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#303

TITLE: EXPLORING THE PERCEPTIONS AND UTILIZATION OF VIRTUAL REALITY IN TENNIS COACHING: INSIGHTS FROM HIGH-PERFORMANCE AUSTRALIAN COACHES

AUTHORS: Sumeyya Ozsoy[1,2], Dr Russell Conduit[1], Dr Robyn Moffitt[3], Dr Tim Buszard[4,2], Dr Melanie Nash[1]

Affiliations: [1]RMIT University, [2]Tennis Australia - Game Insights Group, [3]Deakin University, [4]Victoria University

First author's contact: sumeyyaozsoy@gmail.com

BACKGROUND: Innovation plays a crucial role in elite sports, including tennis, where technological advancements have significantly impacted the competition environment (e.g.,Hawkeye), equipment (e.g., racquet development), and training (e.g., SwingVision). However, the progress made in enhancing mental resilience and skill acquisition practices in tennis has not kept pace with these other areas. Virtual reality (VR) training and its advancements have been consistently evolving over the past decade in commercial, research, and sport settings, including the realm of tennis. Despite the existence of VR tennis programs, the reasons for the technology not being integrated into training or tournament environments at the sub-elite and elite levels remain unknown. Therefore, the objective of this study was to explore the opinions and knowledge of high-performance tennis coaches regarding VR. RESULTS: The results revealed that 50% coaches had personal experience with VR, which 39% had experience with VR-tennis specifically. Limited technological capabilities of VR-tennis emerged as a consistent barrier for elite level athletes. Moreover, coaches highlighted limitations such as high costs and limited real-time manipulations, which further hinder the adoption of VR in tennis. CONCLUSIONS: The viewpoints shared by coaches in this study can assist future VR companies in finding ways to access the elite tennis market, provide guidance to coaches interested in incorporating VR into their coaching methods, and foster the development of new practices for mental and motor skill learning through VR innovations.

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#304

TITLE: THE RELIABILITY AND VALIDITY OF THE BALANCE MAT

AUTHORS: Dr Isaac Selva Raj[1,2], Prof Ken Nosaka[3]

Affiliations: [1]Murdoch Applied Sports Science Laboratory, Discipline of Exercise Science, School of Allied Health, Murdoch University, Perth, WA, Australia, [2]Centre for Healthy Ageing, Health Futures Institute, Murdoch University, Perth, WA, Australia, [3]Edith Cowan University

First author's contact: Isaac.SelvaRaj@murdoch.edu.au

BACKGROUND: Reliable and accurate postural sway assessment tools are important for monitoring the postural stability of individuals so that interventions can be evaluated, and balance ability is better assessed. The Balance Mat (PSI, ACT, Australia) is a new postural sway assessment device that is relatively cheap and highly portable, but it is yet to be scientifically validated and its reliability tested. Therefore, the aims of this project were to assess the test-retest reliability and validity of the Balance Mat (BM). METHODS: Seventeen participants (age range 18 – 67) were recruited, and they performed nine balance tests. The reference method for obtaining balance measurements was the AMTI AccuSway-Optimized force platform (Advanced Mechanical Technology, Inc., MA, USA), which was placed below the BM so that force plate and BM data were collected simultaneously. Each participant performed two trials for each test, which were 20 seconds in duration each. From the BM software, the sway variance, mean sway distance, sway range, sway velocity, and sway path were obtained for each trial. From the force platform, the following centre of pressure (COP) measurements were obtained: standard deviation of the radial displacement of the COP; mean radial displacement of the COP; 95% confidence ellipse area; average velocity of the COP; and COP path length. Spearman's rank-order correlation coefficient was used to test the validity and reliability of the BM. RESULTS: For the comparison between BM and force plate data, correlation coefficients ranged from 0.63 to 0.79 ($p<0.001$). For the test-retest reliability analyses, correlation coefficients ranged from 0.77 to 0.85 ($p<0.001$) among the nine tests. CONCLUSIONS: The strong to very strong positive correlations suggest that the BM is a valid and reliable tool for assessing postural sway.

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#310

TITLE: LOWER LIMB PERFORMANCE AND KINETIC ASYMMETRIES IN PATIENTS FOLLOWING ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION

AUTHORS: Dr Peter Edwards[1,2], Mr Nicholas Blackah[1], Dr Ross Radic[3], Dr Jay Ebert[2,4]

Affiliations: [1]Curtin University, Perth, Western Australia, Australia, [2]Orthopaedic Research Foundation of Western Australia, Claremont, Western Australia, Australia, [3]Perth Orthopaedic and Sports Medicine Centre, [4]University of Western Australia, Crawley, WA, Australia

First author's contact: peter.edwards1@curtin.edu.au

INTRODUCTION AND AIM: Analyses of functional performance and movement strategies at key clinical milestones during rehabilitation are critical to guide rehabilitation and return-to-sport (RTS) decisions post-anterior cruciate ligament reconstruction (ACLR). The aim of this study was to evaluate lower limb performance and kinetics during jumping and hopping in patients post-ACLR. METHODS: Seventy-one patients (39 males, 32 females; mean age 27.0 years; height 1.74m; weight 76.5kg) underwent lower limb evaluation at 6.1 and 10-months post-ACLR. Patient-reported outcomes (IKDC-2000, ACL-RSI) were collected at both time points. Ground reaction forces during bilateral and unilateral countermovement jumps (CMJ) on dual force plates were recorded, alongside unilateral horizontal hops for distance (HHD). Paired sample t-tests examined between-limb differences in eccentric and concentric phases of the bilateral CMJ and jump heights and distances of the unilateral CMJ and HHD, respectively, at both time points. Differences in limb asymmetries between the unilateral CMJ and HHD were also examined. Chi square tests were performed to examine differences in meeting known RTS thresholds (>90% limb symmetry index [LSI]). RESULTS: Moderate to large asymmetries were observed for concentric (effect size [ES] = -1.06, $P<0.001$) eccentric phases (ES = 0.54, $p<0.001$) during the bilateral CMJ at both time points. Greater limb asymmetry was observed in the unilateral CMJ compared to the HHD at 6-months (ES = -0.52; $p\leq0.001$) and 10-months (ES = -0.56; $p\leq0.001$). Significantly more participants "passed" a horizontal hop test versus a vertical hop test at 6 months ($\chi2=7.07$, $p=0.008$) and at 10 months ($\chi2=7.52$, $p=0.006$). CONCLUSION: Vertical performance metrics can better identify between-limb asymmetries than HHD and should be included in RTS testing batteries following ACLR. Between-limb deficits in key eccentric and concentric phases of the bilateral CMJ are also apparent at 6- and 10-months after ACLR, suggesting a persistent offloading strategy even at the time of RTS.

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#311

TITLE: CHRONIC LOW BACK PAIN: BARRIERS AND ENABLERS OF EXERCISE-BASED CLINICIANS TO IMPLEMENTING EVIDENCE-BASED PRACTICE

AUTHORS: Ms Emily Walker[1], Dr Mitchell T. Gibbs[1,2], Mr Andrew Natoli[1], Matthew D Jones[1,2]

Affiliations: [1]School of Health Sciences, Faculty of Medicine and Health, UNSW Sydney, Sydney, New South Wales, Australia, [2]Centre for Pain IMPACT, Neuroscience Research Australia, Sydney, Australia

First author's contact: z5160396@ad.unsw.edu.au

INTRODUCTION: Chronic low back pain (CLBP) is the leading cause of years lived with disability. Exercise, integrated with a biopsychosocial framework, is a first-line treatment for CLBP. Exercise physiologists and physiotherapists are allied health clinicians trained to provide exercise treatment through evidence-based practice (EBP). Research indicates the implementation of EBP remains low, impacting the quality of care provided to patients, which can perpetuate the impacts of CLBP. Given the role of exercise physiologists and physiotherapists in CLBP treatment, it is necessary to investigate their perceived barriers and enablers to implementing best quality care through EBP. METHODS: Participants completed a pre-interview questionnaire, which gathered data about demographics, further education, biomedical/biopsychosocial beliefs and two patient vignettes. This data was analysed using descriptive statistics. Semi-structured interviews investigated participants' barriers and enablers to implementing EBP. This data was analysed through reflexive thematic analysis. RESULTS: Exercise physiologists and physiotherapists misunderstand the definition of EBP. Barriers and enablers existed at clinician-patient, workplace, and system levels, often overlapping. Barriers comprised of unpacking inaccurate messages from other healthcare professionals, patient expectations and beliefs, profit-focused business models, insufficient clinician education, and inadequate funding. Enablers encompassed upskilling with further education, a collaborative community, clinician autonomy, extended consultations, and support from other healthcare professionals. CONCLUSIONS: Multi-level barriers and enablers affect exercise physiologists and physiotherapists use of EBP. Similar barriers and enablers between professions suggest systemic influences outweigh profession-specific influences. To improve the implementation of EBP, both clinician factors and deeper systemic factors must be addressed.

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#312

TITLE: THE PHYSICAL AND MENTAL HEALTH BENEFITS OF PARTICIPATING IN A LUNGS IN ACTION COMMUNITY EXERCISE MAINTENANCE PROGRAM FOLLOWING REHABILITATION.

AUTHORS: Ms Kristal Grainger[1], A/Prof Julie Cooke[2], Ms Emma Halloran[1], A/Prof Lissa Spencer[3,4], Dr Narelle Cox[5,6], Dr Julie Adsett[7], Ms Mary Roberts[8], Associate Professor Andrew Williams[9]

Affiliations: [1]Pulmonary Exercise, Lung Foundation Australia, Brisbane, Queensland, Australia, [2]Research Institute for Sport and Exercise, University of Canberra, Australian Capital Territory, Australia, [3]Department of Physiotherapy, Royal Prince Alfred Hospital Sydney, New South Wales, Australia, [4]School of Health Sciences, Faculty of Medicine and Health, The University of Sydney, New South Wales, Australia, [5]Respiratory Research at Alfred, Monash University, Victoria, Australia, [6]Institute for Breathing and Sleep, Victoria, Australia, [7]Heart Failure Service, Royal Brisbane & Women's Hospital, Queensland, Australia, [8]Department of Respiratory and Sleep Medicine, Westmead Hospital, Sydney, New South Wales, Australia, [9]University of Tasmania, Launceston, Tasmania, Australia

First author's contact: kristalg@lungfoundation.com.au

INTRODUCTION AND AIM: Lungs in Action (LIA), a signature program of Lung Foundation Australia (LFA) is a community exercise program for people with chronic lung and cardiac conditions. Facilitated by Exercise Physiologists, Physiotherapists and Fitness Instructors, LIA supports patients to maintain the benefits achieved in pulmonary or cardiac rehabilitation. This research aimed to determine the holistic health benefits of participation in LIA through a national participant evaluation, concurrently with functional outcome measures over a 3-month period. METHODS: A convenience sample of LIA participants completed an online health questionnaire (Qualtrics) that incorporated the EQ-5D-5L Health Questionnaire, demographics and structured health and wellbeing questions at baseline. A follow-up health questionnaire was undertaken 3-months post baseline. Concurrently, LIA Instructors conducted functional assessments of muscular strength (30sec Sit to Stand (30STS)), mobility, and balance (Timed Up and Go (TUG)) at baseline and 3-months post, to assess if physiological adaptations were evident. RESULTS: 108 LIA participants (60±8 years; F=72) consented to complete the baseline questionnaire with n=61 (60±7 years; F=41) completing the 3-month post questionnaire. There were significant improvements in EQ-5D-5L anxiety domain (MD±SD; 0.18±0.22; p=0.04) and overall health rating (EQ-VAS) (MD±SD; 5.62±2.72; p=0.02). 74 participants (60±7 years; F=52) who attended an average of 11±6 classes over the 3-month interval, completed functional testing at both timepoints. There was a significant decrease in time to complete the TUG (MD±SD; -0.81±1.41 sec; p<0.0001) and increase in repetitions for the 30sSTS (MD±SD; 1.68±2.76 reps; p<0.0001). CONCLUSION: Results indicate an increase in functional capacity, overall health, and a decrease in anxiety over the 3-month period. These benefits may relate to improved independence and activities of daily living.

#313

TITLE: A RANDOMIZED CONTROLLED TRIAL ASSESSING A BRACE-FREE AND ACCELERATED WEIGHT-BEARING PROTOCOL AFTER SURGICAL REPAIR OF ACUTE PROXIMAL HAMSTRING TENDON AVULSIONS

AUTHORS: Dr Jay Ebert[1,2,3], Dr Peter Edwards[4,3], Dr Steven Cecchi[3], Mr Randeep Aujla[4], Mr Peter Annear[5], Mr Brendan Ricciardo[6], Mr Peter D'Alessandro[6,3]

Affiliations: [1]University of Western Australia, Perth, Western Australia, Australia, [2]HFRC, Perth, Western Australia, Australia, [3]Orthopaedic Research Foundation of WA, CLAREMONT, WA, AUSTRALIA, [4]Curtin University, Perth, Western Australia, Australia, [4]University Hospitals of Leicester, Leicester, England, [5]Perth Orthopaedic and Sports Medicine Centre, [6]Coastal Orthopaedics, Claremont, Western Australia, Australia

First author's contact: jay@hfrc.com.au

INTRODUCTION & AIMS: Proximal hamstring tendon avulsion from the ischial tuberosity is a significant injury, with surgical repair advocated. After surgery, limited data exists regarding the optimal rehabilitation regime with extensive variation in published protocols. This study investigated patient outcomes following a traditionally conservative (CR) versus accelerated (AR) rehabilitation regimen after proximal hamstring tendon repair. METHODS: This prospective randomized controlled trial (RCT) allocated 50 patients undergoing proximal hamstring tendon repair to either a braced, partial weight-bearing rehabilitation regime (CR=25) or an accelerated, unbraced regime, that permitted full weight-bearing as tolerated (AR=25). Patients were evaluated pre-operatively and at 3, 6 and 12 months post-surgery, via patient-reported outcome measures (PROMs) including the Lower Extremity Functional Scale (LEFS), Perth Hamstring Assessment Tool (PHAT) and 12-item Short Form Health Survey (SF-12). The single (SHD), triple (THD) and triple crossover (TCHD) hop tests were assessed at 6 and 12 months, as was peak isometric hamstring strength and peak isokinetic knee extensor and flexor torque. RESULTS: All PROMs improved ($p>0.05$) and, while the AR group reported a significantly better Physical Component Score for the SF-12 at 3 months ($p=0.022$), as well as a lower severity of hamstring pain at 12 months ($p=0.032$), there were no other group differences. Peak isometric hamstrings strength and peak isokinetic quadriceps and hamstrings torque symmetry were all comparable between groups ($p>0.05$). While the AR group demonstrated significantly better ($p=0.009$) limb symmetry for the THD at 6 months, no other hop test differences were seen between groups. Three re-injuries have been observed (CR=2, AR=1). CONCLUSION: After proximal hamstring repair surgery, post-operative outcomes following an accelerated rehabilitation regimen were largely comparable to a traditionally conservative

#314

TITLE: A RANDOMIZED CONTROLLED TRIAL OF AUTOLOGOUS TENOCYTE INJECTION VERSUS CORTICOSTEROID INJECTION FOR SYMPTOMATIC PARTIAL THICKNESS ROTATOR CUFF TEARS

AUTHORS: Dr Jay Ebert[1,2,3], Dr Peter Edwards[4,3], Prof Ming Hao Zheng[1], Dr Jane Fitzpatrick[5], Mr Jeff Hughes[6], Dr William Breidahl[7], Prof Allan Wang[1]

Affiliations: [1]University of Western Australia, Perth, Western Australia, Australia, [2]HFRC, Perth, Western Australia, Australia, [3]Orthopaedic Research Foundation of WA, CLAREMONT, WA, AUSTRALIA, [4]Curtin University, Perth, Western Australia, Australia, [5]University of Melbourne, [6]North Shore Private Hospital, [7]Perth Radiological Clinic

First author's contact: jay@hfrc.com.au

BACKGROUND: Symptomatic supraspinatus tears are difficult to treat, causing persistent subacromial impingement symptoms. Clinical studies of Autologous Tenocyte Injection (ATI) have shown that cultured tenocytes can synthesize extracellular matrix and facilitate healing of damaged tendon tissue. This randomized controlled trial (RCT) investigated the efficacy of ATI compared to corticosteroid injection (CS), combined with a graded rehabilitation program, in patients with symptomatic tendinopathy and partial thickness cuff tears. METHODS: Eligible participants with a duration of symptoms >6 months were recruited and randomized to receive ATI to the interstitial tear or CS to the subacromial bursa in a 2:1 ratio, under ultrasound guidance, followed by a rehabilitation protocol. Assessments were undertaken pre-treatment and at 1, 3, 6 and 12 months post-treatment, including the Constant Score, Visual Analogue Pain Scale (VAS) and American Shoulder and Elbow Surgeons Assessment (ASES). Magnetic resonance imaging (MRI) was performed at baseline, 6 and 12 months. RESULTS: Thirty participants were enrolled (ATI=19, CS=11). The ATI group performed significantly better in the Constant Score at 1 ($p=0.020$, ATI=81.8, CS=67.6), 6 ($p=0.026$, ATI=84.9, CS=71.1) and 12 ($p=0.024$, ATI=86.5, CS=65.4) months, reported better ($p<0.05$) VAS scores at all post-treatment timepoints and reported better ASES scores at all timepoints including 6 ($p=0.012$, ATI=88.6, CS=74.0) and 12 ($p<0.01$, ATI=93.3, CS=62.9) months. A total of 7 of 11 CS participants withdrew from the trial between 6 and 12 months due to worsening pain. These patients were subsequently offered and underwent ATI, with 6 and 12 month improvements similar to the primary ATI group. CONCLUSION: ATI resulted in a significantly better and sustained reduction in pain, and improvement in shoulder function, compared with CS. This is the first Level 1 study using ATI to treat supraspinatus tears.

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#315

TITLE: AN INVESTIGATION OF SEX-BASED DIFFERENCES IN PHYSICAL AND PSYCHOLOGICAL RECOVERY, AND RETURN TO SPORT, FOLLOWING ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION.

AUTHORS: Miss Liza Kneebone[1], Dr Jay Ebert[1,2], Dr Peter Edwards[3,4], Mr Nic Blackah[5]

Affiliations: [1]School of Human Sciences (Exercise and Sport Science), University of Western Australia, Crawley, Western Australia, Australia, [2]HFRC, Perth, Western Australia, Australia, [3]Curtin University, Perth, Western Australia, Australia, [4]Orthopaedic Research Foundation of Western Australia, Claremont, Western Australia, Australia, [5]School of Allied Health, Curtin University, Bentley, Western Australia, Australia

First author's contact: liza.kneebone1@outlook.com

INTRODUCTION & AIMS: Despite the increasing rate of anterior cruciate ligament (ACL) tears and surgical reconstruction (ACLR), little is known about the post-operative recovery in males versus females. Understanding differences in the recovery between sexes will assist in better tailoring rehabilitation, return to sport (RTS) and counselling pathways. This study investigated sex-based differences in the physical and psychological recovery of both females and males after ACLR. METHODS: This study recruited 104 patients (49 females, 55 males) undergoing ACLR. Patients were assessed pre-operatively and at 6, 12 and 24 months post-surgery, via patient-reported outcome measures (PROMs) including the International Knee Documentation Committee (IKDC) form, the Tegner Activity Scale (TAS) and the Anterior Cruciate Ligament Return to Sport after Injury (ACL-RSI) score. Patients embarked on an assessment of peak isokinetic knee extensor (PKET) and flexor (PKFT) torque and a 4-hop performance battery. Limb Symmetry Indices (LSIs) were calculated. The incidence of RTS was investigated. RESULTS: All PROMs significantly improved ($p<0.05$), though females reported significantly lower ACL-RSI ($p=0.002$) and IKDC ($p=0.007$) scores. While no sex-based differences were observed in hop test LSIs, males demonstrated significantly higher mean LSIs for PKET at 6 ($p=0.037$) and 24 (0.047) months, and PKFT at 6 ($p=0.007$) and 12 ($p=0.002$) months. At 24-months post-surgery, a significantly greater ($p=0.030$) percentage of male patients had returned to pivoting sports. CONCLUSION: This study demonstrates the disparity between sexes in physical and psychological recovery, as well as RTS status, in community-level patients undergoing ACLR. The development and implementation of enhanced post-operative patient-centered care may be warranted tailored to sex, encompassing rehabilitation, education, and counseling after ACLR to promote increased engagement in rehabilitation.

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#316

TITLE: A RANDOMIZED CONTROLLED TRIAL EVALUATING AN ACCELERATED WEIGHT-BEARING REHABILITATION PATHWAY AFTER MATRIX-INDUCED AUTOLOGOUS CHONDROCYTE IMPLANTATION FOR SYMPTOMATIC KNEE CARTILAGE DEFECTS

AUTHORS: Dr Jay Ebert[1,2,3], Dr Peter Edwards[3,4], Prof Ming Hao Zheng[1], Dr Sven Klinken[5], Prof David Wood[1], Mr Greg Janes[6]

Affiliations: [1]University of Western Australia, Perth, Western Australia, Australia, [2]HFRC, Perth, Western Australia, Australia, [3]Orthopaedic Research Foundation of WA, CLAREMONT, WA, AUSTRALIA, [4]Curtin University, Perth, Western Australia, Australia, [5]Perth Radiological Clinic, [6]Perth Orthopaedic and Sports Medicine Centre

First author's contact: jay@hfrc.com.au

INTRODUCTION & AIMS: Matrix-induced autologous chondrocyte implantation (MACI) has demonstrated encouraging outcomes in treating symptomatic knee cartilage lesions which, if untreated, can progress toward early osteoarthritis. Rehabilitation is imperative to optimize outcome, though has been traditionally conservative. This study investigated the long-term outcomes of an accelerated return to full weight bearing (WB) after MACI. METHODS: This prospective randomized controlled trial (RCT) allocated 35 patients (37 knees) to a 6-week (n=18) or 8-week (n=19) return to full WB after MACI. Patients were evaluated pre-operatively and at 1, 2, 5 and ≥10 years, via patient-reported outcome measures (PROMs) including the Knee Osteoarthritis Outcome Score (KOOS). Single limb hop capacity and peak knee extensor and flexor torque were assessed, with limb symmetry indices (LSIs) calculated. Magnetic resonance imaging (MRI) evaluated repair tissue, while a validated MRI composite graft score was calculated. RESULTS: While the 6-week WB group reported significantly better 1-year KOOS Quality of Life scores, no other differences ($p>0.05$) in PROMs existed. The peak knee extensor torque LSI significantly improved ($p<0.0001$) over time, with mean LSIs of 100.8 (6-week) and 99.1 (8-week) at ≥10 years. No group differences ($p>0.05$) were observed in hop LSIs. A non-significant decline ($p>0.05$) was observed for the MRI composite score from 1-year to final ≥10-year review and, apart from a significant group effect ($p=0.028$) for graft tissue intensity in favor of the 6-week group suggesting repair tissue more reflective of native cartilage, no other MRI-based differences ($p>0.05$) existed. At ≥10-years, no grafts on MRI had failed, though 3 patients (6-week n=1, 8-week n=2) had progressed toward knee arthroplasty. CONCLUSION: The 6-week accelerated rehabilitation program provided comparable clinical and MRI-based outcomes beyond 10 years post-surgery, without jeopardizing the graft.

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#317

TITLE: A RANDOMIZED CONTROLLED TRIAL INVESTIGATING PATIENT RECOVERY AFTER ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION UNDERTAKEN WITH A QUADRICEPS VERSUS HAMSTRINGS TENDON AUTOGRAFT

AUTHORS: Dr Jay Ebert[1,2,3], Dr Peter Edwards[3,4], Mr Nick Calvert[5], Mr Ross Radic[5]

Affiliations: [1]University of Western Australia, Perth, Western Australia, Australia, [2]HFRC, Perth, Western Australia, Australia, [3]Orthopaedic Research Foundation of WA, CLAREMONT, WA, AUSTRALIA, [4]Curtin University, Perth, Western Australia, Australia, [5]Perth Orthopaedic & Sports Medicine Centre

First author's contact: jay@hfrc.com.au

INTRODUCTION & AIMS: Anterior cruciate ligament (ACL) tears are common. However, a lack of high-quality evidence exists comparing different graft options in patients undergoing surgical reconstruction (ACLR). This randomized controlled trial (RCT) investigated the course of recovery in patients undergoing ACLR with either a quadriceps (QT) or hamstrings (HT) tendon autograft. METHODS: This study randomized 112 patients to one of the two graft reconstruction cohorts (HT=55, QT=57), subsequently undergoing ACLR and a structured rehabilitation program. Patients were assessed pre-surgery and at 6 weeks and 3, 6, 12 and 24 months, with a range of patient-reported outcome measures (PROMs) including the International Knee Documentation Committee form (IKDC) and the Anterior Cruciate Ligament Return to Sport after Injury (ACL-RSI) score. Graft laxity, peak isokinetic knee extensor and flexor strength and a 6-hop performance battery were assessed. Limb Symmetry Indices (LSIs) were calculated. RESULTS: All PROMs significantly improved ($p<0.0001$). Apart from the ACL-RSI score which was significantly better ($p<0.05$) in the HT group at 3, 6 and 12 months, no other group differences ($p>0.05$) were observed. No group differences ($p=0.407$) were observed for knee laxity. While the HT group demonstrated significantly greater ($p<0.05$) quadriceps strength LSIs at 6 and 12 months, the QT group demonstrated significantly greater ($p<0.05$) hamstrings strength LSIs at 6, 12 and 24 months. The HT group demonstrated significantly greater ($p<0.05$) LSIs for the single horizontal (6 months), lateral (6 and 12 months) and medial (6 months) hop tests. CONCLUSION: The HT group reported a higher level of psychological readiness to return to sport, while demonstrating greater quadriceps strength (and hop test) LSIs. Greater hamstring strength LSIs were observed for the QT cohort. Longer-term review will continue to evaluate RTS and later-stage re-injury between the two graft constructs.

#318

TITLE: A RANDOMIZED CONTROLLED TRIAL INVESTIGATING FUNCTIONAL RECOVERY AFTER ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION USING A SINGLE VERSUS DOUBLE TENDON HARVEST

AUTHORS: Dr Jay Ebert[1,2,3], Dr Peter Edwards[3,4], Dr Adam Lawless[3], Mr Toby Leys[5], Mr Peter D'Alessandro[5]

Affiliations: [1]University of Western Australia, Perth, Western Australia, Australia, [2]HFRC, Perth, Western Australia, Australia, [3]Orthopaedic Research Foundation of WA, CLAREMONT, WA, AUSTRALIA, [4]Curtin University, Perth, Western Australia, Australia, [5]Coastal Orthopaedics, Claremont, Western Australia, Australia

First author's contact: jay@hfrc.com.au

INTRODUCTION & AIMS: Anterior cruciate ligament (ACL) tears are common. While surgical reconstruction (ACLR) is commonly advocated and a hamstring autograft is the popular choice, hamstring tendon harvest has been linked to reduced hamstring strength and ongoing donor site pain. While traditional surgical techniques required a harvest of both semitendinosus/gracilis tendons, modern harvesting and fixation methods permit a shorter, broader harvest of semitendinosus only. This study investigated donor site pain, strength and functional recovery in patients undergoing ACLR via a single (ST) versus dual (DT) tendon hamstring harvest. METHODS: This prospective randomized controlled trial (RCT) allocated 138 patients to ACLR with one of the two hamstring tendon graft options (ST=71, DT=67) followed by a structured rehabilitation program. Patients were assessed pre-surgery and at 3, 6, and 12 months, with a range of patient-reported outcome measures (PROMs) including a validated donor-site morbidity score. Graft laxity, peak isokinetic knee extensor and flexor strength and a 6-hop performance battery were assessed. Limb Symmetry Indices (LSIs) were calculated. RESULTS: All PROMs significantly improved ($p<0.0001$) and were largely similar between groups ($p>0.05$), apart from significantly less graft morbidity reported in the ST group ($p=0.001$). No group differences were observed for knee laxity or LSIs for hop measures ($p>0.05$), nor the LSIs for peak knee flexor ($p=0.113$) or extensor ($p=0.286$) torque. CONCLUSION: While the ST ACLR group reported significantly less harvest site morbidity, no other subjective or functional differences were observed in patients undergoing ACLR with either a single or dual hamstring tendon autograft harvest.

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#319

TITLE: "ANYTHING WOULD BE A WIN IF YOU'RE STRUGGLING." – EXPLORING EXERCISE AND PHYSICAL ACTIVITY IN PEOPLE LIVING WITH IDIOPATHIC HYPERSOMNIA

AUTHORS: Mr Jeff Doukakis[1], Associate Professor Kieron Rooney[1], Dr Sheila Sivam[2,3,4], Professor Brendon Yee[2,3,4], Professor Bandana Saini[2,5], Dr Elizabeth Machan (Cayanan)[1,2]

Affiliations: [1]School of Health Sciences, Faculty of Medicine and Health, University of Sydney, Sydney, Australia; [2]CIRUS Centre for Sleep and Chronobiology, Woolcock Institute of Medical Research, Macquarie Park, Australia; [3]Department of Respiratory and Sleep Medicine, Royal Prince Alfred Hospital, Sydney, Australia; [4]Central Clinical School, Faculty of Medicine and Health, University of Sydney, Sydney, Australia; [5]School of Pharmacy, Faculty of Medicine and Health, University of Sydney, Sydney, Australia.

First author's contact: jeffdoukakis@gmail.com

INTRODUCTION: Idiopathic hypersomnia (IH) is a debilitating sleep condition characterised by excessive daytime sleepiness. The potential to moderate symptoms through lifestyle factors such as physical activity has not been explored, and current management focuses on medication. Exercise reduces fatigue and increases energy in the general population, and while some publications note physical activity as a potential avenue to manage symptoms of IH, there is no specific evidence related to exercise in this condition. The aim of this project was to explore the experiences of people living with IH in relation to: self-efficacy and exercise, exercise for symptom management, diagnosis related sources of information to support exercise, perceived ideal exercise prescription and the interaction between exercise and current management strategies and treatment approaches. METHODS: Qualitative data was collected through semi-structured interviews with 14 participants. This was transcribed and analysed using a modified codebook analysis to construct overarching themes and subthemes. RESULTS: Three overarching themes were constructed. The first theme described a lack of exercise advice, outlined the interaction between exercise and condition management strategies and symptoms and outlined the diverse range of activities people with IH engage with. The second theme explored the positive and negative factors of exercise self-efficacy, as well as reported barriers and facilitators of exercise. The third theme "A consumer-led exercise prescription" details a best practice (FITT) potential exercise prescription informed by the opinions and experiences of people with IH. DISCUSSION: This is the first study exploring exercise and physical activity in people living with IH. It provides valuable insight regarding potential future exercise interventions for clinicians, future researchers and people living with IH.

321

TITLE: PATIENTS WITH FEMOROACETABULAR IMPINGEMENT SYNDROME OBTAIN SIGNIFICANT AND SUSTAINED IMPROVEMENT FOLLOWING A COMBINED HIP INJECTION AND REHABILITATION PROGRAM

AUTHORS: Ms Jen Woodhouse[1,2], Dr Jay Ebert[1,3], Dr Peter Edwards[4,5], Mr Randeep Aujla[6], Mr Peter D'Alessandro[5,7]

Affiliations: [1]HFRC, Nedlands, WA, Australia, [2]Murdoch University, Murdoch, WA, Australia, [3]University of Western Australia, Perth, Western Australia, Australia, [4]Curtin University, Perth, Western Australia, Australia, [5]Orthopaedic Research Foundation of Western Australia, Claremont, Western Australia, Australia, [6]University Hospitals of Leicester, Leicester, England., [7]Coastal Orthopaedics, Claremont, Western Australia, Australia

First author's contact: jen@hfrc.com.au

INTRODUCTION: Initial treatment recommendations for symptomatic femoroacetabular impingement syndrome include non-surgical therapies such as injections and rehabilitation. However, many patients undergo isolated injections or a rudimentary exercise regime. This study investigated the benefit of a combined intra-articular hip injection and structured exercise rehabilitation program in patients with FAIS. METHODS: Participants were recruited and underwent a guided intra-articular injection of corticosteroid and local anaesthetic, followed by a 12-week rehabilitation program. Patients were assessed pre-and post-injection(8 weeks, 4, 6, 12 and 24 months) via patient-reported outcome measures including the 33-item International Hip Outcome Tool and Hip Outcome score. Hip ROM and peak isometric hip strength in all planes were assessed, along with single-limb hop capacity. Limb Symmetry Indices were calculated. The percentage of patients transitioning toward surgery over the period was evaluated. RESULTS: A total of 44 patients underwent the injection and completed the initial 8-week rehabilitation component. A significant improvement ($p<0.05$) in all PROMs was observed, with 93% of patients satisfied. A significant increase ($p<0.05$) in all active hip ROM and isometric strength measures was observed, sustained over the 24-month period. Bilateral improvements in hop capacity were observed, with all hop test LSIs significantly improving ($p<0.05$). Overall, 14 patients (32%) progressed toward surgical intervention over the 24-month post-injection period. These patients reported significantly worse ($p<0.05$) PROMs pre-surgery and more pain within the first 4 weeks post-injection. CONCLUSION: This is the first study seeking to implement and comprehensively assess a best-practice, multimodal non-operative program consisting of an intra-articular injection and a structured exercise program. Most patients with symptomatic FAIS demonstrated significant improvement in symptoms.

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#322

TITLE: POTENTIAL IMPACT OF EXERCISE UPON SYMPTOM BURDEN IN ADOLESCENTS AND YOUNG ADULTS UNDERGOING CANCER TREATMENT.

AUTHORS: Dr Claire Munsie[1,2], Dr Jay Ebert[2], Professor David Joske[3,4], Jo Collins[1,4], Prof Tim Ackland[5]

Affiliations: [1]WA Youth Cancer Service, Sir Charles Gairdner Hospital, Perth, Western Australia, Australia, [2]School of Human Sciences, University of Western Australia, Perth, Western Australia, Australia, [3]School of Medicine, University of Western Australia, Perth, Western Australia, Australia, [4]Sir Charles Gairdner Hospital, Perth, Western Australia, Australia, [5]University of Western Australia, Perth, Western Australia, Australia

First author's contact: claire.munsie@health.wa.gov.au

INTRODUCTION: Adolescents and young adults (AYAs) experience vast symptom burden resulting from cancer treatment-related toxicities (TRTs). Evidence supports exercise to mitigate several TRTs in other cohorts, however evidence in AYAs is lacking. Conventional reporting of TRTs adopts a maximum grade approach failing to recognise the trajectory over time or lower grade toxicities. Alternatively, longitudinal analysis of toxicities over time (ToxT) may provide clinically meaningful summaries of this data. We evaluated the longitudinal impact of an exercise intervention on TRTs in AYAs undergoing cancer treatment. METHODS: A prospective, randomised trial allocated participants to a 10-week exercise intervention (EG) or control group (CG) undergoing usual care. Detailed information on TRTs was collected throughout the intervention. All TRTs were graded per the Common Terminology Criteria for Adverse Events (CTCAE v5.0). RESULTS: Forty-three (43) participants (63% male, mean age 21.1 years) were enrolled. When categorised to reflect the maximal worst grade experienced (Grade 0, Grade 1-2 and ≥Grade 3), the CG reported an increased incidence of severe fatigue (≥Grade 3) compared with the EG ($p=0.05$). No other differences between groups were evident ($p>0.05$). ToxT analysis of the four most common toxicities (fatigue, pain, nausea and mood disturbances) demonstrated no difference in the mean grade of each over time ($p>0.05$). Additionally, area under the curve (AUC) analysis revealed trends towards a higher magnitude of fatigue (mean AUC 12.5 vs 11.1 $p=0.11$) and mood disturbances (mean AUC 7.2 vs 5.7 $p=0.28$) over time in the CG. No differences were evident for pain and nausea between groups ($p>0.05$). CONCLUSION: A 10-week exercise intervention reduces the severity of fatigue in AYAs undergoing treatment. While the ToxT approach provided insight into the toxicity profile, adequately powered studies are needed to better understand these differences within a homogeneous sample

#323

TITLE: ARE THE ATTITUDES AND BELIEFS OF AUSTRALIAN EXERCISE-BASED PRACTITIONERS ASSOCIATED WITH THEIR USE OF, AND CONFIDENCE IN, TREATMENT MODALITIES FOR PEOPLE WITH CHRONIC LOW BACK PAIN?

AUTHORS: Dr Mitchell T. Gibbs[1,2], Matthew D Jones[1,2]

Affiliations: [1]School of Health Sciences, University of New South Wales, Sydney, NSW, Australia, [2]Centre for Pain IMPACT, Neuroscience Research Australia, Sydney, Australia

First author's contact: mitchell.gibbs@unsw.edu.au

BACKGROUND: Practitioners' attitudes and beliefs towards chronic low back pain (CLBP) influence their clinical decision making, but few studies have investigated decision making outside the context of patient vignettes, for a range of first- and second-line treatment options for CLBP, or in Accredited Exercise Physiologists (AEPs). METHODS: Using an online survey, Australian AEPs and physiotherapists rated their use of different treatments for CLBP (exercise, education, manual therapy, cognitive behavioural therapy) and their confidence in these treatments for reducing pain and disability. Their biomedical and biopsychosocial beliefs were also assessed using the Pain and Attitudes Beliefs Scale for Physiotherapists. Differences between disciplines in treatment use and confidence were analysed using Mann-Whitney U tests and independent t-tests, respectively. Multiple linear regression was used to explore factors associated with treatment choices. RESULTS: Two-hundred thirty-three practitioners (n=143 physiotherapists, n=90 AEPs) completed the survey. Most practitioners were confident treating CLBP, had a moderate-high level of confidence in the different treatments, and regularly used them in practice. Practitioners with higher biomedical beliefs had greater use of, and confidence in, specific exercise, manual therapy, and combined exercise and manual therapy. Practitioners with higher biopsychosocial beliefs were more confident in general exercise, cognitive behavioural therapy, pain education and combined exercise and pain education. CONCLUSION: Practitioner beliefs influence their use of, and confidence in, different treatments for CLBP. These findings suggest a need for strategies to enhance biopsychosocial beliefs/reduce biomedical beliefs in Australian exercise-based practitioners.

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#324

TITLE: HOW HAS KIDS PHYSICAL ACTIVITY PREVIOUSLY BEEN MEASURED IN AUSTRALIA? AND WHAT QUESTIONS COULD WE USE IN THE FUTURE?

AUTHORS: Verity Booth[1], Natasha Schranz[1,2], Professor Grant Tomkinson[1], Professor David Lubans[3], Professor Tim Olds[1]

Affiliations: [1]University of South Australia, Adelaide, SA, Australia, [2]Wellbeing SA, [3]University of Newcastle

First author's contact: veritymbooth@gmail.com

INTRODUCTION & AIMS: The complex nature of children's and adolescents' participation in physical activity (PA) makes it difficult to measure. Questions have been used in Australia for many decades to subjectively monitor PA and sedentarism, however there is no consensus on which are the best. Since better data is needed to more accurately determine PA participation, the aim of this research was to identify existing questions and utilise expert opinion to develop a set of recommended questions. METHODS: An audit of existing research measuring Australian children's and adolescents' participation in PA and sedentary behaviours was conducted. Existing questions were collated, classified and described in terms of the behaviours they measured and how they have previously been used. A two-round online Delphi method was chosen to identify experts' opinions on existing questions measuring PA and sedentary behaviours. RESULTS: From 1951 to 2019, 362 index questions were identified as previously used to measure PA and sedentary behaviours. The questions were diverse, with varying characteristics such as the behaviours measured, question structure, recall timeframe, and temporal alterations to the questions. Some continuity in data collection was identified, with one question measuring overall PA participation repeated 35 times across different studies. Within the Delphi questionnaire, 29 experts provided feedback on 31 questions which met the pre-determined criteria. The highest-ranked questions measuring participation in overall PA and sedentary behaviours were selected as two key questions for measuring compliance to PA guidelines. CONCLUSION: Numerous questions exist able to measure compliance to guidelines or more specific measurement needs. If researchers and practitioners utilise recommended questions, it will help to accumulate comparative data and provide further insight on how to meaningfully improve PA of an individual child or a whole population.

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#326

TITLE: THE EFFECTS OF EXERCSE ON PSYCHOLOGICAL HEALTH AND WELLBEING IN PEOPLE DIAGNOSED WITH CANCER: A SYSTEMATIC REVIEW AND META-ANALYSIS.

AUTHORS: Jay Calder[1], Dr Kellie Toohey[2], Dr Phil Kavanagh[1], Dr Rachel Bacon[1], Dr Minh Chau[3]

Affiliations: [1]University of Canberra, Canberra, ACT, Australia; [2]Southern Cross University, Lismore, NSW, Australia; [3]Charles Sturt University, Wagga Wagga, NSW, AUS

First author's contact: jay.calder@canberra.edu.au

INTRODUCTION & AIMS: The high psychological burden reported by adults diagnosed with cancer has a large impact on overall and cancer-specific health outcomes. Accumulating evidence indicates that psychological distress may accelerate tumour progression and increase risk of cancer mortality. Research has highlighted that exercise interventions are safe, feasible, and effective at improving both physical and psychological health for adults diagnosed with cancer. However, there are few systematic reviews that have evaluated psychological health as a primary outcome of interest or analysed the effects of different exercise prescriptions on specific psychological health outcomes. This systematic review aims to meta-analyse the available evidence and determine the effects of exercise on psychological health in individuals diagnosed with cancer. METHODS: Systematic review with meta-analysis utilising a random effects model. Subgroups analysis was included, defined by psychological health outcomes and further stratified by the FITT principle: Frequency; Intensity; Time; and Type of exercise. RESULTS: Seventy-eight studies met the inclusion criteria. One hundred and eighty-three individual effect sizes were obtained, which demonstrated small to moderate combined effects of exercise (d = 0.30, 95%CI 0.20; 0.40) across all psychological health outcome measures. CONCLUSION: Exercise is an effective intervention to improve psychological health in adults diagnosed with cancer. The subgroup analysis revealed consistent effects across a range of specific psychological health outcomes, differences were observed between exercise prescriptions, thus highlighting a need for targeted exercise for each psychological health outcome.

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#327

TITLE: EXPLORING PSYCHOLOGICAL NEED SATISFACTION AND MOTIVATION TO EXERCISE AND PHYSICAL ACTIVITY IN AN ARAB CONTEXT

AUTHORS: Mrs Banan Suwan[1], Associate Professor Paul Grimshaw[1,2], Dr. Bridget McFadden[3,4], Dr. Merilyn Lock[1]

Affiliations: [1]Exercise Science, Health and Epidemiology, College of Health and Life Sciences, Hamad Bin Khalifa University, Doha, Qatar, [2] School of Electrical and Mechanical Engineering, University of Adelaide, SA, Australia, [3] Department of Family, Nutrition, and Exercise Sciences, Queens College, City University of New York, Queens, NY, USA, [4]Department of Exercise Science, Arnold School of Public Health, University of South Carolina, Columbia, SC, USA

Fourth author's contact: merilyn.lock@yahoo.com.au

INTRODUCTION & AIMS: Promoting physical activity (PA) requires an understanding of PA behavior, its correlates, and its determinants. This study aimed to assess self-reported PA behavior of adults in Qatar and understand the associations between self-determination theory (SDT) based motivational processes and PA behavior. METHODS: This cross-sectional study used an anonymous online questionnaire within Qatar comprising demographic questions, the International Physical Activity Questionnaire Short Form (IPAQ-SF), the Behavioral Regulation in Exercise Questionnaire (BREQ-3), and the Psychological Need Satisfaction in Exercise (PNSE) scale. RESULTS: Respondents (N=347; nfemales=246, nmales=101) were 21.6% non-Arab expats, 63.7% Arab expats, and 14.7% Qatari nationals. The prevalence of sufficient PA (minimum of 600 MET·min per week according to the IPAQ-SF criteria) was 66%, while 34% of participants were insufficiently active. Males ($\bar{x}$=1808.16±2517.47 MET·min·wk-1) were significantly more active than females ($\bar{x}$=1049.40±1717.31 MET·min·wk-1; P=0.001), and reported more autonomous forms of regulation ($\bar{x}$identified=2.86, $\bar{x}$integrated=2.33, $\bar{x}$intrinsic=2.64) than females ($\bar{x}$identified=2.58, $\bar{x}$integrated=2.01, $\bar{x}$intrinsic=2.36; P<0.05), as well as higher perceived competence satisfaction ($\bar{x}$=3.89) than females ($\bar{x}$=3.49; P=0.025). A bivariate correlation showed that total PA and moderate to vigorous physical activity (MVPA) were positively and significantly (P<0.01) associated with autonomous forms of regulation, namely, identified (rtotal_PA=0.16, rMVPA=0.15) integrated (rtotal_PA=0.26, rMVPA=0.25), and intrinsic (rtotal_PA=0.20, rMVPA=0.18) regulation, as well as perceived competence in exercise (rtotal_PA=0.21, rMVPA=0.18; P<0.01). CONCLUSION: The bivariate correlation results were consistent with the theoretical tenets of SDT, supporting the application of SDT to advance the understanding of psychological associations of PA in predominantly Arab populations. The observed gender gap in physical activity levels is consistent with previous research in Arab populations. Future research could target SDT constructs to promote PA behavior in Arab women through culturally sensitive interventions.

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#328

TITLE: INTERPROFESSIONAL BEHAVIOURAL COUNSELLING; AN ESSENTIAL SKILL FOR OUR UNDERGRADUATE STUDENTS

AUTHORS: Brooke Russell[1], Jana Lutze[1], Dr Neil Gibson[1], Dr James Forsyth[1], Blake Charman[1], Dr John Sampson[1], Dr Gregory Peoples[1], Meredith Kennedy[1], Herb Groeller[1]

Affiliations: [1]University of Wollongong, New South Wales, Australia

First author contact: brooker@uow.edu.au

INTRODUCTION: Collaborative healthcare practices have positive impacts on dietary and physical activity behaviours (Patnode, et al., 2022). An immersive interprofessional work-integrated learning experience was developed for UOW Exercise Science and Rehabilitation(ExSc), and Dietetics and Nutrition(DNut) students, to appropriately prepare novice practitioners for significant growth in workforce interprofessional collaboration opportunities. METHOD: Undergraduate(ExSc:n=47;DNut:n=48) students participated in an Interprofessional Education Workshop(IEW) aimed at improving understanding of interprofessionalism and behaviour counselling techniques. Students then formed into 46 pairs(ExSc:n=1+DNut:n=1) with each pair providing Interprofessional Behavioural Counselling(IBC) to a community client at two separate timepoints; Initial consultation and a 2-week Follow Up(FU). Student volunteers(n=38;ExSc:n=10,DNut:n=28) agreed to participate in the research phase, completing two surveys, Interprofessional Collaborative Competency Attainment Scale(ICCAS) & Students Perceptions of Interprofessional Clinical Education Revised(SPICE-R2) at two timepoints; immediately post IEW, and post FU. Additionally, volunteers(n=14;ExSc:n=3,DNut:n=11) participated in focus groupsfollowing IBC. Significance, set at ($p<0.01$) with mean score differences, and relative change (%) reported. RESULTS: Participant responses(n=31) to ICCAS showed improvement across the five key areas of interprofessional practice; communication(0.8,23%), collaboration(1.1,32%), role and responsibilities(1.1, 33%), patient-centred care(1.2,36%), conflict-management and team-functioning(1.1,30%). Similarly, improvements in SPICE-R2 for patient outcomes(0.30,7%) and roles and responsibilities with collaborative-practice(0.67,17%), but not ($p=0.06$) for interprofessional teamwork and team-based practice. Focus groups indicated that students were confused pre-IBC about effective collaboration, specifically apprehension relating to perceived time constraints involved in having two professionals in one consultation. Conversely, post-IBC student's reported increased confidence in adopting a collaborative approach, better understanding of scope of practice overlap and could see value in client outcomes following an interprofessional approach. CONCLUSION: UOW will continue to embed interprofessional work integrated learning experiences in the future to improve understanding of collegial collaboration ensuring patient-centred care and best practice.

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#329

TITLE: NEAR MAXIMAL VELOCITY SPRINTS ARE RARE, BUT HIGH-INTENSITY ACCELERATIONS OCCUR FREQUENTLY DURING INTERNATIONAL MALE FIELD HOCKEY

AUTHORS: Dr Paul Goods[1,2], Dr Brendyn Appleby[1,3], Associate Professor Brendan Scott[1,2], Prof Peter Peeling[4,5], Dr Brook Galna[1,2]

Affiliations: [1]Murdoch Applied Sport Science Laboratory, School of Allied Health, Murdoch University, Perth, WA, Australia, [2]Centre for Healthy Ageing, Health Futures Institute, Murdoch University, Perth, WA, Australia, [3]High Performance Program, Hockey Australia, Perth, WA, Australia, [4]School of Human Sciences (Exercise and Sports Science), University of Western Australia, Perth, Western Australia, Australia, [5]Department of Sport Science, Western Australian Institute of Sport, Perth, Western Australia, Australia

First author's contact: paul.goods@murdoch.edu.au

INTRODUCTION & AIMS: In team sport, high-intensity running is generally used to describe velocities associated with maximal aerobic speed, with sprints defined by near maximal velocities, which are considered important to team sport performance. However, recent team sport investigations have revealed that near maximal velocities are seldom attained, but high-intensity accelerations occur frequently and may better represent the most demanding aspects of team sport match play. Field hockey research in this area is lacking, and therefore, we aimed to explore the frequency of high-intensity accelerations in elite field hockey, and how often these accelerations resulted in the attainment of sprint velocities. METHODS: Movement data were collected during 2023 across 3 tournaments (17 matches) from 27 members of the Australian male field hockey team (totalling 266 player matches). Duration, high-intensity accelerations (>2.5m.s-2 for >1s), sprints (>7m.s-1), and repeated high-intensity efforts (≥3 accelerations or sprints with ≤45s recovery between efforts) were extracted. Mixed effects models were used to estimate the mean for each outcome (fixed effect), with random intercepts modelled for player and match. RESULTS: Players were active for 51min and completed 42 high-intensity accelerations per match, which lasted for 3.6s, covered 12.9m, and reached a peak velocity of 4.8m.s-1. Only 6.4% of high-intensity accelerations resulted in the attainment of sprint velocity (2.5 per match), and these efforts lasted for 6.1s, covered 35.6m, and reached a peak velocity of 7.5m.s-1. Players completed 4.5 bouts of repeated high-intensity accelerations per match, which comprised 3.7 efforts per bout, interspersed with 16.4s of recovery; however, no repeated-sprint bouts were observed. CONCLUSION: High-intensity accelerations occur frequently in field hockey; however, these rarely result in the attainment of sprint velocities. Practitioners should consider monitoring high-intensity accelerations to ensure players are being adequately prepared for competition demands.

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#330

TITLE: THE INFLUENCE OF SENIOR AUTHOR GENDER ON RESEARCH PRACTICE IN EXERCISE AND SPORTS SCIENCE

AUTHORS: Dr Mandy Hagstrom[1], Dr Kemi Wright[1], Dr Alexander Engel[1], Dr Briana Clifford[1], Matthew D Jones[1,2], Dr Michael Wewege[2], Dalya Jankelowitz[1], Tea Maros[1], Emma Suzuki[1]

Affiliations: [1]School of Health Sciences, Discipline of Exercise Physiology, Faculty of Medicine and Health, The University of New South Wales (UNSW), Sydney, NSW, Australia, [2]Centre for Pain IMPACT, Neuroscience Research Australia, Sydney, Australia

First author's contact: m.hagstrom@unsw.edu.au

INTRODUCTION & AIMS: Sex and gender bias have been continually documented in sport and exercise science. There are disparities in both participants and authorship, including those leading the research. Examples from medical research show senior author gender influences practices (e.g., disaggregation of data by sex). We examined the relationship between senior author gender and research practices in sport and exercise science. METHODS: For this analysis we have included all papers published in the first issue of 2023 of the top 10 sports science journals, according to SJR Sports Science rankings. We extracted senior author gender and data on research practices including study type, exercise modality, and population. This is part of a larger ongoing study. RESULTS: Our preliminary results include 182 studies from 10 journals. Men represented 84% of all senior authors. Percentage of senior author gender ranged from 100% men as senior authors in Knee Surgery, Sports Traumatology, and Arthroscopy (45 papers led by men, 0 led by women), to 66% women senior authorship in Qualitative Research in Sport, Exercise and Health (6 papers led by women, 3 by men). When the senior author was a man, they were more likely to conduct observational research, including cross sectional, retrospective, and epidemiological research. When women were senior authors, they were more likely to conduct qualitative research. Less than 4% of all letters to the editor were led by women. Approximately 25% of all studies focused on Sport. Within this category, 75% of these studies had men senior authors. Approximately 65% of all studies had a clinical focus. Within this category, 86% of these studies had men senior authors. CONCLUSIONS: This preliminary data indicates some differences in research practices by senior author gender. This research also highlights differences by journal in their inclusion of research led by women.

#331

TITLE: SUPPORTING PEOPLE WITH NEUROLOGICAL INJURY TO ENGAGE IN PHYSICAL ACTIVITY- FROM HOSPITAL TO HOME AND BEYOND.

AUTHORS: Miss Sarah Jeffery[1,2], Miss Holly Hitchener[3], Dr Emma Beckman[4,5]

Affiliations: [1]Acquired Brain Injury Transitional Rehabilitation Service, Princess Alexandra Hospital, Metro South Health, Brisbane, QLD, Australia, [2]The Hopkins Centre, Metro South Health & Griffith University, Brisbane, QLD, Australia, [3]My Turn Rehabilitation, Brisbane, QLD, Australia, [4]University of Queensland, Brisbane, QLD, Australia, [5]Queensland Academy of Sport, Brisbane, QLD, Australia

First author's contact: sarah.t.jeffery@gmail.com

Accredited exercise physiologists are perfectly placed to assist people with neurological injury to reengage or explore new opportunities in physical activity. The benefits of physical activity in this population are well documented, however participation rates are low. Research shows that 75% of Australians living with a disability over the age of 15 do not meet the recommended levels of physical activity. While the need is high, the 2021-2022 ESSA workforce report found only 7% of accredited professionals are working with people living with neurological conditions. This highlights the gap between industry demand, workforce capacity and capability to deliver evidence based best practice. As clinicians with a collective experience of 30+ years, we have identified a need for greater dissemination of knowledge, experience, and practical translation of the evidence in this population. This presentation will explore the perspectives of three experienced AEP's working from hospital to home and beyond. Each presenter will draw on their unique context and experience to describe the challenges and opportunities for AEP's in each specific area. Sarah will provide an overview of the hospital setting and transition to community, highlighting the opportunities for early intervention and the role in supporting ongoing meaningful physical activity. Holly will discuss an exercise physiologist's role in community rehabilitation, and our place in a multidisciplinary team. She will further explore what it looks like to move from exercise for rehabilitation mindset, into exercise for life. Emma will detail the opportunities in sports and competitions such as the Paralympics, particularly around how AEP's can support performance goals. The team will close with provocative discussion around how AEP's can contribute to the governments ELEVATE 2042 Strategy and we will invite AEP's to join us on this journey.

#332

TITLE: THE PROTECT TRIAL - PREOPERATIVE EXERCISE THERAPY FOR PATIENTS WITH CANCER: A PILOT RANDOMISED-CONTROLLED TRIAL

AUTHORS: Dr Declan Hennessy[1,2], Dr Matthew Wallen[3], Dr Stephen Brown[4], A/Prof Anna Wong-Shee[2], Dr Jonathan Rawstorn[2], Dr Kyle Miller[1], Dr Ernesto Oqueli[2,4], Mr Drew Aras[5], Fergal Grace[1]

Affiliations: [1]Federation University Australia, Ballarat, Victoria, Australia [2]Deakin University, Melbourne, Victoria, Australia [3]Caring Futures Institute, College of Nursing and Health Sciences, Flinders University, Bedford Park, AUSTRALIA, [4]Grampians Health, Ballarat, Victoria, Australia, [5]Western Alliance, Warrnambool, Victoria, Australia

First author's contact: Declan.Hennessy@deakin.edu.au

INTRODUCTION & AIMS: Prehabilitation exercise is a promising strategy in oncology to optimise pre-operative cardiorespiratory fitness (CRF), which could reduce post-operative complications, mortality and enhance quality of life. This trial aimed to investigate the safety, feasibility, and effects of an aerobic prehabilitation exercise program in breast, colorectal, and prostate cancer patients. Primary outcomes were serious adverse events (SAE), adverse events (AE), participant adherence and compliance. Secondary outcomes were CRF variables and patient well-being. METHODS: A CONSORT-compliant pilot randomised controlled trial (RCT) was conducted at a regional hospital in Ballarat, Australia. Prostate, breast, and colorectal cancer patients scheduled for surgery were randomised 1:1 into prehabilitation (PREHAB) or usual care (UCARE). PREHAB involved aerobic exercises informed by baseline cardio-pulmonary testing findings, with supervised sessions every two/three days for a minimum of 2-weeks. UCARE involved standard oncology treatment. Data on physical activity (actigraphy), resting vitals, and post-operative outcomes (Clavien-Dindo) were also collected. RESULTS: Among 47 approached patients, 23 were randomised. Overall, 11 patients were analysed in the PREHAB and 9 in the UCARE groups. No SAEs were reported, and an exercise-related AE occurred every 756 minutes (total 3780). Participants attended 91.3% of PREHAB sessions. PREHAB participants attended 5.25 (SD = 2.16) sessions and had an average of 15 days from baseline testing to surgery. No significant time x group interactions were observed in $\dot{V}O_2$peak, ventilatory threshold (VT), or overall patient well-being ($p = 0.90, 0.58, 0.82$); PREHAB achieved small within-group increases in absolute $\dot{V}O_2$peak and VT (+4.9% and +1.8%, respectively). CONCLUSIONS: The PROTECT trial demonstrated the safety and feasibility of delivering prehabilitation, revealing small clinically relevant increases in CRF fitness measures. Potentially due to the sample size, no significant improvements were observed in well-being or post-operative complications; future research should prioritise larger-scale RCTs further to explore the benefits of prehabilitation in this population.

#333

TITLE: IT'S ALL IN THE ACTION

AUTHORS: Law Edwards[1], Mrs Oleen George-Posa[1]

Affiliations: [1]Justice Health, NSW Local Health District, Sydney, New South Wales, Australia

First author's contact: laura.edwards1@health.nsw.gov.au

CASE SETTING: The prevalence of metabolic syndrome in patients with serious mental illness is almost double the prevalence reported for the general population of Australia. Cardiometabolic disease and mental illness are overrepresented in adult prison populations, with people in custody significantly more likely to have cardiovascular disease and Type 2 diabetes. The Forensic Hospital, is a mental health facility with 140 beds that sits within Justice Health NSW. It is specifically designed for people who have mental illness and have been involved with the criminal justice system, as well as those who are considered to be at high risk in the community. The Ministry of Health and Justice Health NSW have several documents that make reference to the importance of screening for Metabolic Syndrome however barriers exist at the patient, staff, and organisational level to implementing the recommended physical health guidelines in a high secure forensic mental health setting. TREATMENT: It's All In The Action is a Quality Improvement project led by the Forensic Hospital's Senior Exercise Physiologist and Rehabilitation Coordinator. The initiative focused on embedding physical health intervention for Forensic Hospital patients at risk of or diagnosed with metabolic syndrome through the establishment of the Metabolic Care Team. RESULTS: A defined physical health pathway to intervention within the Forensic Hospital in the form of a physical health MDT, atypical in the Forensic Mental Health setting. REFLECTIONS/LEARNINGS: The presentation will outline the steps taken in a ground up approach to address the growing concern of systemic neglect and achieve service level change. It will demonstrate translation of best practice research as well as State and National policy and guidelines into tangible action for a significantly marginalised population group. Finally, it will reflect on the sustainability of this initiative, the integration of partnerships, and recommendations for prospective next steps.

#334

TITLE: EVALUATING FEASIBILITY OF A SECONDARY STROKE PREVENTION PROGRAM

AUTHORS: Steph Hunter[1], Kimberley Vogel[2], Shane O'Leary[2,3], Dr Jannette Blennerhassett[2,4]

Affiliations: [1]Community Rehabilitation Service at Austin Health, Heidelberg, Victoria, [2]Austin Health, Health Independence Program, Community Rehabilitation Service, Melbourne, VIC 3084, Australia, [3]Austin Health, Spinal Community Integration Service, Melbourne, VIC 3101, Australia, [4]Austin Health, Physiotherapy Department, Melbourne, VIC 3084, Australia

First author's contact: steph.hunter@austin.org.au

INTRODUCTION & AIMS: While 80% of strokes are preventable, stroke remains the second leading cause of disability and death worldwide. Recurrent stroke has an accumulative effect that increases the level of disability and demands on healthcare. Healthy lifestyles that include regular exercise can reduce stroke risk, but stroke survivors lack guidance to modify their lifestyle after hospital discharge. Models of community care may support secondary stroke prevention with guidelines recommending physical activity and cardiovascular exercise, and referrals to support behaviour change to address modifiable risk factors. Our aim was to evaluate the implementation of a secondary stroke prevention program provided within a community rehabilitation service to see if it was feasible to deliver and acceptable for participants. METHOD: We evaluated the implementation of a secondary stroke prevention program involving supervised exercise, multidisciplinary education and health coaching to address modifiable risk factors. The group-based program involved face-to-face and telehealth sessions. The primary outcomes were feasibility, examined via service information (referrals, uptake, participant demographics, costs), and participant acceptability (satisfaction and attendance). Secondary outcomes examined self-reported change in lifestyle factors, and pre-post scores on standardised clinical tests, [e.g., waist-circumference, 6-Minute-Walk (6MWT)]. RESULTS: We ran seven programs in 12-months, and 37 people participated. Attendance for education sessions was 79%, and 30/37 participants completed the full program. No adverse events occurred. Participant satisfaction was high for 'relevance' (100%), 'felt safe to exercise' (96%) and 'intend to continue' (96%). Most participants (88%) changed (on average) 2.5 lifestyle factors (diet, exercise, smoking, alcohol). Changes in clinical outcomes seemed promising, with some being statistically significant, e.g. 6MWT (MD 59m, 95%CI 38m to 80159m, $p<0.001$), and waist-circumference (MD –2.1cm, 95%CI -3.9cm to -1.4cm, $p<0.001$). CONCLUSION: The program was feasible to deliver, acceptable to participants and seemed beneficial for health. Access to similar programs may assist in secondary stroke prevention.

#336

TITLE: CHRONIC ADAPTATIONS TO BLOOD FLOW RESTRICTION AEROBIC OR BODYWEIGHT RESISTANCE TRAINING: A SYSTEMATIC REVIEW

AUTHORS: Mr Tulasiram Bommasamudram[1,2], Ms. Zoe Morrell[2], Dr Matthew Clarkson[3], Prof. Kirtana Raghurama Nayak[4], Dr Rajagopal K V[5], Prof. Aaron Russell[2], Associate Professor Stuart Warmington[1,2]

Affiliations: [1]Department of Exercise and Sports Science, Manipal College of Health Professions, Manipal Academy of Higher Education, Manipal, Karnataka, 576104, India, [2]Institute for Physical Activity and Nutrition (IPAN), School of Exercise and Nutrition Sciences, Deakin University, Geelong, Australia, [3]Institute for Health and Sport, Victoria University, Melbourne, Victoria, Australia, [4]Department of Physiology, Kasturba Medical College, Manipal Academy of Higher Education, Manipal, India – 576104, [5]Department of Radiodiagnosis and Imaging, Kasturba Medical College, Manipal, India

First author's contact: tulasiram.b@manipal.edu

INTRODUCTION: Blood flow restriction (BFR) training has garnered considerable attention in recent years as an innovative method for enhancing aerobic fitness, muscle strength, and muscular hypertrophy. However, the variation of intervention protocols has impeded consensus in the scientific literature. As a result, the primary objective of this study is to systematically investigate and review the available evidence concerning BFR in conjunction with aerobic and bodyweight resistance training. METHODS: A thorough search of electronic databases, including PubMed (MEDLINE), Cinahl, SPORTDiscus® (via EBSCOhost), Embase, and Cochrane (Central), was conducted to identify relevant published studies. The inclusion criteria encompassed a healthy sample population aged 18 and above, original studies, chronic exercise sessions (minimum duration of 2 weeks of training) involving BFR in the context of aerobic or bodyweight resistance training, and comparisons with conventional non-BFR training. RESULTS: The review identified 24 eligible studies that met the inclusion criteria. The findings demonstrated that chronic adaptations to BFR aerobic training were characterized by substantial improvements in VO2max (4-9%) and muscle strength (6-31%) compared to conventional aerobic training. Furthermore, BFR bodyweight resistance training yielded muscle hypertrophy (3-5%) and strength (4-11%) gains on par with those achieved through conventional resistance training. CONCLUSION: This systematic review underscores the potential benefits of chronic adaptations stemming from blood flow restriction training in both aerobic and bodyweight resistance training. BFR aerobic training presents itself as a promising avenue for enhancing cardiovascular fitness, muscular strength, and hypertrophy. Meanwhile, BFR bodyweight resistance training shows promise in promoting muscle hypertrophy and strength gains, although it is worth noting that the available evidence is limited. Further research and a broader base of studies are required to validate and expand upon these findings.

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#337

TITLE: UNDERSTANDING THE INDIVIDUALIZATION OF EXERCISE PRESCRIPTION FOR PEOPLE WITH CANCER: A SYSTEMATIC REVIEW

AUTHORS: Brent Cunningham[1,2], Jamie Chong[2], Ciaran Fariman[3], Tina Skinner[2], Grace Rose[1,2]

Affiliations: [1]University of the Sunshine Coast, School of Health, Sippy Downs, Queensland, Australia, [2]University of Queensland, School of Human Movement and Nutrition Sciences, Brisbane, Queensland, Australia, [3]University of South Carolina, Arnold School of Public Health, Exercise Science Department, Columbia, South Carolina, United States of America

First author's contact: brent.cunningham@uqconnect.edu.au

PURPOSE: The importance of prescribing individualized exercise for people with cancer to minimize injury risk and optimize outcomes has been echoed internationally in position and consensus statements. However, it is unclear what individualization processes are employed in exercise oncology research and how exercise individualisation is implemented for people with cancer. This study aimed to systematically review the available evidence to elucidate the individualisation methods being employed in exercise oncology research. METHODS: A systematic search of PubMed, EMBASE, CINAHL, and Web of Science was performed following the PRISMA guidelines. Eligible randomised controlled trials (RCT), controlled trials (CT), pre-post trials, and comparison trials included men and women aged ≥18 years with a histologically confirmed diagnosis of cancer; undertaking any structured exercise protocol that was 'individualized', with or without supervision; and that explored outcomes of intervention fidelity (e.g., recruitment, attendance, adherence, attrition), and/or patient health and wellbeing (i.e., quality of life, symptom improvement, medication use, physical activity). Study quality was assessed using the Delphi list tool. RESULTS: Forty-nine studies were found to be eligible and subsequently included in the narrative synthesis. Study quality was on average 49% (range 14 to 100%). Individualization of the exercise prescription most occurred prior to intervention commencement (n=23, 47%), based on physiological results from baseline assessments (n=21, 43%). No study individualized exercise based on participant readiness to train. The exercise prescription was predominantly individualized via modulation of both the intensity and volume of exercise (11, 22%). CONCLUSION: Exercise prescription individualization for people with cancer is highly prescriptive and predetermined. Seldom has exercise prescription been individualized based on participant readiness to train. Future exercise oncology studies should include greater detail on the reporting of exercise individualization methods and rationale to enhance our understanding of the relationship between individualization and exercise adherence and attrition in people with cancer.

#339

TITLE: STRUCTURED EXERCISE IMPROVES FATIGUE AND HEALTH-RELATED QUALITY OF LIFE IN METASTATIC BREAST CANCER PATIENTS: THE MULTINATIONAL RANDOMIZED CONTROLLED PREFERABLE-EFFECT STUDY

AUTHORS: Dr Eva Zopf[1,2], Dr Anouk E. Hiensch[3], Dr Johanna Depenbusch[4], Dr Martina E. Schmidt[4], Dr Evelyn M. Monninkhof[3], Mireia Pelaez[5], Dr Dorothea Clauss[6], Dr Philipp Zimmer[6], Jon Belloso[5], Mark Trevaskis[1], Helene Rundqvist[7], Joachim Wiskemann[8], Jana Mueller[8], Carlo Fremd[8], Renske Altena[7], Joanna Kufel-Grabowska[9], Rhodé Bijlsma[10], Lobke van Leeuwen-Snoeks[11], Daan ten Bokkel Huinink[12], Gabe Sonke[13], Ainhara Lahuerta[14], Bruce Mann[15], Prudence Francis[16], Gary Richardson[2], Wolfram Malter[12], Elsken van der Wall[10], Neil K. Aaronson[13], Elzieta Senkus[9], Ander Urruticoechea[14], Wilhelm Bloch[6], Martijn M. Stuiver[13], Yvonne Wengstrom[7], Karen Steindorf[4], Anne M. May[3]

Affiliations: [1]Mary MacKillop Institute for Health Research, Australian Catholic University, Melbourne, Victoria, Australia, [2]Cabrini Cancer Institute, Department of Medical Oncology, Cabrini Health, Malvern, Victoria, Australia, [3]University Medical Center Utrecht, Utrecht University, Utrecht, The Netherlands, [4]German Cancer Research Center (DKFZ) and National Center for Tumor Diseases (NCT) Heidelberg, Heidelberg, Germany, [5]Gipuzkoa Cancer Unit, OSID-Onkologikoa, BioGipuzkoa, Osakidetza, San Sebastian, Spain, [6]German Sport University Cologne, Cologne, Germany, [7]Karolinska Institutet, Stockholm, Sweden, [8]National Center for Tumor Diseases (NCT), Heidelberg University Hospital, Heidelberg, Germany, [9]Medical University of Gdańsk, Gdańsk, Poland, [10]University Medical Center Utrecht, Utrecht, The Netherlands, [11]Diakonessenhuis, Utrecht, The Netherlands, [12]Alexander Monro Ziekenhuis, Bilthoven, The Netherlands, [13]Netherlands Cancer Institute, Amsterdam, The Netherlands, [14]Gipuzkoa Cancer Unit, OSID-Onkologikoa, BioGipuzkoa, Osakidetza, San Sebastian, Spain, [15]The Royal Melbourne Hospital and The Royal Women's Hospital, Melbourne, Victoria, Australia, [16]Peter MacCallum Cancer Centre, Melbourne, Victoria, Australia, [17]University Hospital Cologne, Cologne, Germany,

First author's contact: eva.zopf@acu.edu.au

INTRODUCTION & AIMS: Exercise has been proven safe and effective for patients with breast cancer in the curative setting, however evidence in patients with metastatic breast cancer (mBC) is scarce. The aim of the PREFERABLE - EFFECT study (NCT04120298) was to evaluate the effects of a structured exercise program on fatigue, health-related quality of life (HRQoL), and other cancer- and treatment-related side effects in patients with mBC. METHODS: The randomized controlled trial included patients with mBC from five European countries (Germany, Spain, Netherlands, Poland, Sweden) and Australia. Participants were randomly assigned to usual care (UC) or a 9-month supervised and individualized exercise program (EX) involving twice weekly aerobic, resistance, and balance exercises. The primary outcomes, physical fatigue (EORTC QLQ-FA12 subscale) and HRQoL (EORTC QLQ-C30 summary score) were assessed at baseline, 3, 6, and 9 months. Among other physical fitness outcomes, maximal short exercise capacity was assessed with the Steep Ramp Test. Changes from baseline to 3, 6 (primary endpoint) and 9 months were compared between groups using adjusted mixed models for repeated measures. RESULTS: A total of 357 patients were randomized (EX=178, UC=179). On average, participants were 55.4 years of age (SD=11.1) and 73.9% had bone metastases. EX resulted in a significant reduction in physical fatigue (-5.3 [-10.0; -0.6], p=.027, ES=0.22) and improvement in HRQoL (+4.8 [2.2; 7.4], p=.0003, ES=0.33) compared to UC at 6 months (primary endpoint), as well as at 3 and 9 months. EX also improved physical fitness (+24.3 Watts, [15.5; 33.1], ES=0.42, at 6 months) and numerous relevant QLQ-C30 scales, including social functioning, pain, and dyspnoea. CONCLUSION: This large multinational study demonstrates that supervised exercise improves fatigue, HRQoL, and other clinically relevant outcomes in patients with mBC. Based on these findings, supervised exercise should be recommended to patients with mBC.

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#340

TITLE: PATIENT EXPERIENCES OF A VIRTUALLY SUPERVISED EXERCISE PROGRAM FOR ADULTS WITH ADVANCED CANCER AND CACHEXIA - A QUALITATIVE STUDY

AUTHORS: Dr Eva Zopf[1,2], Dr Madeleine Ratcliffe[3], Prof Meinir Krishnasamy[4,5], Amruta Nandi[4,5], Dr Evelyn Parr[6], Prof Peter Martin[7,8], A/Prof Prue Cormie[4,5], Prof Luc J.C. van Loon[9], Kelcey Bland[1]

Affiliations: [1]Mary MacKillop Institute for Health Research, Australian Catholic University, Melbourne, Victoria, Australia, [2]Cabrini Cancer Institute, Department of Medical Oncology, Cabrini Health, Malvern, Victoria, Australia, [3]Department of Medical Oncology, Cabrini Health, Melbourne, Victoria, Australia, [4]Peter MacCallum Cancer Centre, Melbourne, Victoria, Australia, [5]Department of Nursing and Sir Peter MacCallum Department of Oncology, Faculty of Medicine, Dentistry and Health Sciences University of Melbourne, Victoria, Australia, [6]Australian Catholic University, Brisbane, QLD, Australia, [7]School of Medicine, Deakin University, Geelong, Victoria, Australia, [8]Palliative Care, Barwon Health, Geelong, Victoria, Australia, [9]Department of Human Biology, NUTRIM School for Nutrition and Translational Research in Metabolism, Maastricht University, Maastricht, Netherlands

First author's contact: eva.zopf@acu.edu.au

INTRODUCTION & AIMS: People with advanced cancer and cachexia experience significant body weight loss, impairing physical function and lowering quality of life (QOL). Effective, evidence-based treatments for cancer cachexia are lacking, leaving patients with unmet needs. Exercise holds promise to improve patient QOL. However, information on patients' experiences of exercise, including their ability to cope with structured exercise, is limited. The aim of this qualitative study was to explore patient experiences completing a structured, supervised exercise program for people with cachexia due to advanced cancer. METHODS: Semi-structured interviews were conducted with participants enrolled in a phase II feasibility, randomized controlled trial to explore their experiences of an 8-week virtually supervised exercise program delivered via videoconference technology. Interviews were analysed using reflexive thematic analysis. RESULTS: Seventeen participants completed interviews (female n = 9, 53%). Main interview themes included: 1) Deciding to exercise involves balancing concerns and expectations, 2) The exercise program is a positive experience, and 3) Moving forward after the exercise program. While some participants initially held doubts about their physical capabilities and exercise safety, most wanted to exercise to enhance their wellbeing. Participants described the exercise program as a positive experience, offering diverse benefits. Some would have preferred in-person exercise, but all agreed the virtual format increased exercise convenience. Participants emphasized the need to extend the program to others in similar circumstances. They underscored the necessity and desire for ongoing support to sustain their new exercise habits. CONCLUSION: Based on patient experiences, virtually supervised exercise programming appears to be feasible and meaningful to people with advanced cancer and cachexia.

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#341

TITLE: PRESCRIBING BLOOD FLOW-RESTRICTED CYCLING USING RPE BALANCES THE PHYSIOLOGICAL AND PERCEPTUAL DEMANDS IN HEALTHY ADULTS

AUTHORS: Dr Nathan Smith[1,2], Dr Olivier Girard[3], Associate Professor Brendan Scott[2,4], Professor Jeremiah Peiffer[2,4]

Affiliations: [1]School Health Sciences, University of Notre Dame, Perth, Western Australia, [2]Centre for Healthy Ageing, Murdoch University, Perth, Western Australia, [3]School of Human Sciences (Exercise and Sports Science), University of Western Australia, Perth, Western Australia, Australia, [4]Murdoch Applied Sports Science Laboratory, Discipline of Exercise Science, School of Allied Health, Murdoch University, Perth, WA, Australia,

First author's contact: Nathan.Smith@nd.edu.au

INTRODUCTION: Aerobic exercise is commonly prescribed using fixed heart rates or power/speed. These methods may not be suitable when incorporating blood flow restriction (BFR), as this technique can influence these measurements. Prescribing exercise via perception of exertion (RPE), which reflects overall psychophysiological stress, may present an alternative to overcome these issues. Aim: Describe physiological and perceptual responses during fixed-power and fixed-RPE cycling performed with blood flow restriction (BFR_{PWR} and BFR_{RPE}) and without (CON_{PWR} and CON_{RPE}). METHODS: Following baseline testing, twelve active males cycled for ten minutes under four conditions. CON_{PWR} was performed first, then the remaining conditions in a randomised and counterbalanced order. BFR_{PWR} and CON_{PWR} were performed at the power equivalent to the first ventilatory threshold (161±38W). CON_{RPE} and BFR_{RPE} were prescribed at the RPE reported during CON_{PWR}. Continuous ventilatory and heart rate measurements were recorded as two-minute averages. Subjective RPE, effort, muscular discomfort, and cuff pain were recorded every two minutes. Blood lactate was measured pre-exercise, post-exercise, and two-minutes post-exercise. RESULTS: BFR_{PWR} resulted in the greatest physiological and perceptual responses among all conditions. Power output was lower during BFR_{RPE} (119±48W) than CON_{RPE} (139±47W). Oxygen consumption during BFR_{RPE} (20.8±5.1mL·kg-1·min-1) was lower than CON_{PWR} (25.3±6.0mL·kg-1·min-1, $p<0.001$) and CON_{RPE} (22.3±5.9mL·kg-1·min-1, $p=0.007$). Heart rate during CON_{PWR} (143±22beats·min-1) was greater than BFR_{RPE} (133±26beats·min-1, $p<0.001$) and CON_{RPE} (131±25beats·min-1, $p<0.001$). Muscular discomfort was not different between BFR_{RPE} (2.5±1.3au) and CON_{PWR}(2.3±1.5au), yet both were greater than CON_{RPE} ($p<0.001$, 1.8±1.5au). Cuff pain was greater during BFR_{PWR} (3.3±1.7au) than BFR_{RPE} (2.2±1.1au, $p<0001$). Blood lactate was greater during fixed-power (4.9±3.5mmol·L-1) compared to fixed-RPE trials (3.6±2.7mmol·L-1, $p<0.001$). CONCLUSIONS: BFR_{RPE} caused less discomfort and pain than BFR_{PWR} without compromising physiological stress compared to CON_{RPE}. BFR_{RPE} should be considered when high mechanical loads are contraindicated, or discomfort/pain is undesirable. These findings improve our understanding of aerobic BFR exercise prescription to healthy adults.

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#343

TITLE: V̇O2PEAK PROVIDES A BETTER PREDICTOR OF ERGOMETER MEAN MAXIMAL POWER THAN MAXIMAL OXYGEN EXTRACTION IN TRAINED ROWERS

AUTHORS: Mr Bryce Lanigan[1,2], Mr Zeke L Tinely[2,3], Dr Martyn J Binnie[2,3], Professor Peter Peeling[2,3], Associate Professor Brendan R Scott[1,4], Professor Jeremiah J Peiffer[1,4], Dr Brook Galna[1,4], Mr Myles C Dennis[3,5], Professor François Billaut[6], Dr Paul SR Goods[1,2,4]

Affiliations: [1]Murdoch Applied Sports Science Laboratory, School of Allied Health (Exercise Science), Murdoch University, Perth, Western Australia, Australia, [2]Western
Australian Institute of Sport, Mt Claremont, WA, Australia, [3]School of Human Sciences (Exercise and Sport Science), The University of Western Australia,
Perth, WA, Australia, [4]Centre for Healthy Ageing, Health Futures Institute, Murdoch University, Perth, Western Australia, Australia, [5]Queensland Academy of
Sport, Nathan, QLD, Australia, [6]Department of Kinesiology, Laval University, Québec, Canada.

First author's contact: blanigan@wais.org.au

INTRODUCTION & AIMS: Muscle oxygenation characteristics are suggested to better explain performance than peak oxygen uptake (V̇O2peak) in highly trained canoe-kayak athletes (Paquette et. al, 2018), but this has not been explored with rowers. Therefore, this investigation aimed to 1) determine whether maximal oxygen extraction improved prediction of rowing ergometer mean maximal power (MMP; W/kg) compared to V̇O2peak alone, and 2) assess differences in muscle oxygen extraction between anatomical sites during incremental rowing. METHODS: Trained male (n=16) and female (n=6) rowers completed a 7x4min graded exercise test on a rowing ergometer to determine mean power output for each stage and V̇O2peak and MMP during the final stage. Change in muscle oxygen extraction (Δ[HHb]) during each stage was determined using near infrared spectroscopy (NIRS) at the vastus lateralis (VL), gastrocnemius medialis (GM), and biceps brachii (BB). The best predictor of MMP was determined using linear regression, and mixed-effects models were used to assess Δ[HHb] across sites and stage. RESULTS: V̇O2peak was a significant predictor of MMP (R2=0.74); however, Δ[HHb] (at each site individually or combined) had no association with MMP (R2≤0.05). The strongest model included V̇O2peak and GM Δ[HHb] (R2=0.83); however, the improvement in model fit was modest (mean absolute error decreased from 0.211W.kg-1 to 0.193W.kg-1). A significant site x stage interaction was observed for Δ[HHb] at each site across all stages. Post-hoc analysis revealed VL Δ[HHb] was higher than GM Δ[HHb] for each stage; VL Δ[HHb] was lower than BB Δ[HHb] from stages 1-4, then higher from stages 5-7; and GM Δ[HHb] was lower than BB Δ[HHb] for stages 1-6, but higher in the final stage. CONCLUSION: Maximal oxygen extraction alone cannot predict ergometer MMP in trained rowers. However, NIRS derived muscle oxygen extraction may provide additional useful information regarding relative muscle contributions at varying exercise intensities.

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#345

TITLE: THE EFFECT OF DRY AND HUMID HEAT ACCLIMATION ON PERFORMANCE IN EACH ENVIRONMENT

AUTHORS: Mr Peter McDonald[1], Mr Kevin John[1], Dr Tom Topham[1], Prof Mike Sawka[2], Dr Brad Clark[1], Prof Julien Périard[1]

Affiliations: [1]University of Canberra, Research Institute for Sport and Exercise, Bruce , ACT, Australia., [2]School of Biological Sciences, Georgia Institute of Technology, Atlanta, USA

First author's contact: peter.mcdonald@canberra.edu.au

BACKGROUND: Athletes adopt heat acclimation (HA) to partly restore heat-mediated decrements in performance. However, the influence of environmental characteristics during HA on performance in dry and humid conditions is unclear. Therefore, this study aimed to compare dry and humid HA on performance in each environment. METHODS: In a counterbalanced crossover study, ten trained male cyclists (age 43 ± 9 y; body mass 80.8 ± 7.3 kg; maximal oxygen uptake; 59 ± 7 mL.kg-1.min-1) completed a 30-min time-trial in hot-dry (TT-DRY; 42°C, 25% RH) and warm-humid (TT-HUM; 33°C, 80% RH) conditions before and after 8 days of controlled heart rate (HR) HA in either dry (DRY-HA) or humid conditions (HUM-HA). A Bayesian multi-level model was used to determine posterior means, 90% credible intervals, and probability of direction (%). RESULTS: The improvement in power output during TT-HUM was similar following DRY-HA (13 W [3, 22]; 99%) and HUMID-HA (11 W [3, 19]; 98%). In TT-DRY, the improvement in power output was 12 W ([1, 22]; 97%) higher following DRY-HA (19 W [10, 28]; >99%) compared to HUM-HA (7 W [-2, 17]; 91%). During TT-HUM, mean rectal temperature changed following HUM-HA (0.03°C [-0.11, 0.17]; 63%) and DRY-HA (-0.14°C [-0.29, 0.02]; 92%), with a difference of 0.16°C ([-0.36, 0.03]; 92%). During TT-DRY, the difference was -0.20°C ([-0.40, 0.01]; 94%) between HUM-HA (-0.22°C [-0.38, -0.06]; 98%) and DRY-HA (-0.03°C [-0.19, 0.13]; 63%). Mean HR during TT-DRY (3 beats·min-1 [-2, 8]; 85%) and TT-HUM (-4 beats·min-1 [-10, 2]; 85%) was similar following DRY-HA and HUM-HA. CONCLUSIONS: DRY-HA further improved mean power output during TT-DRY compared to HUM-HA. However, HUM-HA tended to lower rectal temperature more than DRY-HA during TT-DRY. HA condition did not influence HR during either TT. Our data indicate that performance is further improved in hot-dry conditions when acclimating to the same environment.

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#346

TITLE: IDENTIFYING THE CURRENT PRACTISE IN PHYSICAL ACTIVITY ADVICE GIVEN TO WOMEN FOLLOWING A MISCARRIAGE AND THEIR ATTITUDES TOWARDS PHYSICAL ACTIVITY.

AUTHORS: Dr Kate Edwards[1,2], Vivian Lee[1,3], Melanie Keep[1]

Affiliations: [1]Faculty of Medicine and Health, University of Sydney, NSW, Australia, [2]Charles Perkins Centre, University of Sydney, NSW, Australia, [3]The George Institute for Global Health, Sydney, New South Wales, Australia.

First author's contact: kate.edwards@sydney.edu.au

INTRODUCTION & AIMS: Miscarriage is the most common adverse pregnancy outcome, with up to 36% of women reporting a miscarriage by 40-45 years old. While physical activity is known for its benefits on physical and mental health in various population, the evidence in women following a miscarriage is lacking. Therefore, the aim of the study is to identify current practice and advice on physical activity following a miscarriage, assess current physical activity levels and to identify women's attitudes to physical activity following a miscarriage. Women's willingness to participate in future studies on the benefits of physical activity following miscarriage was also examined. METHODS: A cross-sectional survey consisting of 21 questions across 5 subsections including demographics, pregnancy loss experience, physical activity advice, physical activity participation and research participation was used. Participation was opened to all Australian women who had ever experienced a miscarriage. RESULTS: A total of 77 surveys were complete and suitable for analysis. Most participants (82%, n=63) reported receiving no physical activity guidance following their miscarriages and said they would like physical activity advice specific to their experiences (84%, n=65). The proportion of women who do not meet the recommended physical activity guideline increase from pre-pregnancy (32%) to following a miscarriage (83%) and continues to be higher (58%) than it was pre-pregnancy. The most frequently identified barriers to physical activity was feeling mentally/emotionally unprepared (34%, n=51). Majority of participants (68%, n=52) were willing to participate in future studies on the benefits of physical activity for women post-miscarriage. CONCLUSION: This study strongly supports the need for further research into appropriate physical activity guidelines for women following a miscarriage. There is a clear unmet need in this population who are being disadvantaged by the current lack of support and guidance.

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#347

TITLE: UNDERSTANDING THE BARRIERS AND ENABLERS TO ACCREDITED EXERCISE PHYSIOLOGIST'S INTEGRATION WITHIN THE AUSTRALIAN HEALTHCARE SETTING

AUTHORS: Mr Aaron Beecroft[1], Dr Shannon Sahlqvist[2], Dr Kristy Bolton[2], Dr Peter Kremer[1], Dr Niamh Mundell[2]

Affiliations: [1]*School of Exercise and Nutrition Sciences, Deakin University, Geelong, Victoria, Australia*, [2]*Institute for Physical Activity and Nutrition (IPAN), School of Exercise and Nutrition Sciences, Deakin University, Geelong, Victoria, Australia*

First author's contact: abeecroft@deakin.edu.au

INTRODUCTION: Physical activity (PA) is crucial in managing the high rates of non-communicable disease (NCD) within Australia. Accredited Exercise Physiologists (AEPs) are well-placed to assist individuals in managing symptoms of NCD through PA intervention. However, General Practitioner referral rates to AEPs are very low (< 1%), with a lack of time and education reported as key barriers to their referral practices. Research has yet to explore the underutilization of AEPs from the AEP's perspective. AIM: To explore the perspectives of Australian AEPs regarding their role and utilisation within the healthcare setting. METHODS: Currently practicing AEPs (n=15) participated in audio-recorded, individual semi-structured interviews between May to July 2023. Interviews were transcribed and data were analysed via an inductive, semantic approach to reflexive thematic analysis. RESULTS: Four primary themes emerged. The first, understanding is important, identified that a key barrier to AEP practice was the general population's lack of understanding regarding the role of an AEP. The second, education and support of AEPs is crucial, reflected the perception that some recent graduates required further support to be better integrated within the healthcare setting and to provide a higher quality service. The third, interaction is key, highlighted that AEPs regarded communication with referrers as crucial to improve referral processes. The final theme, systematic and policy barriers impact AEP services, highlighted systematic barrier's including time-consuming administration tasks and cost, as impacting AEP services. CONCLUSION: The findings highlight a need to promote the role of AEPs to the general population. Ongoing support is required to ensure recent graduate AEPs can integrate effectively within the healthcare setting. Enhanced connection between AEPs and referrers may assist in generating referrals and broadening the understanding of the profession. Addressing systematic barriers, such as reducing clients' financial constraints through increased funding, may help improve AEP service uptake.

#348

TITLE: CAN REFERRAL TO COMMUNITY-BASED EXERCISE PHYSIOLOGIST SERVICES REDUCE EMERGENCY DEPARTMENT BURDEN? A CHART AUDIT.

AUTHORS: Dr Niamh Mundell[1], Dr Paul Buntine[2,3], Prof Julie Considine[4,5], Mr Joseph Miller[3,6], Mr Liam Hackett[3,6], Dr Heather Lawson[3], Dr Iseult MacMahon[3], Christopher Neason[1], Alice Neilson[3], Diya Patel[3], Claire Samanna[1], Patrick Owen[1,2]

Affiliations: [1]Institute for Physical Activity and Nutrition, School of Exercise and Nutrition Sciences, Deakin University, Geelong, Victoria, Australia, [2]Eastern Health Emergency Medicine Program, Melbourne, Victoria, Australia, [3]Eastern Health Clinical School, Monash University, Melbourne, Victoria, Australia, [4]Centre for Quality and Patient Safety Research - Eastern Health, Melbourne, Victoria, Australia., [5]School of Nursing and Midwifery and Centre for Centre for Quality and Patient Safety Research in the Institute for Health Transformation, Deakin University, Burwood, Victoria, Australia., [6]Eastern Health Emergency Medicine Program, Melbourne, Victoria, Australia.

First author's contact: niamh.mundell@deakin.edu.au

INTRODUCTION & AIMS: Despite the rapid growth of exercise physiology in Australia, its potential within the healthcare system remains underutilised. Healthcare system strain, characterised by increased emergency department (ED) waiting times and length-of-stay is exacerbated by preventable, non-urgent ED attendances. In 2022, musculoskeletal conditions constituted the majority of >800,000 non-urgent ED presentations. Community care and underutilised allied health services, such as exercise physiology, may offer better management options. This study aimed to examine characteristics of patients presenting to ED for musculoskeletal conditions, treatment advice provided on physical activity, and referral practices to community-based exercise physiology services. METHODS: A retrospective chart audit (n=267) examined patient characteristics, referral patterns and treatment advice due to non-urgent musculoskeletal conditions at Eastern Health EDs. RESULTS: Most (n=223, 84%) patients presented with conditions that had persisted for a mean (SD) duration of 9.3 (32.4) days. Conditions affecting the leg (n=92, 34%), lower back (n=59, 22%) and arm (n=44, 16%) were most common. Sharp pain was the most common descriptor of pain (n=33, 12%). Almost half (45%, n=119) had comorbid cardiovascular disease (n=59, 22%), metabolic conditions (n=31, 12%) or mental health issues (n=29, 11%). Treatment advice on physical activity was provided for 17% to patients with 12% advised to avoid physical activity (n=31, 12%) and 5% to stay active (n=12). Advice to return to (n=2, 1%) or take time off (n=47, 18%) work was provided for 19% (n=49) patients. No patients were referred to exercise physiology services. CONCLUSION: Patients presenting to EDs for musculoskeletal conditions appeared suitable for referral to community-based exercise physiology services, yet no referrals were identified. Moreover, few patients received advice on whether to stay active or avoid physical activity. Strategies to increase external ED referral to exercise physiology are warranted to alleviate burden within this setting.

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#349

TITLE: PHYSICAL ACTIVITY AND SPINAL CORD INJURY: BEHAVIOUR, BARRIERS, MOTIVATIONS AND GAINS

AUTHORS: Mr Paul Watson[1], Laura Stendell[2], James W Middleton[3,4], Mohit Arora[3,4], Camila Quel De Oliveira[2], and Glen M Davis[1]

Affiliations: [1]Sydney School of Health Sciences, Faulty of Medicine and Health, The University of Sydney, Sydney, NSW, Australia; [2]Discipline of Physiotherapy, Graduate School of Health, University of Technology Sydney, Sydney, Australia; [3]John Walsh Centre for Rehabilitation Research, Northern Sydney Local Health District, St Leonards, NSW, Australia; [4]The Kolling Institute, Faculty of Medicine and Health, The University of Sydney, Sydney, NSW, Australia.

First author's contact: paul.watson@sydney.edu.au

INTRODUCTION & AIMS: To attain a comprehensive understanding of physical activity (PA) behaviour in individuals with a spinal cord injury (SCI) in Australia. Investigation and analysis included volumes, guideline-adherence, barriers, motivators , and perceived benefits of PA. METHODS: Methodology included quantitative and qualitative approaches. Statistical tests were used on national survey data (n=1,579) to scrutinise PA volumes and guideline-adherence. Semi-structured interviews (n=105) were used to explore barriers to PA, whilst focus groups (six groups of six people) were used to uncover motivations for, and gains of, PA. RESULTS: The average PA per week was 333 (+/-318) minutes, 42% of people were sedentary, and less than half (47%) of individuals met PA-specific guidelines. Sociodemographic and injury characteristics displayed very weak capacity (2-5% variance) in predicting PA volume. Barriers pertained to cost, accessibility, pain, self-consciousness, and a perceived lack of return of investment in PA. Whilst appearance/weight management and improved health appeared initially as motivators to PA, participants reported they gained more affiliation and revitalisation through PA, and less appearance/weight management and health change than they had anticipated. Focus group analysis highlighted that the primary (and more significant) motivators and benefits of PA include independence, reclamation of identity, restitution, reduced familial burden, and mitigation of perceived hastened aging. CONCLUSION: People with SCI in Australia are amongst the most sedentary in the nation, and less than half of individuals meet PA guidelines. Specific attention is needed toward females, older individuals and people injured non-traumatically. Barriers are significant and affordable and accessible services, skilful and knowledgeable clinicians, and an inclusive environment are needed to improve consumer confidence. Motivation and perceived benefits extend beyond obvious physical advantages of PA. Clinicians and scientists need to understand the psychosocial influence of PA in this sedentary population and harness this knowledge to improve participation and quality of life.

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#350

TITLE: ASSESSMENT OF SLEEP HEALTH IN ELITE FEMALE BASKETBALL PLAYERS DURING INTERNATIONAL COMPETITION: A CASE STUDY

AUTHORS: Prof Stephen P. Bird[1,2,3], Dr. Jonathan Charest[4,5]

Affiliations: [1]School of Health and Medical Sciences, University of Southern, Queensland Australia., [2]Centre for Health Research, University of Southern Queensland, Toowoomba Australia., [3]Basketball New Zealand, Wellington New Zealand., [4]Faculty of Kinesiology, University of Calgary, Calgary, AB Canada, [5]Centre for Sleep & Human Performance, Calgary, AB Canada.

First author's contact: stephen.bird@unisq.edu.au

INTRODUCTION & AIMS: Sleep health is recognised as an essential component to optimise overall wellbeing and athletic performance. However, athletes frequently report sleep disturbance prior to and during competition, with nearly a quarter of athletes experiencing moderate to severe sleep problems international travel and subsequent competition. The Athlete Sleep Screening Questionnaire (ASSQ) was developed as a sleep screening tool to detect clinically significant sleep disturbances and daytime dysfunction in athletes. The purpose of this study was to assess sleep health (sleep disturbances, sleep difficulty and daytime dysfunction) via a sleep screening tool in elite female basketball players during international competition. METHODS: Participants were 12 elite female basketball players (New Zealand Women's Senior National Team, Tall Ferns) competing at the 2021 International Basketball Federation Women's Asia Cup in Amman Jordan. The Athlete Sleep Screening Questionnaire (16 item) was used to assess sleep health and associated factors during the 7-day tournament to determine the impact of international travel. The ASSQ was scored according to previous validated methods to determine chronotype, sleep difficulty score, clinical sleep problem category (none, mild, moderate, or severe), and potential referral to a sleep physician for assessment due to poor sleep health. Categorical variables were summarised with frequency and percent. The study was approved by the University of Southern Queensland Human Research Ethics Committee (H21REA182). RESULTS: Clinical sleep problems, as categorised by sleep difficulty score ≥ 8, were reported in 33% of the athletes, with 25% classified as moderate and 8% classified as severe. Fifty percent of the athletes reported sleep disturbance during travel, while 42% reported daytime dysfunction when travelling for competition. According to chronotype classification, 75% of athletes were categorised into evening type, 33% 'definitely evening' type sub-category, with 25% categorised into morning type. In total, 42.0% of athletes (5 players) were identified for further assessment. CONCLUSION: This study highlights the effective use of the ASSQ as an easy to administer sleep screening tool to determine sleep health in elite female basketball players. The ASSQ provides a method of accurately identifying athletes that would benefit from sleep hygiene education, sleep travel management and subsequent preventative measures related to clinically significant sleep problems. In this case study, a substantial portion of elite female basketball players appear to suffer from suboptimal sleep and would likely benefit from interventions targeting sleep health. This is an important consideration and provides valuable insights into indicators of sleep health in the management of female athlete sleep health and wellbeing during international competition.

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#351

TITLE: INDIVIDUAL STRENGTH CHANGES FOLLOWING A VERY BRIEF INTERVENTION ON NATIONAL STRENGTH TRAINING GUIDELINES IN ADULTS AGED 50 -75 YEARS

AUTHOR: Dr. Ashley Gluchowski[1]

Affiliation: [1] School of Health & Society, University of Salford, Greater Manchester, United Kingdom

Author's contact: a.gluchowski@salford.ac.uk

BACKGROUND: There is little evidence that the public or healthcare practitioners are aware of and implementing the strength training component of the United Kingdom's (UK) Chief Medical Officers' physical activity guidelines in practice. Our study aimed to objectively measure strength following a very brief intervention with the strength component to determine if this practice could increase muscle strength. METHODS: This was a mixed method, one-arm, pre-post six-month study. Thirty adults aged 50-75 years had hand grip (upper) isometric strength and ankle plantarflexion (lower) isometric strength measured. The average of two trials on the dominant limb were recorded. Participants were provided a physical copy of the guidelines and were asked to follow the strength recommendations. The very brief intervention (five minutes) included information on why and how to follow the strength guidelines, example exercises, along with a proven behaviour change technique (providing a journal to record training sessions). Strength was tested after six-months. RESULTS: The group average indicated that there was no change in upper or lower body strength from baseline. However, when data were viewed individually, upper body strength was gained in 21 of 30 participants and lost in 9 (range: -4.5 to +6 kg). 42% of participants gained more than 2 kg in hand strength after six-months. Lower body strength was gained in 15 participants and lost in 15 (range: -12.4 to +8.65 kg). 43% of participants lost more than 2 kg. Qualitatively participants took the opportunity to 'procure some new weights' as they found their weights at home 'too easy.' Participants had a new-found realisation that 'strength training is vital to muscle strength.' Some mentioned that 'strength training is now part of my life.' On the other hand, other participants wanted more, noting that 'there should be more publicity, information about [strength training] to the general public' and found it unnecessarily 'hard to find [follow up information] online.' CONCLUSIONS: In the movement to make 'every contact count,' a very brief intervention has been shown to raise awareness and change strength training behaviour. Healthcare practitioners should focus on lower body exercise examples alongside progression techniques to avoid rapid loss in lower body strength. Public health stakeholders need to work together to provide easily accessible strength training resources.

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#352

TITLE: RETHINKING THE MANAGEMENT OF HEALTH IN PEOPLE WITH DIABETES-RELATED FOOT ULCERS FROM AN AEP PERSPECTIVE: AN UPDATE FROM THE DFUEX STUDY

AUTHORS: Dr Callum Baker[1,2,3], Dr Danqing Min[1,2], Professor Vivienne Chuter[4], Professor Stephen Twigg[1,2], A/Professor Nathan Johnson[1,3]

Affiliations: [1]Greg Brown Diabetes & Endocrine Research Laboratory, Charles Perkins Centre, University of Sydney, Sydney, Australia., [2]Central Clinical School, Sydney Medical School, Faculty of Medicine and Health, University of Sydney, Australia, [3]Sydney School of Health Sciences, Faculty of Medicine & Health, University of Sydney, Sydney, Australia, [4]Discipline of Podiatry, School of Health Sciences, Western Sydney University.

First author's contact: calbaker90@gmail.com

INTRODUCTION & AIMS: Current treatments for people with diabetes-related foot ulcers (DFUs) focus on foot outcomes - potentially at the expense of broader health and wellbeing considerations. There are barriers to exercise for people with DFU and hesitancy in promoting physical activity by clinicians. AEPs may have the clinical skills to help people with DFUs engage in safe and effective exercise. The aim of this study was to examine the impact of AEP supervised exercise intervention on cardiorespiratory fitness, health and wound healing in adults with DFU. METHODS: Using a randomised control trial design (ANZTR registration: 12622000885796p) adults aged 18 to 70 years (n=32) with active DFU are being recruited from an interdisciplinary High-Risk Foot Service (iHRFS) at Royal Prince Alfred Hospital Sydney Australia, and randomised to receive 12 weeks of supervised exercise (aerobic and resistance) training (Exercise) with usual care or usual care (Control) Measurements including fitness, metabolic and wound outcomes are acquired at baseline and after 12 weeks. RESULTS: Preliminary baseline demographic, fitness and health data will be presented. Consideration for the scope of practice for AEPs in the multidisciplinary management of DFUs will be discussed incorporating observations and guidance on implementing exercise in a high risk DFU population, where there is limited patient and practitioner knowledge about safe and effective exercise options, and historical avoidance of physical activity to lessen the risk of wound deterioration. This will include consideration of aspects around exercise which are unique to people with DFUs, such as working with iHRFS, patient ambulation and transport, wound type and location, diversity of wound offloading devices and individual facilitators and barriers to exercise participation. CONCLUSIONS: There is a need for robust evidence concerning the efficacy and safety of exercise intervention, and a need for strategies to engage AEPs into the multidisciplinary care of people with DFUs. Supported by the Exercise and Sports Science Australia Research Grant.

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#353

TITLE: REGULAR LOW-DOSE CAFFEINE SUPPLEMENTATION DURING TRAINING DOES NOT PROVIDE ADDITIONAL BENEFIT TO SUBSEQUENT EXERCISE PERFORMANCE IN AUSTRALIAN RULES FOOTBALL ATHLETES

AUTHORS: Dr Kagan Ducker[1], Mr Joel Maylor[1], Dr Daniel Hiscock[1,2], Dr Carly Brade[1]

Affiliations: [1]Discipline of Exercise Science, Curtin School of Allied Health, Curtin University, Perth, Western Australia, Australia, [2]Wesley College, South Perth, Western Australia, Australia.

First author's background: kagan.ducker@curtin.edu.au

INTRODUCTION & AIMS: Acute caffeine supplementation can improve exercise types like those completed by Australian Rules football (ARF) players during training. Hypothetically athletes could implement caffeine supplementation prior to training, allowing them to complete more training volume, improving adaptation and subsequent exercise performance. This study aimed to investigate the effect of regular low-dose caffeine ingestion pre-training during a training block on subsequent exercise performance. METHODS: Twenty-nine male semi-professional ARF players were randomly allocated to a caffeine or placebo group. The four-week intervention period involved participants ingesting 2 mg·kg·BM-1 of caffeine or a placebo 60 min prior to two of their three weekly training sessions, which incorporated sport-specific conditioning and skills training. To assess exercise performance, a battery of tests was used before and after the intervention period including the Yo-Yo Intermittent Recovery Test Level 2 (YYIRT2), 20 m sprint and vertical jump (VJ). Performance differences were assessed using a linear mixed-effect model. RESULTS: Mean session rating of perceived exertion ($p = .24$) and total training load ($p = .53$) were not different between caffeine and placebo groups over the intervention. There were no significant time x condition interaction effects for YYIRT2 accumulated distance ($p = .87$), or 5, 10 and 20 m sprint times ($p = .06$ - $.44$), however both caffeine and placebo groups improved YYIRT2 distance and sprint times following four weeks of training ($p < 0.01$). There was a significant effect for time showing decreased VJ performance ($p < 0.01$), with greater reductions in the placebo group ($p = .03$). CONCLUSION: It is more beneficial to implement an effective training program for athletes rather than focusing effort on regular low-dose caffeine supplementation to augment the training stimulus. The training stimulus itself is typically greater for developing endurance and sprint effort performance, with supplemental caffeine showing no additional performance benefit.

#354

TITLE: EXPERIENCES AND PERCEPTIONS OF PHYSICAL ACTIVITY AND EXERCISE IN PEOPLE WITH METABOLIC-ASSOCIATED FATTY LIVER DISEASE: A META-ETHNOGRAPHIC REVIEW

AUTHORS: Dr Shelley Keating[1,2], Carla Dreyer[3], Dr Kate Hallsworth[4,5,6], Associate Professor Jonathan Stine[7,8,9,10], Associate Professor Ingrid Hickman[11,12]

Affiliations: [1]Centre for Research on Exercise, Physical Activity and Health, School of Human Movement and Nutrition Sciences, The University of Queensland, St Lucia, QLD, Australia, [2]Centre for Research on Exercise, Physical Activity & Health, The University of Queensland, Brisbane, QLD, Australia, [3]School of Human Movement and Nutrition Sciences, The University of Queensland, Brisbane, QLD, AUSTRALIA, [4]NIHR Newcastle Biomedical Research Centre, Newcastle Upon Tyne Hospitals NHS Foundation Trust, Newcastle Upon Tyne, UK, [5]Liver Unit, Newcastle Upon Tyne Hospitals NHS Foundation Trust, Newcastle Upon Tyne, UK, [6]Translational and Clinical Research Institute, Faculty of Medical Sciences, Newcastle University, Newcastle Upon Tyne, UK, [7]Division of Gastroenterology and Hepatology, Department of Medicine, The Pennsylvania State University- Milton S. Hershey Medical Center, Hershey, PA, USA, [8]Department of Public Health Sciences, The Pennsylvania State University- College of Medicine, Hershey, PA, USA, [9]Liver Center, The Pennsylvania State University- Milton S. Hershey Medical Center, Hershey, PA, USA [10]Cancer Institute, The Pennsylvania State University- Milton S. Hershey Medical Center, Hershey, PA, USA, [11]Faculty of Medicine, The University of Queensland, Brisbane, QLD, Australia, [12]Department of Nutrition and Dietetics, Princess Alexandra Hospital, Brisbane, QLD, Australia

First author's contact: s.keating@uq.edu.au

INTRODUCTION & AIMS: Metabolic-associated fatty liver disease (MAFLD) affects one third of adults worldwide (>5 million Australians) with significant health and socioeconomic burden. Physical activity (PA) is an effective component of MAFLD management, with Australian exercise guidelines recently developed. However, <20% of people with MAFLD meet recommended PA targets. We aimed to review published data on the lived experiences and perceptions of PA and exercise in people with MAFLD. METHODS: A meta-ethnographic synthesis was utilised to systematically review articles published in English relating to the experiences and perceptions of PA/exercise in people with MAFLD. Databases (PubMed, Embase, Web of Science) were searched from inception to November 2023. Two researchers (CD, SK) independently screened titles and extracted data. Data (study-level themes and subthemes) were coded and themed using the validated Noblit and Hare model. Study quality was assessed using the Critical Appraisal Skills Programme checklist. RESULTS: A total of 1538 articles were screened, with seven studies included (n=161 participants across six countries; overall study quality rated 'high'). Semi-structured interviews and focus groups were the predominant methods. Key findings encompassed barriers to PA/exercise uptake and maintenance including: lack of awareness of MAFLD, which lowered risk perception; lack of information provision regarding the role and importance of PA/exercise for MAFLD management; lack of resources, tailored exercise plans or referrals; multiple comorbidities and symptoms including obesity, musculoskeletal conditions, pain and fatigue; ambivalence of perceived exercise capabilities and low exercise-related self-efficacy; lack of time and competing priorities. Reported enablers of PA/exercise included: accountability to themselves (e.g., habit forming) and to the healthcare professional; social support from family, friends, and healthcare providers; the experience of symptom relief and holistic benefits. CONCLUSION: This study translated first-hand experiences and perceptions of physical activity and exercise for people with MAFLD, identifying priorities to target for improved uptake and maintenance.

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#355

TITLE: RESISTANCE TRAINING PRESCRIPTION FOR ATHLETES DURING PERIODS OF PLANNED DE-LOADING: A SURVEY OF STRENGTH AND CONDITIONING COACHES

AUTHORS: Ms Kristen De Marco[1,2], Dr Paul Goods[1,2], Dr Kate Baldwin[3], Dr Daniel Hiscock[4,5], Associate Professor Brendan Scott[1,2]

Affiliations: [1]Murdoch Applied Sport Science Laboratory, School of Allied Health, Murdoch University, Perth, WA, Australia; [2]Center for Healthy Ageing, Murdoch University, Perth, WA, Australia; [3]School of Physiotherapy and Health Sciences, University of Notre Dame, Fremantle, Australia; [4]Curtin School of Allied Health, Curtin University, Perth, WA, Australia; [5]Sport Department, Wesley College, South Perth, WA, Australia

First author's contact: kristen.demarco@murdoch.edu.au

INTRODUCTION & AIMS: Implementing resistance training (RT) for athletes may be difficult during some training-phases due to competing demands. However, it is currently unknown how strength and conditioning coaches prescribe RT during periods of planned de-loading. Therefore, we aimed to investigate the RT prescription practices of coaches during four common de-loading periods (taper, competitive season, tournament, travel). METHODS: An anonymous online survey was shared globally to coaches, with data analysed from 204 responders (current level of athlete coached: world class n=68, elite/international n=62, highly-trained n=64, trained n=10). Coaches only provided answers about prescription for de-loading periods which they reported encountering. Where a coach indicated not prescribing RT for specific de-loading periods, they provided information on any barriers preventing RT prescription. RESULTS: Weekly RT prescription across all de-load periods was typically reported as: 1-2 sessions, 30-60 min, 1-3 sets, 1-6 repetitions. Most coaches reported decreasing volume during all periods (taper: 89.1%, competitive season: 70.4%, tournament: 84.1%, travel: 74.6%), with the most common reduction in RT volume reported as 0-25%. Most coaches also decreased intensity during a taper (52.9%), tournament (54.8%) and travel (53.6%), with a 0-25% reduction most common. 'Lack of equipment and facilities' and 'scheduling/time' were common barriers cited to RT prescription during the competitive season (100% for scheduling/time), tournament (55.6% and 50.0%), and travel (57.3% and 60.0%). During a taper, 'recovery' was the most reported reason (41.7%). CONCLUSION: During planned de-loading periods, both training volume and intensity are generally decreased by coaches compared to periods of normal training. The similarity of barriers to RT prescription during de-load periods suggests the experiences of coaches are not influenced by the phase. To address barriers experienced by some coaches, researchers should examine the use of alternative RT strategies for periods of planned de-loading to maintain training stimulus.

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#356

TITLE: SOLVING THE HIGH-INTENSITY MUTLIMODAL TRAINING PRESCRIPTION PUZZLE: A SYSTEMATIC MAPPING REVIEW

AUTHORS: Miss Tijana Sharp[1], Dr Katie Slattery[1], Distinguished Professor Aaron Coutts[1], Miss Mikah van Gogh[2], Miss Lara Ralph[1], Dr Lee Wallace[1]

Affiliations: [1] School of Sport, Exercise and Rehabilitation, University of Technology Sydney, Human Performance Research Centre, Moore Park, NSW, Australia, [2] Australian College of Physical Education, Sydney Olympic Park, NSW, Australia

First author's contact: tijana.sharp@uts.edu.au

INTRODUCTION & AIMS: High-Intensity Multimodal Training (HIMT) refers to all styles of high-intensity combined aerobic, resistance and/ or bodyweight exercise. Previous heterogeneity in exercise prescription and reporting in HIMT reduces the understanding of which factors should be commonly considered when prescribing HIMT (e.g., exercise volume, intensity, duration). Previous studies have demonstrated positive effects of HIMT on health and performance outcomes. However, methodological disparities limit comparisons between findings. This systematic mapping review examines the prescriptive considerations and health and performance outcomes of HIMT in the context of training. METHODS: A systematic literature search was conducted using Ovid Medline, SPORTDiscus and Cochrane Library databases and additional sources to identify studies up until February 2023. A total of 37090 records were retrieved, of which 221 were included for review. 247 individual HIMT protocols were included for categorical analysis against the Consensus on Exercise Reporting Template (CERT) and Applied Research Model for the Sport Sciences. RESULTS: A total of 85 unique terms were used to describe HIMT. Included studies most commonly prescribed HIMT using a consistent exercise selection and circuit format. Exercise intensity was inconsistently reported on and a large proportion of studies incorrectly prescribed 'high-intensity' exercise according to ACSM definitions (i.e., <77% HRmax). Participation location, supervision and participation format were the most commonly reported non-training variables. The most frequently reported outcomes were cardiovascular health, perceptual outcomes, body composition and biochemical outcomes. A large proportion of previous HIMT research was experimental in design. CONCLUSIONS: Previous HIMT research demonstrates a lack of standardisation in reporting. Future studies should seek to follow guidelines such as the CERT to improve reporting rigour. Additionally, forthcoming research should attempt to actively involve practitioners in implementation studies to improve ecological validity among interventions. REGISTRATION: This review adhered to PRISMA-ScR guidelines. Preregistration: osf.io/yknq4.

#357

TITLE: A VALIDATION OF A NOVEL RUNNING ECONOMY PROTOCOL AND COMPARISON OF TWO CARBON-PLATED RUNNING SHOES IN FEMALE LONG-DISTANCE RUNNERS

AUTHORS: Dr Brock Freeman[1], Dr Ashley Cripps[1], Mr Rob Merrells[1], Ms Kayla McCulloch[1], Dr Kate Baldwin[1], Dr Claire Badenhorst[5], Dr Bent Rønnestad[3], Nathan D.W. Smith[1]

Affiliations: [1]School of Health Sciences & Physiotherapy, The University of Notre Dame Australia, Fremantle, Western Australia, Australia, [2]Massey University, [3]Innland Norway University of Applied Sciences

First author's contact: brock.freeman@nd.edu.au

INTRODUCTION: Running economy (RE) is the strongest predictor of long-distance running performance in well-trained athletes (1). Carbon-plated running shoes have indicated improvements of 4% in RE when compared to previous generation non-carbon-plated running shoes (2). However, these studies have key methodological limitations; the prescribed intensities didn't replicate race demands, the influence of fatigue was not considered, and testing was only completed on males. AIM: The primary aim of this study was to develop an appropriate protocol to measure RE in female long-distance runners. The secondary aim was to compare performance and RE of two carbon-plated performance shoes in female long-distance runners. METHODS: Seven female endurance athletes (age: 30.7 ± 6.6 y, mass: 59.1 ± 5 kg, VO2max: 55.3 ± 4.1 ml/kg/min) completed a graded exercise test to establish a relative race intensity (90% of lactate threshold). Participants completed two testing sessions during the follicular phase of the menstrual cycle in alternating footwear, which consisted of four 7-minute trials, a 25-minute continuous run, four 7-minute trials, and a 13-minute distance trial. RE was recorded as the oxygen consumption and energetic cost of running from minutes 5-7 of each trial. Shoe preference was recorded midway through the first session and the end of the second session. A linear mixed model was used to compare economy and performance metrics. RESULTS: There was no significant difference in RE because of fatigue and no significant difference between shoes. However, large individual variations were evident. Participants reported disagreement between preferred shoe and the shoe that demonstrated greatest RE. CONCLUSION: A longer protocol that controlled for the menstrual cycle did not induce fatigue related changes in female participants, supporting a higher resistance to fatigue in females (3). The individual variation between shoes suggests that further analyses should be conducted to inform shoe selection for female long-distance runners. REFERENCES: 1.Barnes, K.R. and A.E. Kilding, Running economy: measurement, norms, and determining factors. Sports Med Open, 2015. 1(1): p. 8. 2.Hoogkamer, W., et al., A Comparison of the Energetic Cost of Running in Marathon Racing Shoes. Sports Med, 2018. 48(4): p. 1009-1019. 3.Besson, T., et al., Sex Differences in Endurance Running. Sports Med, 2022. 52(6): p. 1235-1257.

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#358

TITLE: ACUTE INTERMITTENT HEAT EXPOSURE WITH MORE FREQUENT AND SHORTER COOLING BREAKS ENHANCES PERFORMANCE AND ELICITS COMPARABLE PHYSIOLOGICAL RESPONSES TO CONTINUOUS HEAT EXPOSURE

AUTHORS: Julian Ramos[1], Dr Kagan Ducker[1], Dr Hugh Riddell[1], Dr Grant Landers[2], Dr Olivier Girard[3], Dr Carly Brade[1]

Affiliations: [1]Discipline of Exercise Science, Curtin School of Allied Health, Curtin University, Perth, Western Australia, Australia, [2]The University of Western Australia, Perth, Western Australia, Australia, [3]School of Human Sciences (Exercise and Sports Science), University of Western Australia, Perth, Western Australia, Australia

Firs author's contact: julian.ramos0720@gmail.com

INTRODUCTION & AIMS: Heat acclimation (HA) is critical to mitigate the adverse effects of heat on exercise performance. While these methods yield physiological adaptations to heat, it also results in greater internal training load. This can potentially compromise training quality and lead to overreaching. Therefore, there is a need for HA protocols that address situations where training quality is crucial, yet the heat stimulus is necessary. The aim of this study was to investigate the influence of shorter, more frequent rest breaks with per-cooling (PerC) as an alternative HA session on physiological, perceptual, and self-paced maximal cycling performance, compared to continuous heat exposure. METHODS: Thirteen participants completed one continuous and three intermittent heat exposure (IHE) maximal self-paced cycling protocols matched for total exercise and rest duration, in a random order in heat (36°C, 80% relative humidity): 1 x 60-min exercise (CON), 3 x 20-min exercise with 7.5-min rest between sets (IHE-20), 4 x 15-min exercise with 5-min rest between sets (IHE-15), 6 x 10-min exercise with 3-min rest between sets (IHE-10). Mixed-method PerC (crushed-ice ingestion and cooling vest) was applied during rest periods of all IHE protocols. RESULTS: Total distance completed was greater in IHE-10, IHE-15, and IHE-20 compared to CON (+11%, +9%, and +8%, respectively), with no difference observed between IHE protocols. Total time spent above 38.5°C core temperature (Tc) was longer in CON compared to IHE-15 and IHE-20 (+62% and +78%, respectively), but similar to IHE-10 (+5%). Furthermore, a longer time above 38.5°C Tc occurred in IHE-10 versus IHE-15 and IHE-20 (+54% and +69%, respectively). Sweat loss did not differ between conditions. CONCLUSION: Intermittent heat exposure with PerC may be a viable alternative HA protocol in situations where training quality takes precedence over thermal stimulus, or when both factors hold equal priority.

#359

TITLE: EXPLORING THE ROLE OF SKELETAL MUSCLE MICROVASCULAR BLOOD FLOW IN EXERCISE CAPACITY AMONG INDIVIDUALS WITH CONTROLLED TYPE 2 DIABETES

AUTHORS: Dr Lewan Parker[1,2], Dr Hannah Thomas[1,3], Dr Kimberley Way[1,4], Dr Mark Nolan[2], Prof. Ralph Maddison[1], Professor Tom Marwick[2], Prof Michelle Keske[1,2]

Affiliations: [1]Institute for Physical Activity and Nutrition (IPAN), School of Exercise and Nutrition Sciences, Deakin University, Geelong, Victoria, Australia, [2]Baker Heart and Diabetes Institute, Melbourne, Victoria, Australia, [3]Institute for Health and Sport (IHES), Victoria University, Melbourne, Victoria, Australia, [4]Exercise Physiology and Cardiovascular Health Lab, University of Ottawa Heart Institute, Ottawa, Canada

First author's contact: lewan.parker@deakin.edu.au

INTRODUCTION & AIMS: The cardiac and macrovascular system is vital for human exercise capacity, yet the microvascular network is primarily responsible for delivering nutrients and oxygen to metabolically active tissues like skeletal muscle. Due to methodological limitations, few studies have investigated the role of muscle microvascular blood flow in determining exercise capacity or intolerance in individuals with chronic conditions such as type 2 diabetes. Our aim was to use modern contrast-enhanced ultrasound to directly measure microvascular blood flow in skeletal muscle at rest and after a maximal treadmill exercise test in individuals with controlled type 2 diabetes. METHODS: Fifteen adults with controlled type 2 diabetes (age: 62.5 ± 8.0 years [M ± SD]; BMI: 31.6 ± 6.9 kg/m2; HbA1c: 6.7 ± 0.9%; 13 females and 2 male) attended the laboratory after a 2-hour fast and completed a Modified Bruce treadmill exercise test until exhaustion. Microvascular blood velocity, volume, and flow in the vastus lateralis muscle was assessed at rest, immediately post-exercise, and 30 minutes post-exercise via contrast-enhanced ultrasound during a constant-rate intravenous contrast agent infusion (DEFINITY®). Participants also completed a whole-body dual x-ray absorptiometry scan and a six-minute walk test (6MWT). RESULTS: Microvascular blood velocity, volume, and flow increased immediately after exercise (~230%, ~79%, and ~529%, respectively; all $p<0.001$), and remained elevated above baseline levels 30 minutes post-exercise (~79%, ~25%, and ~139%, respectively; all $p\leq0.003$). Resting and post-exercise skeletal muscle microvascular blood flow measures were not associated with VO2peak (ml/min/kg), time to exhaustion, or six-minute walk distance (all $p>0.05$). CONCLUSION: Muscle microvascular blood flow remains elevated for up to 30 minutes following maximal aerobic exercise in individuals with controlled type 2 diabetes. The lack of association between muscle microvascular blood flow and exercise capacity is not clear but may indicate considerable blood flow redundancy or reserve within the vascular network.

#360

TITLE: ADHERENCE TO PRESCRIBED EXERCISE AND CLINICAL OUTCOMES IN PEOPLE WITH CHRONIC NONSPECIFIC LOW BACK PAIN: A SYSTEMATIC REVIEW AND META-ANALYSIS

AUTHORS: Andrew Bastianon[1,2], Dr Lianne Wood[3], Mr Yannick Gilanyi[2,4], Mr Harrison Hansford[1,2], Dr Mitchell T. Gibbs[1,2], Prof Sarah Dean[5], Prof Nadine Foster[6], Dr Jill Hayden[7], Matthew D Jones[2,4]

Affiliations: [1]School of Health Sciences, University of New South Wales, Sydney, Australia, [2]Centre for Pain IMPACT, Neuroscience Research Australia, Sydney, Australia, [3]Spinal Surgical Division, Nottingham University Hospitals NHS Trust, Nottingham, UK, [4]School of Health Sciences, Faculty of Medicine and Health, University of New South Wales, Sydney, New South Wales, Australia, [5]Institute of Health Research, University of Exeter Medical School, Exeter, United Kingdom, [6]Primary Care Centre Versus Arthritis, School of Primary, Community and Social Care, Faculty of Medicine and Health Sciences, Keele University, Newcastle-under-Lyme, UK, [7]Department of Community Health and Epidemiology, Dalhousie University, Halifax, Canada,

First author's contact: andrew2basti@gmail.com

BACKGROUND: Exercise is widely accepted as a first-line treatment for chronic non-specific low back pain (CNSLBP). However, the benefits of exercise diminish over time, as does adherence to exercise. It is unclear whether greater exercise adherence is associated with improvements in pain intensity (PI) and functional limitation (FL). We explored the relationship between exercise adherence and patient-reported outcomes in people with CNSLBP. METHODS: We conducted a secondary analysis of the Cochrane systematic review, 'Exercise therapy for chronic low back pain', using a subset of 24 trials that measured exercise adherence compared to usual care. Random-effects meta-analysis was performed in R for PI and FL at the closest time point post-intervention. We used predefined subgroups of exercise adherence of 'Good' (90-100%), 'Moderate' (70-89%), or 'Poor' (14-69%) adherence. We used the risk of bias judgements provided by Cochrane. RESULTS: All trials included were deemed low risk of bias. Compared to usual care, 'Good' adherence was associated with reduced PI by 17.83 points on a 100-point scale (95% CI -26.23 to -9.43; I2 = 81.7%) and FL by 9.69 points on a 100-point scale (95% CI -12.64 to -6.74; I2 = 18.9%). 'Moderate' adherence was associated with reduced PI by 6.93 points (95% CI -10.43 to -3.44; I2 = 18.3%) and FL by 3.80 points (95% CI -6.10 to -1.49; I2 = 0%). 'Low' adherence was associated with reduced PI by 7.50 points (95% CI -19.83 to -4.84; I2 = 89.7%) and FL by 3.35 points (95% CI -10.45 to -3.74; I2 = 82.7%). CONCLUSIONS: Greater adherence to exercise is associated with greater improvements in PI and FL in adults with CNSLBP. Further research is needed to understand the causal effect of adherence on patient-reported outcomes. Better reporting of this potentially important exercise parameter in randomised trials is also needed.

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#361

TITLE: IN-HOME COMMUNITY AGED CARE FALLS PREVENTION TELEHEALTH PILOT

AUTHORS: Richelle Street[1], Jane Anderson[1]

Affiliations: [1]Blue Care,Brisbane,Qld,Australia

First author's contact: r.street@bluecare.org.au

BACKGROUND: A small scale pilot was conducted to test the concept of a remotely delivered in-home prescriptive exercise program for older Australians at risk of falling or with a history of falls. There is limited evidence for the efficacy of remotely delivered falls prevention programs within the aged community setting. Most community models are in-person and resource poor. This can result in older Australians living in isolated locations not having access to a service or provision of a service that cannot support the intervention intensity to produce effective functional gains. In the Residential aged care facility setting, the SUNBEAM trial is evidenced to reduce falls prevalence in participating residents. This pilot aimed to discover if exercise prescription modeled on the SUNBEAM trial could be delivered in a remote format to in-home clients and result in improvement in strength, mobility and balance scores associated with a reduced risk of falling. METHOD: The pilot commenced in April 2023 and was delivered by an Accredited Exercise Physiologist for a period of 14 weeks, offering a total of 28 hours of exercise to 6 participants with a history of falls. Participants were provided with a home exercise kit for use and all sessions were conducted as individual appointments, using videoconferencing via the telehealth platform, Coviu. A series of strength and balance related outcome measures and assessments were collected using modified methodology for telehealth. RESULTS: The individual results of the program demonstrated gains in strength and balance, directly linked to reducing falls risk. Participants reported meaningful impacts on sense of self from the program. CONCLUSION: The pilot was successful in proving the concept of a remotely delivered falls prevention exercise-based program can work for the in-home aged care setting. This warrants future efforts to expand on findings to benefit the wider aged care population residing in their own homes.

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#362

TITLE: FATIGUE SCIENCE INFORMING LONG COVID RECOVERY: A CASE STUDY

AUTHORS: Mrs Adriana Giles[1], Dr Vicky Phillips[1], Mr Chris Sinclair[1]

Affiliations: [1]EXPHYS, Sydney, NSW, Australia

First author's contact: adriana.giles@exphys.com.au

CASE SETTING: 42-year-old female client referred for unmanaged long covid symptoms, six months following severe acute COVID-19 infection. Referred by an occupational therapist under Life Insurance to restore health and function for return to work (RTW). Experiencing cognitive and physical fatigue, muscular aches , breathlessness, post-exertional malaise, reduced cognitive capacity and exacerbated asthma symptoms at referral. Reduced functional capacity to perform activities of daily living and usual work duties and hours.
TREATMENT/REHABILITATION PROVIDED: 14 hours of exercise physiology was delivered by telehealth over nine months, during fortnightly or monthly consultations. Additional multidisciplinary collaboration occurred with occupational therapist, return to work co-ordinator, and general practitioner. The intervention consisted of educational coaching sessions on the physiology of fatigue, pacing strategies, individualised wellness strategies (sleep, mindfulness/relaxation, exercise, diet), relapse planning, and RTW planning. A commercially available wearable device obtained 24/7 biometric data, which tracked resting heart rate variability (rHRV), resting heart rate, respiratory rate, and sleep performance. rHRV objectively measured fatigue. Wellness strategies were coached from analysing the impact of client behaviours on rHRV trends. Two functional goals of housework and socialising were established. RESULTS: Validated inventories measured self-reported improvements in; fatigue symptoms: 12-item SPHERE-12, range: 0-68 points [42 baseline; 4 final] ; function: two 11-item patient-specific functional scale [housework, socialising], range: 0-20 points [5 baseline; 19 final]; and quality of life: 16-item quality of life scale, range: 0-112 [54 baseline; 79 final]. rHRV improved [10ms baseline, 56ms final]. RTW improved from four days/week to five days/week in her pre-disability role as a client manager.
REFLECTIONS/LEARNINGS: rHRV provided an objective marker of fatigue. The subject responded positively to rHRV monitoring. Real time biometric data enables individualised fatigue coaching including behaviour change, wellness and planning/pacing strategies. This approach improved fatigue and restored function to perform daily activities and RTW.

#363

TITLE: THE EFFECT OF INTRA-INFUSION EXERCISE ON CHEMOTHERAPY SIDE EFFECTS; AN INTERIM ANALYSIS

AUTHORS: Catherine Seet-Lee[1,2,3], Jasmine Yee[1,2], Sarah Marvin[1,2], Dr David Mizrahi[4], Kate Mahon[1,5], A/Prof Judith Lacey[6,7], Dr Kate Edwards[1,2]

Affiliations: [1]Faculty of Medicine and Health, University of Sydney, NSW, Australia, [2]Charles Perkins Centre, University of Sydney, NSW, Australia, [3]Department of Supportive Care and Integrative Oncology, Chris O'Brien Lifehouse, NSW, Australia, [4]The Daffodil Centre, The University of Sydney, a joint venture with Cancer Council NSW, Sydney, NSW, Australia, [5]Department of Medical Oncology, Chris O'Brien Lifehouse, NSW, Australia, [6]Supportive Care and Integrative Oncology Department, Chris O'Brien Lifehouse Comprehensive Cancer Centre, Sydney, NSW, Australia, [7]NICM Health Research Institute, Western Sydney University, Sydney, NSW, Australia

First author's contact: csee0522@uni.sydney.edu.au

INTRODUCTION: Chemotherapy treatment results in side effects that impact quality of life and physical activity behaviours. Aerobic exercise in parallel with chemotherapy reduces side effects particularly fatigue and improves quality of life. Our recent clinical pilot work has shown that an acute bout of aerobic exercise increases blood flow to tumours. Therefore, if exercise is performed during chemotherapy (intra-infusion exercise), the result may be increased drug delivery and treatment efficacy. Intra-infusion exercise also provides a supervised opportunity to overcome patient-reported barriers to exercise during a period where a patient would be otherwise sedentary. AIM: The aim of this ongoing randomised controlled trial is to determine the effects of aerobic intra-infusion exercise on chemotherapy side effects and physical activity behaviours. METHODS: Adults under 75 years receiving chemotherapy with stage I-III breast, colorectal or ovarian cancer, and ECOG 0-2 were eligible. Four chemotherapy sessions were included, cycle 1 (C1) a baseline and cycles 2-4 (C2-4) included exercise intervention or usual care. The exercise task was 20-minutes of moderate intensity cycling (40-50% heart rate reserve) during infusion. All participants received exercise education. A 7-day symptom diary (including Brief Fatigue Inventory (BFI) and Edmonton Symptom Assessment System (ESAS)) was completed following C1-C4 and an activity monitor worn. RESULTS: Nineteen participants have completed the trial (79% female), with no adverse events reported in either group. Physical symptoms increased across cycles in both groups (p=0.003). 1-week mean ESAS physical symptoms total in the exercise group (C1 16±9.8, C4 23±13.7) and control group (C1 18±7.1, C4 23±12.7) were similar. No significant effects were seen for fatigue or step count. CONCLUSION: Intra-infusion exercise is safe and does not increase side effects in patients receiving chemotherapy. Expected increases in physical symptoms were observed without difference between usual care and exercise. Further analysis with ongoing recruitment will continue to examine any differences between groups.

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#364

TITLE: DOES EXERCISE CHANGE BLOOD FLOW TO TUMOURS? ACUTE AEROBIC EXERCISE EFFECTS ON LIVER METASTASES BLOOD FLOW: A CASE SERIES

AUTHORS: Catherine Seet-Lee[1,2,3], Jasmine Yee[1,2], Jillian Clarke[1], Dr Kate Edwards[1,2]

Affiliations: [1]Faculty of Medicine and Health, University of Sydney, NSW, Australia, [2]Charles Perkins Centre, University of Sydney, NSW, Australia, [3]Department of Supportive Care and Integrative Oncology, Chris O'Brien Lifehouse, NSW, Australia

First author's contact: csee0522@uni.sydney.edu.au

AIM: Effective cancer treatment relies on intravenous chemotherapy penetrating the entire tumour in sufficient concentrations, which is largely reliant on effective blood supply into and within the tumour. However, tumours contain abnormal vasculature with inefficient blood perfusion leading to the inability for chemotherapy to reach the target tumour. Pre-clinical evidence suggests acute exercise may increase blood flow by 200%. However, most pre-clinical studies investigate the effects of light-to-moderate intensity exercise and subsequently there is little evidence regarding the most effective exercise intensity for improved tumour vasculature. Therefore, the aim of this ongoing case series is to determine whether exercise changes tumour blood flow in a clinical model using non-invasive techniques, and how exercise intensity effects degree of change in blood flow to tumours in patients with liver metastases. METHODS: Participants were eligible if they were aged over 18 years, had stage IV cancer with liver metastasis and ECOG 0-2. The study visit consisted of an aerobic fitness test (YMCA) to determine cardiorespiratory fitness and three 5-minute bouts of exercise at low, moderate and high intensities. After each exercise bout, Doppler ultrasound was used to measure a liver tumour vessel and the hepatic artery (as a control) to determine blood flow parameters. RESULTS: Exercise increased peak systolic velocities (PSV) to liver tumours at all intensities compared to rest. Moderate and high exercise intensities showed a marked increase in PSV within the first 2 minutes after exercise. The hepatic artery showed less variability in PSV with time compared to the liver tumour. Cardiorespiratory fitness did not affect tumour PSV. CONCLUSION: The results of this case series thus far suggest that exercise increases tumour blood flow at all exercise intensities with particular emphasis on moderate and high intensities. This supports the potential for using exercise as an adjunct to standard treatment to improve chemotherapy efficacy.

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#365

TITLE: EFFICACY, FEASIBILITY AND OPTIMAL TRAINING PARAMETERS FOR RUNNING IN ADULTS WITH CHRONIC LOW BACK PAIN: THE ASTEROID RANDOMISED CONTROLLED TRIAL

AUTHORS: Christopher Neason[1,2], Claire L Samanna[1,2], Prof Daniel L Belavy[3], A/Prof Steven J Bowe[4], Dr Matthew J Clarkson[5], A/Prof David Connell[6], Emma A Craige[7], Romina Gollan[2], A/Prof Luana C Main[2], Dr Clint T Miller[2], Prof Ulrike H Mitchell[8], Dr Niamh L Mundell[2], A/Prof David Scott[2,9], Dr Scott D Tagliaferri[10,11], Dr Jamie L Tait[2], Dr Grace E Vincent[7], A/Prof Patrick J Owen[1,2,12]

Affiliations: [1]Eastern Health Clinical School, Monash University, Melbourne, Victoria, Australia; [2]Institute for Physical Activity and Nutrition, School of Exercise and Nutrition Sciences, Deakin University, Geelong, Victoria, Australia; [3]Hochschule für Gesundheit (University of Applied Sciences), Department of Applied Health Sciences, Division of Physiotherapy, Gesundheitscampus 6-8, 44801, Bochum, Germany; [4]School of Health, Wellington Faculty of Health, Victoria University of Wellington, Wellington, New Zealand; [5]Institute for Health and Sport, Victoria University, Melbourne, Victoria, Australia; [6]Imaging @ Olympic Park, AAMI Park, 60 Olympic Boulevard, Melbourne, VIC 3004, Australia; [7]Appleton Institute, School of Health, Medical, and Applied Sciences, Central Queensland University, Rockhampton, Queensland, Australia; [8]Department of Exercise Sciences, Brigham Young University, Provo, Utah, United States of America; [9]School of Clinical Sciences at Monash Health, Monash University, Clayton, Victoria, Australia; [10]Orygen, Parkville, Victoria, Australia; [11]Centre for Youth Mental Health, University of Melbourne, Melbourne, Victoria, Australi; [12]Eastern Health Emergency Medicine Program, Melbourne, Victoria, Australia

First author's contact: chris.neason@deakin.edu.au

INTRODUCTION & AIMS: Running is common and one of the most accessible forms of exercise training, yet the suitability for adults with chronic low back pain is unknown. This study assessed the efficacy and feasibility of running in adults with chronic low back pain (LBP) and explored the relationship between training parameters and pain intensity. METHODS: This two-arm parallel (1:1) individually randomised controlled trial allocated 40 participants (mean [SD] age: 33 [6] years, female: 50%) with non-specific chronic LBP to a 12-week intervention or waitlist control. The intervention was a progressive run-walk interval program comprising three 30-minute sessions per week, that were digitally delivered and remotely supported by an exercise physiologist. Efficacy outcomes were self-reported average and current pain intensity (100-point visual analogue scale) and disability (100-point Oswestry Disability Index). Training parameters examined were fortnightly adherence, pace and distance. RESULTS: At 12-week follow-up, the intervention decreased average pain intensity (mean net difference [95%CI]: -15.30 [-25.33, -5.27] points, P=0.003), current pain intensity (-19.35 [32.01, -6.69] points, P=0.003) and disability (-5.20 [-10.12, -0.24] points, P=0.038), compared to control. There was no attrition and mean (SD) training adherence was 70% (20%; i.e. 2.1 of 3 sessions per week). Nine non-serious adverse events deemed potentially study-related were reported (lower limb injury/pain: n=7, cardiac syncope associated with an underlying condition: n=1, LBP: n=1). Greater fortnightly adherence (-0.04 [-0.33, 0.25] points), pace (0.23 [-0.48, 0.02] points) and distance (-0.03 [-0.13, 0.06] points) tended to be associated with greater reductions in pain intensity, yet did not reach statistical significance. CONCLUSION: Running was feasible and improved pain intensity and disability in individuals aged 18-45 years with non-specific chronic LBP when compared to control. An individualised and conservative run-walk program should be considered a suitable form of physical activity for adults with chronic LBP.

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#366

TITLE: A COMPARISON OF PEAK WORK RATES DURING SUPER SHOT AND NON-SUPER SHOT PERIODS IN PROFESSIONAL NETBALL PLAYERS.

AUTHORS: Lucas Brown[1], Dr Luke Hogarth[2], Dr Rob Buhmann[1]

Affiliations: [1]University of the Sunshine Coast, Sippy Downs, QLD, Australia, [2]Sunshine Coast Lightning, Sippy Downs, QLD, Australia

First author's contact: lwb006@student.usc.edu.au

BACKGROUND: Since its introduction, the super shot has been a critical period of play in the Australian domestic netball competition. Depending on their shot selection strategy, teams can increase their odds of outscoring oppositions during super shot periods. As a result, players are likely to complete more attacking and defensive actions, possibly increasing their workload. The purpose of this study was to quantify workload and make comparisons between i) super shot and non-supershot periods and ii) different player positions. METHODS: Raw acceleration data (VX sport Log units Visuellex New Zealand) from 11 players across 14 matches was collected and used to calculate PlayerLoadTM. Quarters were split into three five-minute periods and player position for each period was reported. Data was only included if a player competed for a full five-minute period (n=1110). A rolling average was applied over 60 seconds to compare peak PlayerLoadTM values between periods and positions. A linear mixed effects model was used to determine the effect of the period and position on peak 60s PlayerLoadTM. Random intercepts were included for player and game, quarter was included as a random effect within game. RESULTS: During super shot periods, peak values were significantly lower for GS compared to regular periods (model coefficient = 0.8, 95%CI = 0.02 to 1.59, P = 0.04). During super shot periods, GD and GK positions showed slightly higher peak values compared to regular periods, with model coefficients of -0.05 (95%CI = -1.20 to 0.327) and -0.21 (95%CI = -1.00 to 0.57) respectively. On the other hand, GA, WA, WD, and C positions exhibited lower peak values for super shot periods compared to regular periods. Results indicate that there are differences in peak workloads between positions during super shot periods. CONCLUSION: Workload demands may be different between positions during super shot periods, this has implications for player conditioning.

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#368

TITLE: ACUTE EFFECT OF INTERVAL TRAINING SET STRUCTURE ON PHYSIOLOGICAL AND PERCEPTUAL RESPONSES TO EXERCISE

AUTHORS: Dr Kagan Ducker[1], Ms Chelsey Heath[1], Dr Carly Brade[1], Dr Daniel Hiscock[1,2], Associate Professor Brendan Scott[3,4], Mr Jacob Shaw[1], Dr Hugh Riddell[1], Mr Isaac Ng[1]

Affiliations: [1]Discipline of Exercise Science, Curtin School of Allied Health, Curtin University, Perth, Western Australia, Australia, [2]Wesley College, South Perth, Western Australia, AUSTRALIA, [3]Murdoch Applied Sports Science Laboratory, Discipline of Exercise Science, School of Allied Health, Murdoch University, Perth, WA, Australia, [4]Centre for Healthy Ageing, Health Futures Institute, Murdoch University, Perth, WA, Australia

First author's contact: kagan.ducker@curtin.edu.au

INTRODUCTION & AIMS: A novel method for prescribing maximal aerobic speed (MAS) interval sessions involves the use of rest redistribution (RR). This approach could reduce perceived exertion and fatigue, preventing a decline in performance. This study aimed to compare acute physiological and perceptual responses between traditional (TS) and RR MAS interval training in endurance athletes. METHODS: Twenty-five endurance runners (19 males, 6 females; age=31.9±8.5 y; maximal oxygen consumption ($\dot{V}O2max$)=54.6±5.7 ml·kg·min-1; height=1.77±0.10 m; body-mass=74.0±13.0 kg) who ran >5 hours/week participated. Participants completed two MAS interval sessions equal in duration (18 min total, 360 s exercise, TS=660 s rest/RR=680 s rest) in a randomised order; TS: 3 sets x 6 repetitions (1 rep=20 s running:20 s rest) at 110% MAS and RR: 18 sets x 1 repetition (20 s running:40 s rest) at 110% MAS. During both sessions $\dot{V}O2$ and heart rate (HR) were measured after each repetition, and blood lactate (HLa-) measured pre-exercise and after repetitions 6, 12 and 18. Rating of perceived exertion (RPE) was measured after repetitions 6, 12, and 18, and overall session RPE 10 minutes post-session. RESULTS: Linear mixed effects models showed that TS led to a faster increase in $\dot{V}O2$ (β=.16, p=.04) and HLa- (β=.09, p<.01), with consistently higher HR than RR (β=5.35, p<.01). Additionally, RPE (β=1.35, p<.01) and session RPE were lower in RR than TS (β=1.13, p<.01). CONCLUSION: Results indicate that when session time is similar, TS (1:1 work-to-rest ratio), produces a greater physiological stimulus with higher $\dot{V}O2$, HR and HLa-. Conversely, RR (1:2 work-to-rest ratio) resulted in lower perceived exertion and metabolic stress. This makes RR an appropriate choice for training periods with lower physiological stress or during periods of fatigue management. The reduced physiological demands in RR can facilitate a more controlled and sustainable training experience while still providing valuable training benefits.

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#369

TITLE: PHYSICAL ACTIVITY AND MENTAL HEALTH IN AUSTRALIAN ADULTS WITH PSYCHOLOGICAL DISTRESS

AUTHORS: Dr Niamh Mundell[1], Dr Megan Teychenne[1], Dr Deborah N Ashtree[2], Dr Marita Bryan[2], Dr Mary Lou Chatterton[3], Dr Jessica Davis[2], Ms Tayla John[2,4], Ms Sophie Mahoney[2], Simon Rosenbaum[5], Dean Saunders[2], Megan Turner[2], Vincent Versace[6], Lauren M Young[2,7], Adrienne O'Neil[2,7]

Affiliations: [1]Institute for Physical Activity and Nutrition, School of Exercise and Nutrition Sciences, Deakin University, Geelong, Victoria, Australia, [2]Deakin University, IMPACT - the Institute for Mental and Physical Health and Clinical Translation, Food & Mood Centre, School of Medicine, Barwon Health, Geelong, Australia, [3]School of Psychology, Deakin University, Victoria, Australia, [4]Barwon Health, Geelong, Australia, [5]UNSW, Sydney, New South Wales, Australia, [6]Deakin Rural Health, School of Medicine, Warrnambool, Australia, [7]Monash University, Melbourne, Australia

First author's contact: niamh.mundell@deakin.edu.au

INTRODUCTION & AIMS: Adults with mental health concerns face compounded barriers to physical activity engagement. We recently conducted a randomised controlled trial to determine whether a lifestyle intervention targeting PA and nutrition was non-inferior to psychotherapy in managing depression (the CALM non-inferiority trial). While we demonstrated non-inferiority, participants assigned to the lifestyle intervention demonstrated improvements in dietary adherence and intake but not self-reported activity measures. The aim of this sub-study was to analyse actigraphy-derived measures to identify whether objective changes occurred and determine whether these were associated with mental health. METHODS: This study included a sub-set of 36 of the 70 participants assigned to the lifestyle therapy intervention from the larger trial (ACTRN12621000387820) who were recruited based on indicative depression (Distress Questionnaire Scale 8+). A Fitbit Charge-2 measured daily steps (n), distance travelled (km), floors climbed (n) and minutes in sedentary, light, moderate and vigorous activity. Questionnaires measured psychological distress (Kessler-10), anxiety (Generalised Anxiety Disorder scale-7) and depressive symptoms (Patient Health Questionnaire-9). Linear mixed models determined within-group change over time. Spearman rank correlation coefficients examined associations between change scores over 8-weeks. RESULTS: From baseline to 8-week follow-up, floors climbed increased 38% (mean change [95%CI]: 2.8 [0.0, 5.5], P=0.047) and minutes sedentary increased 9% (66.9 [20.8, 133.0], P=0.004). We found no change in daily steps, distance travelled, or minutes spent lightly, moderately, or vigorously active. Reducing sedentary time was associated with reduced depressive symptoms (rs=0.350, P=0.043), similarly increasing time spent in vigorous activity was associated with reduced psychological distress (rs=0.346, P=0.045). CONCLUSION: Changes in activity were mixed, however vigorous physical activity and reduced sedentary time were associated with improved mental health in adults with psychological distress participating in a lifestyle therapy intervention for depression. Future investigations should seek to quantify minimum changes required to benefit mental health in this vulnerable population.

#370

TITLE: THRIVING IN MOTION – YOUTH MOVES: MOVEMENT FOR TRANS AND GENDER DIVERSE YOUNG FOLK

AUTHORS: Mrs Felicity Austin[1,2,3], Dr Kemi Wright[1,4], Benjamin Quick[1], Greta Edwards[1], Kayleen Russell[1], Benjamin Kramer[1,2], A/Prof Bonnie Furzer[1,2]

Affiliations: [1]Thriving Exercise Rehabilitation Inc, Perth, Western Australia, [2]School of Human Sciences (Exercise & Sport Science), University of Western Australia, Perth, Western Australia, [3]Telethon Kids Institute, Perth, Western Australia, [4]School of Health Sciences, The University of New South Wales, Sydney, Australia

First author's contact: felicity@thrivinginmotion.org

CASE SETTING: Gender diverse young people have lower rates of exercise, and higher rates of mental and physical health challenges, perpetuated by a lack of trans-friendly physical activity providers and environments. Our collaborative project aimed to create and support community-based exercise opportunities for trans and gender diverse young people (15-25yrs) to increase participation and improve their physical and mental health outcomes. Alongside feasibility data from 18 months delivery, two case studies will be presented (23 yrs non-binary individual, presenting with disordered eating and exercise, neurodivergence and mental illness; 18yrs transfeminine presenting with neurodivergence and participation barriers). APPROACH AND TREATMENT: Through targeted community collaboration with young people and multidisciplinary support services, a supportive and inclusive structured exercise program was created. Specifically, we delivered and evaluated the feasibility of the exercise program for gender diverse young people; and educated the wider exercise and health community on inclusive exercise practices. RESULTS: Forty-six gender diverse young people participated across the delivery of 11 x 8-10 week programs in 5 Perth metro locations, totalling 4518 exercise therapy hours. On average 100% of participants reported a score higher than 3/5 for program enjoyment, 79% of participants reported a score higher than 3/5 for motivation to return. Participants on average increased weekly physical activity participation by 50% since commencing the program, and 100% of participants would recommend the program to other trans peers. REFLECTIONS/LEARNINGS: In WA, the absence of exercise opportunities for gender diverse young people prompted our tailored program. We prioritized inclusivity, safety, and participant-specific needs. Our proactive approach included health screenings, upskilling staff, and encouraging a supportive environment. Listening to participant expectations, involving a Youth Advisory Group, and engaging a Youth Engagement Officer proved vital for program success. Our reflections incorporate the significance of tailored, inclusive programs and community involvement in fostering active, safe spaces.

#371

TITLE: THRIVING IN MOTION – YOUTH MOVES: MOVEMENT FOR YOUTH MENTAL HEALTH PROGRAM

AUTHORS: Mrs Felicity Austin[1,2,3], Dr Kemi Wright[1,,4], Greta Edwards[1], Kayleen Russell[1], Ashley ALMARJAWI[1], A/Prof Bonnie Furzer[1,2]

Affiliations: [1]Thriving Exercise Rehabilitation Inc, Perth, Western Australia, [2]School of Human Sciences (Exercise & Sport Science), University of Western Australia, Perth, Western Australia, [3]Telethon Kids Institute, Perth, Western Australia, [4]School of Health Sciences, The University of New South Wales, Sydney, Australia

First author's contact: felicity@thrivinginmotion.org

CASE SETTING: A Western Australia community exercise initiative supporting vulnerable youth experiencing poor mental health. Led by professionals and peers, our program offers a non-judgmental space for exercise and education, addressing discrimination, isolation, and service access barriers. Addressing a lack of physical activity options for at-risk groups, the program targets individuals affected or at risk of mental health disorders, recognizing that a quarter of youth face such challenges. TREATMENT: An 8-week evidence-based program integrating mixed movement and education in alternative or education support settings. Tailored for at risk youth, the goal is to directly improve mental and physical health literacy, and social outcomes of participants through diverse exercise opportunities to manage and maintain thriving mental health. Specifically, we delivered and evaluated the feasibility of the program for at risk youth. RESULTS: Since 2022, Thriving has delivered 43 8-week programs directly impacting 855 vulnerable youth in various metro (13) and regional (2) Western Australian locations, totalling 20, 860 exercise therapy hours. Forty-two collaborative partnerships and 15 staff have been involved in delivery. On average 85% of participants reported a score higher than 3/5 for program enjoyment, 80% of participants reported a score higher than 3/5 for motivation to return. REFLECTIONS/LEARNINGS: Despite the abundance of community-based exercise and sporting organizations, a significant gap exists in their ability to address the needs of vulnerable youth, stemming from insufficient specialized skills and training. Informed by the achievements and insights of prior collaborations and projects, our program focuses on establishing inclusive activity environments for youth in low participation groups. Building on successful community relationships, we strive to encourage disengaged youth, allies, friends and families by offering tailored opportunities and pathways for meaningful exercise participation.

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#372

TITLE: HOW DO PEOPLE WITH CHRONIC LOW BACK PAIN PERCEIVE SPECIFIC AND GENERAL EXERCISE?

AUTHORS: Dr Mitchell T. Gibbs[1,2], Matthew D Jones[2,3], Mr Andrew Natoli[4], Mr Brendan Mouatt[5], Ms Emily Walker[4]

Affiliations: [1]School of Health Sciences, University of New South Wales, Sydney, NSW, Australia, [2]Centre for Pain IMPACT, Neuroscience Research Australia, Sydney, Australia, [3]School of Health Sciences, Faculty of Medicine and Health, UNSW Sydney, Australia, [4]University of New South Wales, [5]University of South Australia

First author's contact: mitchell.gibbs@unsw.edu.au

INTRODUCTION & AIMS: Exercise prescriptions for chronic low back pain (CLBP) often utilize reductionistic, trunk-focused exercise aimed at addressing proposed pain mechanisms. It is unknown if the use of these trunk focussed exercises imply beliefs to people with CLBP about the rationale for their use (e.g., aetiology), even without concurrent biomedical narratives. This study aimed to explore people's perceptions of specific and general exercise without an accompanying narrative when experiencing CLBP. METHODS: An anonymous online survey was distributed. Mixed methods were utilised for analysis. Six-point Likert scales categorised people's beliefs about individual exercises. Open-ended questions were used to gather further beliefs which were then coded into themes. RESULTS: 109 people with CLBP perceived specific exercise as more beneficial than general exercise. Eight themes and five sub-themes were defined. A high volume of positive beliefs were centred around strengthening the low back and abdominal musculature, emphasising the importance of correct technique. Negative beliefs were held against spinal flexion and external load. Both positive and negative beliefs were underpinned by spinal/pelvic stability being important as well as certain exercises being achievable or not. CONCLUSION: This study demonstrated that people with CLBP consider specific exercises to be more beneficial than general exercises for CLBP. Specific exercises irrespective of an accompanying narrative can imply meaning about the intent of an exercise. Understanding this requires practitioners to be mindful when prescribing and communicating exercise.

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#373

TITLE: PERIPHERAL AND CENTRAL DEMANDS OF REPEATED-SPRINT EXERCISE WITH CONTINUOUS BLOOD FLOW RESTRICTION FOR TEAM-SPORT PLAYERS

AUTHORS: Mr James Mckee[1], A/Prof. Olivier Girard[2], Professor Jeremiah Peiffer[1,3], Associate Professor Alasdair R. Dempsey4,5, Miss Kirsten Smedley[1,6], Associate Professor Brendan Scott[1,3]

Affiliations: [1]Murdoch Applied Sports Science Laboratory, Discipline of Exercise Science, Murdoch University, Perth, WA, Australia, [2]School of Human Sciences (Exercise and Sport Science), The University of Western Australia, Perth, WA, Australia, [3]Centre for Healthy Ageing, Health Futures Institute, Murdoch University, Perth, WA, Australia, [4]Centre for Molecular Medicine and Innovative Therapeutics, Health Futures Institute, Murdoch University, Murdoch, WA, Australia, [5]Discipline of Exercise Science, School of Allied Health, Murdoch University, Murdoch, WA, Australia, [6]School of Medical, Molecular and Forensic Sciences, Murdoch University, Perth, WA, Australia

First author's contact: jamesmckee10@hotmail.com

INTRODUCTION & AIMS: Team-sport players' repeated-sprint ability improves following repeated-sprint training with systemic hypoxia (reduced fraction of inspired oxygen) through enhanced metabolic demands compared to sea-level training. Localised hypoxia (i.e., blood flow restriction; BFR) presents a limb-specific alternative strategy, though central and peripheral demands during multiple-set repeated-sprint BFR exercise have not been quantified for team-sport players. Therefore, this study aimed to assess the impact of BFR during repeated-sprint exercise on performance, metabolic, neuromuscular, and perceptual responses for team-sport players. METHODS: Twenty-six semi-professional and amateur team-sport players performed cycling repeated-sprint exercise (three sets of five 5-second sprints with 25 seconds of passive recovery) with continuous BFR at 45% arterial occlusion pressure or without. Power output, vastus lateralis muscle oxygenation, and cardiorespiratory responses were continuously monitored. Surface electromyography examined vastus lateralis, biceps femoris, and lateral gastrocnemius activation, and root mean square was calculated over eight consecutive cycle revolutions. Exercise-related sensations and blood lactate concentration were assessed following sets. Linear mixed models compared differences in dependent variable means between conditions and sets or repetitions. RESULTS: Mean, peak power output, and oxygen consumption decreased ($p < .01$) with BFR (-5.0%, -4.5%, and -6.3%, respectively) compared to without. Vastus lateralis tissue saturation index reduced ($p < .001$) during sprints and recovery periods for BFR (-6.9% and -5.9%, respectively). Electromyography root mean square decreased ($p < .01$) for biceps femoris and lateral gastrocnemius muscles with BFR (-2.8% and -8.9%, respectively), but remained unchanged for the vastus lateralis. Perceived limb discomfort increased ($p < .001$) for BFR, though blood lactate concentration and rating of perceived exertion did not differ between conditions ($p > .05$). CONCLUSION: Repeated-sprint exercise with BFR for team-sport players reduced performance and likely increased the physiological and perceptual stimulus for the periphery with greater reliance on anaerobic glycolysis, despite comparable or decreased central demands.

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#374

TITLE: EFFECT OF PRE-EXERCISE EDUCATION ON PAIN RESPONSES TO A SINGLE EXERCISE SESSION IN PEOPLE WITH KNEE OSTEOARTHRITIS: A RANDOMISED CONTROLLED TRIAL

AUTHORS: Matthew D Jones[1,2], Mr Adrian Ram[3], Dr Mitchell T. Gibbs[2,3], A/Prof Jeanette Thom[3,4], Dr John Booth[3], Ms Laura Cooke[5], Mr Alexandre Kovats[3], Mr Darryl Ser Foong Ho[5], G Pramod Ram[5]

Affiliations: [1]School of Health Sciences, Faculty of Medicine and Health, UNSW Sydney, Australia, [2]Centre for Pain IMPACT, Neuroscience Research Australia, Sydney, Australia, [3]School of Health Sciences, University of New South Wales, Sydney, NSW, Australia, [4]Discipline of Exercise and Sport Science, Sydney School of Health Sciences, Faculty of Medicine and Health, The University of Sydney, Camperdown, NSW, Australia, [5]School of Clinical Medicine, University of New South Wales, Sydney, NSW, Australia

First author's contact: matthew.jones@unsw.edu.au

INTRODUCTION & AIMS: In pain-free individuals, pre-exercise education about exercise-induced hypoalgesia (EIH) reduces experimental pain following a single exercise session. However, its effect in people with chronic pain remains unexplored. This study aimed to determine if EIH education influences pain during and following exercise in people with knee osteoarthritis (OA). METHODS: Participants were randomised into an intervention group (INT) who received 15-minutes of explicit EIH education or a control group (CON) who received 15-minutes of general information about knee OA. Following education, participants' knowledge and beliefs about exercise and pain were assessed using five questions scored on a Likert scale. Participants then undertook a single 15-minute, low-moderate intensity home-based strength exercise session delivered online. Pain was assessed on a 0-10 scale before, during, and immediately following exercise. RESULTS: 40 people with knee OA (67 ± 10.8 years old; BMI: 27.6 ± 6.5) completed the study. Education did not significantly influence participants' knowledge or beliefs about exercise and pain. Pain reduced during exercise in both groups (mean difference [95% CI]; INT = -0.50 [-1.39 to 0.39]; CON = -1.58 [-2.55 to -0.62]), with a moderate effect (Cohen's d) in favour of CON (-1.08 [-2.35 to 0.18], d = 0.54). Pain also reduced following exercise in both groups (INT = -0.95 [-1.77 to -0.12]; CON = -0.98 [-1.74 to -0.22]), with no difference between groups (0.03 [-1.06 to 1.12], d = 0.02). CONCLUSION: A single exercise session reduces pain in people with knee OA, but this was not influenced by pre-exercise education about EIH. Given the chronic nature of OA pain, any intervention that can potentiate the benefits of exercise, even if marginal, may be beneficial. Therefore, further research is needed to understand if and how EIH can be modulated in people with knee OA.

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#375

TITLE: FOSTERING RECOVERY: A CASE STUDY ON THE JOURNEY FROM UNCERTAINTY TO DIAGNOSIS IN POST-COVID POTS

AUTHOR: Olivia Powrie[1]

Affiliation: [1]Chronic Conditions Services - West Moreton Health, Ipswich, Queensland, Australia

Author's contact: olivia.powrie@health.qld.gov.au

CASE SETTING: Imagine, one day you are an active 20-year-old, then after a COVID-19 infection, your life is now limited by debilitating symptoms: fainting, palpitations, and exercise intolerance. Your whole world has changed, and you have no diagnosis and no treatment options. This was reality for a patient referred to cardiac rehabilitation in early 2023 as a unique case, not meeting usual service criteria. TREATMENT: In the absence of a formal diagnosis, there was no clear pathway for treatment and no rehabilitation guidelines to follow. After a comprehensive assessment, marking the start of the road to recovery, a conservative and gradual approach to re-introducing exercise was developed, whereby progressions were only made when no symptoms were experienced during nor following the sessions. Across the next nine months, further symptoms were identified, prompting further research, which shaped a plausible diagnosis: Postural Orthostatic Tachycardia Syndrome (POTS). Whilst initially dismissed as a possibility by the patient's cardiologist, after further questioning, gaining objective data and referral to specialist physicians, this plausible diagnosis was confirmed. RESULTS: Through months of rehabilitation, lifestyle modifications and commencing medication, this patient has improved symptom control and increased activity tolerance. Importantly, this has allowed return to studying, return to part time work and return to tolerating daily activities. REFLECTIONS/LEARNINGS: As exercise physiologists, we often spend more time with patients than medical practitioners, and resultingly identify characteristics which may otherwise be missed in busy clinics. This case study acts as a reminder of the importance of trusting your instinct and not being afraid to advocate for patients - doing so may just re-direct them down the road to recovery. With the increasing prevalence of dysautonomia, particularly POTS, as consequences of COVID-19 infections, there is an ever-increasing need for awareness, in addition to clinician upskilling to ensure best support and management of these patients.

#376

TITLE: SAFETY, EFFICACY, AND IMPLEMENTATION OF HOME-BASED HIGH-INTENSITY INTERVAL TRAINING FOR PATIENTS WITH CARDIAC DISEASE: A SYSTEMATIC REVIEW

AUTHORS: Ms Rebecca Turnbull[1,2], Mr Dylan Perera[1], Dr Hazel Heng[1,2], Associate Professor Adam Semciw[1,2]

Affiliations: [1]Division of Allied Health, Northern Health, Epping, Victoria, Australia, [2]School of Allied Health, Latrobe University, Bundoora, Victoria, Australia

First author's contact: rebecca.turnbull@nh.org.au

INTRODUCTION & AIMS: High-intensity interval training (HIIT) is safe and more effective than moderate-intensity continuous training for improving cardiorespiratory fitness in adults with cardiac disease. Home-based delivery of cardiac rehabilitation has been introduced to increase the uptake and participation of programs. The aim of this systematic review was to investigate the safety, efficacy, and implementation of home-based HIIT programs for patients with cardiac disease. METHODS: A systematic review of the literature was conducted in three electronic databases (MEDLINE, CINAHL and EMBASE) before 2nd October 2023. Studies were included if they were written in English, peer-reviewed and compared home-based HIIT to other centre-based or home-based exercise interventions. A secondary analysis investigating intervention safety, efficacy and implementation was conducted using the Reach, Effectiveness, Adoption, Implementation and Maintenance (RE-AIM) framework. RESULTS: Five studies, involving 153 participants (62 for home-based HIIT and 91 for other home-based or centre-based exercise interventions) were included in the analysis. There were no differences in functional capacity or quality of life (QOL) between home-based HIIT and other centre-based or home-based exercise interventions ($p > 0.05$). Across all the studies, the reporting rates were highest for program effectiveness (75%) and adoption (75%), followed by reach (70%), implementation (40%), and maintenance (10%). Adverse events were reported during the home-based HIIT intervention in two studies (3%). Participant attrition within home-based HIIT interventions was 8-12%. In studies where adherence to the home-based HIIT protocol was reported, this ranged between 36% and 85%. CONCLUSIONS: Home-based HIIT resulted in similar effects in functional capacity and QOL as other centre-based and home-based exercise interventions for patients with cardiac disease. HIIT in the home appears to be safe and effective, however adherence to the protocol varies. Further high-quality studies are needed to inform best practices for prescribing HIIT in the home.

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#377

TITLE: THE EFFECTS OF HYBRID FUNCTIONAL ELECTRICAL STIMULATION INTERVAL TRAINING ON AEROBIC FITNESS AND FATIGUE IN PEOPLE WITH ADVANCED MULTIPLE SCLEROSIS

AUTHORS: Ms Suzie Mate[1], Ms Megan Soutter[1], Ms Jana Liaros[1], Dr Daniel Hackett[1], Professor Michael Barnett[2,3], Prof Maria A. Fiatarone Singh AM[4,5], Dr Ché Fornusek[6],

Affiliations: [1]Sydney School of Health Sciences, Faculty of Medicine and Health, The University of Sydney, Sydney, NSW 2006, Australia, [2]Brain & Mind Centre, The University of Sydney, 94 Mallett St, Camperdown NSW 2050, Australia, [3]Royal Prince Alfred Hospital, 50 Missenden Rd, Camperdown NSW 2050, Australia, [4]Faculty of Medicine and Health, School of Health Sciences, the University of Sydney, Sydney, Australia., [5]Hinda and Arthur Marcus Institute for Aging Research, Hebrew SeniorLife, Boston, Massachusetts, USA., [6]The University of Sydney School of Health Sciences, Discipline of Exercise and Sport Science, Sydney, New South Wales, Australia

First author's contact: suzanne.mate@sydney.edu.au

INTRODUCTION & AIMS: Improving aerobic fitness in people with multiple sclerosis (MS) can reduce fatigue, and lower the risk of cardiovascular disease. Aerobic training can be challenging due to paresis, access to suitable equipment and fatigue. The aim was to investigate whether functional electrical stimulation (FES) cycling combined with arm crank interval exercise (hybrid FES interval training) is feasible for people with advanced MS, and its effects on aerobic fitness and fatigue. METHODS: Hybrid FES interval training was performed 2 d/wk for 12 weeks. Each session consisted of 40 minutes of continuous FES cycling with arm crank intervals of 30 seconds work/30 seconds rest added concurrently for 20 minutes. The intensity target was a minimum of 60% of arm crank power and 'hard' measured by rate of perceived exertion (RPE) on a scale of 6-20. Feasibility was measured by attendance, compliance to intensity and time targets, adverse events, and drop outs. Aerobic fitness was assessed by an arm crank maximal test. Fatigue was measured via the Modified Fatigue Impact Scale (MFIS). RESULTS: Seven participants (6 female; age 57.1±7.8y; Expanded Disability Status Scale 7.1±0.8) with advanced MS attended 80±10.4% of the scheduled sessions and there were no adverse events or drop outs. Average RPE at the end of each training session was 15±2, representing vigorous intensity exercise. Aerobic fitness did not change pre- to post-intervention [14.2±5.7 to 14.78±6.0 mL/kg/min (p=0.43)]. There was a trend towards a reduction in the MFIS score pre- to post-intervention [31.0±10.4 to 21.7±11.4 (p=0.10)]. CONCLUSION: Hybrid FES interval training is feasible for people with advanced MS who need exercise equipment appropriate for their condition, and can represent vigorous intensity exercise. The positive findings support the need for future randomized control trials that can assess the aerobic fitness changes and associated health benefits of hybrid FES interval training.

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#378

TITLE: THE SMALLEST WORTHWHILE EFFECT OF EXERCISE THERAPY FOR PEOPLE WITH CHRONIC LOW BACK PAIN: A DISCRETE CHOICE EXPERIMENT STUDY

AUTHORS: Mr Harrison Hansford[1,2], Matthew D Jones[2,3], Aidan G Cashin[2,3], Raymond WJG Ostelo[4,5], Alessandro Chiarotto[6], Sam A Williams[2], Saurab Sharma[2,3], Jack J Devonshire[2], Michael C Ferraro[2,3], Michael A Wewege[2,3], James H McAuley[2,3], John M Rose[7]

Affiliations: [1]School of Health Sciences, University of New South Wales, Sydney, Australia, [2]Centre for Pain IMPACT, Neuroscience Research Australia, Sydney, Australia, [3]School of Health Sciences, Faculty of Medicine and Health, UNSW Sydney, Australia, [4]Department of Health Sciences, Faculty of Science and Amsterdam Movement Science Research Institute, Vrije Universiteit, Amsterdam, The Netherlands, [5]Department of Epidemiology and Data Science, Amsterdam University Medical Centre, location Vrije Universiteit, Amsterdam Movement Sciences, The Netherlands, [6]Department of General Practice, Erasmus MC, University Medical Centre, Rotterdam, The Netherlands, [7]Neil Smith Research Chair in Sustainable Transport Futures, Institute of Transport and Logistics Studies, The University of Sydney Business School, Sydney, New South Wales 2006, Australia

First author's contact: h.hansford@unsw.edu.au

INTRODUCTION: Understanding the magnitude of treatment effect patients need to see to consider a treatment worthwhile is of clear clinical and research importance. Current measures of clinical importance, such as the minimum clinical important difference, are limited as they are not determined by patients, and do not reflect specific costs, risks or inconveniences of individual treatments, i.e. you could have the same MCID for surgery as for exercise. We aimed to identify the smallest worthwhile effect (SWE), a new measure of clinical importance, of exercise therapy for people with non-specific chronic low back pain (CLBP) using discrete choice experiment. METHODS: The SWE was estimated as the lowest reduction in pain that participants would consider exercising worthwhile, compared to not exercising i.e., effects due to natural history and other components (e.g., regression to the mean). We recruited English-speaking adults in Australia with non-specific CLBP to our online survey via email from a registry of previous participants and advertisements on social media. We used discrete choice experiment to estimate the SWE of exercise compared to no exercise for pain intensity. We analysed the discrete choice experiment using a mixed logit model, and mitigated hypothetical bias through certainty calibration, with sensitivity analyses performed with different certainty calibration thresholds. RESULTS: 213 participants completed the survey. Mean age (±SD) was 50.7±16.5, median (IQR) pain duration 10 years (5-20), and mean pain intensity (±SD) was 5.8±2.3 on a 0-10 numerical rating scale. For people with CLBP the SWE of exercise was a between-group reduction in pain of 20%, compared to no exercise. This means, for a baseline pain of 5, the SWE would be a 1/10 between-group reduction in pain. CONCLUSION: This patient-informed threshold of clinical importance should guide the interpretation of findings from randomised trials and meta-analyses of exercise therapy compared to no exercise.

#379

TITLE: FUNCTIONAL ELECTRICAL STIMULATION COMBINED WITH VOLUNTARY CYCLING ACCENTUATES VO2 RESPONSE IN PEOPLE WITH ADVANCED MULTIPLE SCLEROSIS: A PILOT STUDY

AUTHORS: Ms Suzie Mate[1], Dr Nicholas Corr[1,2], Dr Daniel Hackett[1], Professor Michael Barnett[3,4], Prof Maria A. Fiatarone Singh AM[5,6], Dr Ché Fornusek[1]

Affiliations: [1]Sydney School of Health Sciences, Faculty of Medicine and Health, The University of Sydney, Sydney, NSW 2006, Australia, [2]Sydney Medical School, Faculty of Medicine and Health, The University of Sydney, Sydney, NSW 2050 Australia, [3]Brain & Mind Centre, The University of Sydney, 94 Mallett St, Camperdown NSW 2050, Australia, [4]Royal Prince Alfred Hospital, 50 Missenden Rd, Camperdown NSW 2050, Australia, [5]Faculty of Medicine and Health, School of Health Sciences, the University of Sydney, Sydney, Australia., [6]Hinda and Arthur Marcus Institute for Aging Research, Hebrew SeniorLife, Boston, Massachusetts, USA

First author's contact: suzanne.mate@sydney.edu.au

INTRODUCTION & AIMS: Lower limb muscle weakness and reduced balance due to disease progression in multiple sclerosis (MS) may make robust aerobic exercise difficult. Functional electrical stimulation (FES) cycling combined with voluntary cycling may allow people with advanced MS to enhance the intensity of aerobic exercise. The aim of this study was to investigate the cardiorespiratory, power, and participant perceptions during acute bouts of FES cycling, voluntary cycling, and FES cycling combined with voluntary cycling (FES assist cycling). METHODS: Participants with advanced MS (Expanded Disability Status Scale [EDSS] ≥ 6.0) undertook three exercise trials on a leg cycle ergometer. Trial 1: 30 minutes of FES cycling; Trial 2: two 10-minute bouts of voluntary cycling separated by 10 minutes rest; and Trial 3: a combination of trials 1 and 2 (FES assist cycling). Outcome measures included VO2, cycle power output, heart rate, exertion, and post-exercise perceptions of fatigue. RESULTS: Ten people with advanced MS participated (9 female; age 52.4±9.98 y; EDSS 7.1±0.6). Average VO2 during the 30-minute trials was significantly higher for FES assist cycling compared to voluntary cycling (429.7 ± 111.0 vs 388.5 ± 101.0 mL/min, 95% CI 23.4 to 113.0 mL/min, p=0.01), with a large effect size (Hedges' g=1.04). Participants reported similar perceptions of exertion at the end of each trial (p=0.14). There was no difference in self-reported fatigue at the end of each trial (p=0.21). CONCLUSION: This study found FES assist cycling produced significantly higher VO2 values than voluntary cycling, although the clinical significance of these differences is unknown. Participants performed FES assist cycling at a self-reported levels of exertion consistent with moderate to vigorous intensity, however it was considered light-intensity exercise when expressed by METS. FES assist cycling was no more fatiguing post-exercise than the other modes.

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#381

TITLE: EXERCISE PROGRAM WITHIN ADULT PSYCHIATRIC INPATIENT SERVICES FOR THOSE WITH DISORDERED EATING

AUTHORS: Dr Kemi Wright[1], Dr Bonnie Furzer[2,3], Caleb McMahen[2,3], Jessica Luke[2], Brittany Herbert[2], Azam Edoo[2]

Affiliations: [1]School of Health Sciences, Discipline of Exercise Physiology, Faculty of Medicine and Health, The University of New South Wales (UNSW), Sydney, NSW, Australia, [2]Fremantle Hospital Mental Health Service, South Metropolitan Health Service, Perth, WA, Australia, [3]School of Human Sciences (Exercise & Sport Science), University of Western Australia, Perth, WA, Australia

First author's contact: kemi.wright@unsw.edu.au

INTRODUCTION & AIMS: Over one million Australians live with an eating disorder, with 40 – 80% reported to undertake dysfunctional exercise practices (e.g., compulsive exercise, exercise dependence). Dysfunctional exercise can be the first symptom to appear and the last symptom to resolved in eating disorder patients, with 41% of eating disorders patients relapsing into dysfunctional exercise patterns 4 to 9 months post inpatient treatment. We evaluated an accredited exercise physiology led program implemented for adult mental health inpatients with disordered eating and exercise behaviours to support patient outcomes and safe exercise participation. METHODS: Data was collected as part of service evaluation and included patient characteristics, session data (e.g., mood and enjoyment via Exercise Enjoyment Scale) and patient outcomes (e.g., Compulsive Exercise Test (CET); Exercise Dependence Scale (EDS-21)). Characteristics of the cohort was reported and compared to clinical cut-offs, along with program feasibility measures. RESULTS: Between Sep 2022 and Nov 2023, 20 female patients engaged in the program (mean age= 26 years). Of those 15 were diagnosed with Anorexia Nervosa, 16 with a co-occurring Personality Disorder and 9 with a Trauma Related Disorder. EDS-21 results showed 56% were symptomatic, and 33% exercise dependent, with 80% also presenting with suicidal ideation/self-harm. Across 137 service interactions, patients engaged 65% of the time, and 25% of the time deemed inappropriate. Pre-session mood was low (mean= -2.13 ± 1.46) with an average post-session mood improvement of + 4.46 Session enjoyment was high (mean=3.6±1.20) and no adverse events were recorded. CONCLUSIONS & IMPLICATIONS: Exercise supported by AEPs is safe for inpatients with disorder eating, with patients valuing engagement in services focused on supporting positive exercise relationships and behaviours. A tailored and evidence-based approach to exercise can improve acute mood of consumers.

#382

TITLE: DOES A SINGLE DAY OF EXERCISE SNACKING IMPROVE INSOMNIA SEVERITY AND SLEEP ARCHITECTURE IN INDIVIDUALS WITH SELF-REPORTED INSOMNIA?

AUTHORS: Dr Matthew Wallen[1], Ms Caitlin Schmidt1, Mr Ethan Ashworth1, Ms Hanna Dawood1, Ms Mary Simpfendorfer1, Ms Samara Hannouch1, Ms Chelsea Smith1, Mr Joseph Aloi1, Jack Manners2, Bastien Lechat2, Alexander Sweetman2, Andrew Vakulin2

Affiliations: [1]Caring Futures Institute, College of Nursing and Health Sciences, Flinders University, Bedford Park, AUSTRALIA, [2]Flinders Health and Medical Research Institute, College of Medicine and Public Health, Flinders University, Bedford Park, AUSTRALIA

First author's contact: matthew.wallen@flinders.edu.au

INTRODUCTION & AIMS: Regular exercise may reduce an individual's insomnia severity, but time constraints remain a significant barrier to participation. Exercise snacking, defined as short bouts of moderate-to-vigorous physical activity performed periodically during the day, shows potential to address time pressures for other chronic conditions. However, its effects on insomnia severity and sleep architecture are unknown. The aim of this study was to explore the impact of a single day of exercise snacking on insomnia severity and sleep architecture in individuals with self-reported insomnia symptoms. METHODS: Adults self-reporting insomnia symptoms were recruited to participate in a single-arm study. Participants completed a single-day exercise snacking protocol that included three sessions of 3 x 20 second 'all out' stair climbing efforts, separated by 1-4 hours. Self-reported insomnia severity was assessed at baseline and at 24-hours using the Insomnia Severity Index (ISI). Sleep architecture (sleep stages, time, and efficiency) was quantified during the night before, and immediately after the exercise protocol, via the Withings Sleep Analyzer. RESULTS: Fourteen adults aged (median [range]) 23 [19-34] years at baseline, including 64% females, with a body mass index of (mean ± SD) 24.4 ± 5.0 kg/m2, and an ISI score of 15.4 ± 3.2, were recruited. Twelve participants completed all testing timepoints. Adherence to the protocol was 93%. Compared to baseline, there was a significant reduction in the ISI at 24-hours (baseline mean: 15.2, 95% CI 12.8-17.7; 24-hours: 11.4, 95% CI 9.0-13.8; p = 0.001, Cohen's d = -1.21). No significant changes were found for sleep architecture outcomes including sleep stages, time, or efficiency. CONCLUSION: A single day of exercise snacking improves acute insomnia severity symptoms, but not objectively measured sleep architecture, in adults with self-reported insomnia symptoms. A randomised controlled trial with an extended follow-up period and wider age range of participants is required.

#383

TITLE: CALL FOR ACTION: GUIDELINES FOR PHYSICAL ACTIVITY BASED INTERVENTIONS IN ADDICTION

AUTHORS: Mrs Kirrily Gould[1], Dr Rhiannon Dowla[2]

Affiliations: [1]St John of God Health Care Richmond Hospital, North Richmond, NSW, Australia, [2]Faculty of Medicine and Health, Susan Wakil Health Building, University of Sydney, Sydney, Australia

First author's contact: kirrily.l.gould@gmail.com

With the evidence supporting the extensive benefits of exercise for people experiencing substance use disorders (SUD) rapidly growing, the demand for clinical exercise interventions in SUD services is expanding through Australia. However, at present there are no clear safety considerations or guidelines specific to SUD, leaving exercise physiologists falling to broader guidelines when working with SUD, often using those developed for severe mental illness (SMI). When working with SUD, many considerations differ to those being treated with SMI. This includes differences in the common comorbidities seen in SUD compared to SMI, as well as considerations relating to withdrawal and craving management. Furthermore, the different impacts and considerations of each substance class in relation to exercise needs to be elucidated. Therefore, standardised safety considerations and contraindications need to be developed to allow Exercise Physiologists to provide safe and effective interventions for those in the withdrawal and recovery phase of SUD. This call for action proposes the development of a multidisciplinary informed clinical exercise guideline for safety protocols, considerations and contraindications for physical activity-based interventions within substance use disorder treatment.

#384

TITLE: CAN AN INTERVAL-BASED RUNNING EXERCISE INTERVENTION IMPROVE LUMBAR INTERVERTEBRAL DISC HEALTH? THE ASTEROID RANDOMISED CONTROL TRIAL.

AUTHORS: Claire L Samanna[1], Christopher Neason[1], Scott Tagliaferri[2,3], Daniel Belavy[4], A/Prof Steven J Bowe[5], Matthew Clarkson[6], A/Prof Daniel Connell[7], Ms Emma A Craige[8], Romina Gollan[9], Luana C Main[9], Clint Miller[9], Ulrike Mitchell[10], Niamh Mundell[9], David Scott[9,11], Jamie L Tait[9], Grace E Vincent[8], Patrick Owen[1,12]

Affiliations: [1]Eastern Health Clinical School, Monash University, Melbourne, Victoria, Australia; [2]Orygen, Parkville, Victoria, Australia; [3]Centre for Youth Mental Health, University of Melbourne, Melbourne, Victoria, Australia; [4]Hochschule für Gesundheit (University of Applied Sciences), Department of Applied Health Sciences, Division of Physiotherapy, Gesundheitscampus 6-8, 44801, Bochum, Germany; [5]School of Health, Wellington Faculty of Health, Victoria University of Wellington, Wellington, New Zealand; [6]Institute for Health and Sport, Victoria University, Melbourne, Victoria, Australia; [7]Imaging @ Olympic Park, Melbourne, VIC 3004, Australia; [8]Central Queensland University, Rockhampton, Queensland, Australia; [9]Institute for Physical Activity and Nutrition, School of Exercise and Nutrition Sciences, Deakin University, Geelong, Victoria, Australia; [10]Department of Exercise Sciences, Brigham Young University, Provo, Utah, United States of America; [11]School of Clinical Sciences at Monash Health, Monash University, Clayton, Victoria, Australia; [12]Eastern Health Emergency Medicine Program, Melbourne, Victoria, Australia

First author contact: clairesama24@gmail.com

BACKGROUND AND AIMS: Low back pain is the leading cause of global disability, with lumbar disc pathologies estimated to contribute to up to 40% of cases. Exercise training is an established treatment to reduce pain intensity and disability in individuals with low back pain; however, the effect of exercise training on intervertebral discs is unknown. Cross-sectional studies have shown that endurance running (>50km per week) is associated with healthier intervertebral discs, as evidenced by greater T2-relaxation (hydration) and intervertebral disc height. However, no studies have explored the relationship between running and disc health prospectively. This study aims to examine the impact of a 12-week progressive run-walk exercise intervention on intervertebral disc health in individuals with chronic low back pain. METHODS: Forty individuals with non-specific low back pain were enrolled in a 12-week parallel randomised control trial and allocated to either a digitally-delivered progressive run-walk interval exercise intervention (supervised by an accredited exercise physiologist) or waitlist control. All participants underwent magnetic resonance imaging at baseline, 6 and 12 weeks to examine intervertebral disc health (e.g. T2-relaxation, intervertebral disc height, Pfirrmann grade). RESULTS: Thirty-nine participants (20 intervention and 19 waitlist control; mean [SD] age: 33 [6] years, female: 50%) underwent MRI at baseline, 6 and 12 weeks. At baseline, intervertebral disc outcomes were no different in either group (T2-relaxation[ms] mean[SD]:81.07[6.61] and 85.11[9.33]; p=0.939, height[mm] mean[SD]: 8.77[0.87] and 9.03[0.90]; p=0.819, respectively). Six and 12-week outcomes are currently being analysed and results will be available for presentation at the conference. CONCLUSION: This randomised control trial will provide world-first evidence on the effects of a progressive run-walk exercise intervention on lumbar intervertebral disc health in adults with non-specific chronic low back pain. Should this intervention prove effective, findings will have marked implications for current guidelines and clinical management of this debilitating chronic condition.

#385

TITLE: ENGAGE: COMMUNITY – A STUDENT LED, TELEHEALTH EXERCISE PHYSIOLOGY SERVICE DELIVERY MODEL TO COMBAT SOCIAL ISOLATION IN OLDER ADULTS

AUTHORS: Dr Nattai Borges[1,2,3], Ms Brishna Shah[2,4], Professor Michael Nilsson[2,5], Dr Kemi Wright[6], Dr Mitchell Smith[3], Professor Frederick Rohan Walker[2,5]

Affiliations: [1]Department of Exercise Physiology, School of Health Sciences, University of New South Wales, Sydney, Australia, [2]Centre for Rehab Innovations, College of Health, Medicine, and Wellbeing, University of Newcastle, Newcastle, Australia, [3]School of Biomedical Sciences and Pharmacy, College of Health, Medicine, and Wellbeing, University of Newcastle, Newcastle, Australia, [4]School of Health Sciences, Faculty of Medicine and Health, University of New South Wales, Sydney, Australia, [5]Hunter Medical Research Institute, New Lambton Heights, Australia, [6]School of Health Sciences, Discipline of Exercise Physiology, Faculty of Medicine and Health, The University of New South Wales (UNSW), Sydney, NSW, Australia

First author contact: nattai.borges@unsw.edu.au

BACKGROUND and AIMS: EngAGE: Community is a student-led Exercise Physiology service delivery model that provides accessible, enjoyable and socially engaged exercise programs for older adults to combat loneliness. We aimed to assess the impact of EngAGE: Community on social, psychological, and quality of life outcomes in community-dwelling older adults, and student development.

METHODS: EngAGE: Community was a 15-week telehealth group-exercise program that recruited community-dwelling older adults and student Exercise Physiology practitioners. Classes were supervised by an Accredited Exercise Physiologist. Each EngAGE session consisted of exercise, educational and community-developing activities. Participant survey outcomes for social and psychological health, and quality of life were collected online before and following the program. Student development outcomes were also collected online before and following the program.

RESULTS: Across four programs, 73 community participants and 15 student participants were recruited, providing 1042 community engagement hours and 900 student development hours. Of these, 45 community participants completed sufficient attendance for data inclusion, and 14 student datasets were included. Community participants reported significant improvements in social [UCLA Loneliness Scale ($p=0.001$), Social Anxiety and Phobias Scale ($p=0.007$)] and psychological health [Kessler-10 ($p=0.03$)], as well as quality of life [SF-12 ($p=0.02$) and Satisfaction with Life Scale ($p=0.05$)]. A subset of the population demonstrated significant improvements in lower ($p<0.001$) and upper body strength ($p=0.003$). Student practitioners reported significant improvements in Work Self-Efficacy ($p=0.002$), Confidence in Skills ($p=0.02$) and Work Readiness ($p=0.03$). Community participants (n=48) provided an 81-98% agree/strongly agree response to qualifying statements suggesting the program was enjoyable, educational, social, and beneficial for their wellbeing. The cost per practitioner contact minute for all EngAGE: Community rotations was calculated as $1.92 compared to $4.21 for usual care (45% saving).

CONCLUSION: EngAGE: Community is a viable and cost-effective telehealth strategy to improve older Australians social and psychological health while developing Exercise Physiology student practitioners.

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#386

TITLE: THE PHYSIOLOGICAL VALIDITY OF CRITICAL SPEED DERIVED FROM A 3-MINUTE ALL-OUT SWIM TEST.

AUTHORS: Miss Karla Bulte[1,2], Dr Lachlan Mitchell[2], Dr Rodney Siegel[2], Associate Professor Stuart Warmington[3], Dr Samantha Hoffmann[1]

Affiliations: [1]Centre for Sport Research / Institute for Physical Activity and Nutrition, Deakin University, Burwood, Victoria, Australia, [2]Victorian Institute of Sport, Albert Park, Victoria, Australia, [3]Institute for Physical Activity and Nutrition, Deakin University, Burwood, Victoria, Australia

First author's contact: karlabulte27@gmail.com

INTRODUCTION AND AIMS: The boundary between heavy and severe exercise domains is one of the most consistent predictors of swimming performance. The gold standard approach to assessing this physiological threshold (numerous 30-minute constant-load trials) is complex and time-consuming, leading practitioners to explore other methodologies, which has left coaches questioning the validity of testing outcomes and reducing testing implementation. The recent proposal of a modified 3-minute all-out swim test has produced reliable estimates of critical speed (CS), however the estimates have not been validated against physiological measures. The aim of this study was to establish the physiological validity of CS derived from the modified 3-minute all-out swim test in elite swimmers. METHODS: 16 elite swimmers completed a 3-minute test consisting of 12 maximal 25-m efforts separated by 5s of rest. CS was calculated as the average speed of the slowest two 25-m efforts from the last four completed. To identify MLSS, swimmers completed a 30-minute trial broken into 6 x 5-minute intervals. Blood lactate concentration collected at each interval determined the subsequent interval speed. Over two additional visits, participants completed a 30-minute constant speed trial – at 2% above and 2% below CS to determine the physiology surrounding CS. Statistical analyses were conducted to compare CS and MLSS and determine their association, and to compare physiological measures within the two constant load trials. RESULTS: MLSS and CS were not statistically different ($p>0.05$) and had a strong positive correlation ($r=0.98$). A physiological steady state was verified in the below CS trial ($p>0.05$). A physiological steady state was not obtained in the above CS trial ($p<0.05$). CONCLUSIONS: These findings suggest the modified 3-minute all-out swim test as a valid methodology to assess the CS of elite swimmers. Implementation of this methodology could enable critical insight into how athletes are adapting to training and contribute significantly to swimming talent identification.

#387

TITLE: EXERCISE IN ADULTS WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER: A SYSTEMATIC REVIEW

AUTHORS: Christopher Hanbury-Brown[1], Prof Maria A. Fiatarone Singh AM[1,2], Dr Michael Inskip[1,3], Dr Michelle Ogrodnik[4,5], Dr Jennifer Heisz[5], Dr Yorgi Mavros[1]

Affiliations: [1]Faculty of Medicine and Health, School of Health Sciences, the University of Sydney, Sydney, Australia., [2]Hinda and Arthur Marcus Institute for Aging Research, Hebrew SeniorLife, Boston, Massachusetts, USA., [3]College of Healthcare Sciences, James Cook University, Townsville, Australia., [4]Department of Kinesiology, McMaster University, Ontario, Canada, [5]Department of Kinesiology and Health Sciences, Faculty of Health, University of Waterloo, Ontario, Canada

First author's contact: christopher.hanbury-brown@sydney.edu.au

INTRODUCTION & AIMS: Attention-Deficit/Hyperactivity Disorder (ADHD) is one of the most common neurodevelopmental disorders in adults. Stimulant medications are first-line treatments, they have many side effects and do not address common comorbidities such as cardiometabolic disease, depression, and anxiety. Exercise, by contrast, not only improves ADHD symptoms in youth but effectively treats such comorbidities, making it a potentially valuable treatment option. However, exercise efficacy in adults with ADHD has not been systematically reviewed. Therefore, we aimed to summarise the results of acute exercise and training interventions on health-related outcomes for adults with ADHD, including ADHD symptoms, cognitive function, and psychological well-being. METHODS: Using PRISMA guidelines, fifteen databases were searched (including grey literature) on 27/08/2020, yielding 22,088 unique publications. Database alerts were created to capture additional studies (n= 2). Screening, data extraction, Risk of Bias and GRADE assessment was conducted by CEHB. RESULTS: Seven acute (6 cycling, 1 self-selected, 1 yoga) and 6 training studies (Yoga, Pilates, Kickboxing, Tai Chi, General Coordination, Group Circuit Class, Cycling) were included. Among acute studies, those reporting small-to-moderate improvements in cognitive function were characterised by longer duration exercise (>30 minutes), withholding ADHD medication before exercise, and using cohorts with clinician-confirmed ADHD diagnosis. Among the training studies, only one reported an improvement in cognition following Pilates when compared to an inactive control. It was longer (6 months vs. <8 weeks), prescribed progressive intensity and volume, and had high adherence compared to the non-significant trials. The certainty of evidence was low or very low for all outcomes. CONCLUSIONS: Overall, acute exercise may have a small positive effect on cognition in adults with ADHD; however, certainty of the evidence is low. Further research is needed to investigate the impact of different modalities, durations, and intensities of acute exercise and chronic exercise on adult ADHD.

#388

TITLE: LONG-TERM SPORT OR EXERCISE COMMENCED BEFORE 16 YEARS OF AGE REDUCES ADVERSE BODY COMPOSITION OUTCOMES IN CEREBRAL PALSY

AUTHORS: Dr Jennifer Fleeton[1], Dr Ché Fornusek[1], Dr Yorgi Mavros[2], Professor Ross Sanders[1]

Affiliations: [1]The University of Sydney School of Health Sciences, Discipline of Exercise and Sport Science, Sydney, New South Wales, Australia, [2]Faculty of Medicine and Health, Susan Wakil Health Building, University of Sydney, Sydney, Australia

First author's contact: jennifer.fleeton@sydney.edu.au

INTRODUCTION & AIMS: Bone mineral density (BMD) and appendicular lean mass (ALM) deficits are common in people with cerebral palsy (CP), increasing sarcopenia and osteoporosis risk, while sport/exercise participation before age 16 improves adult peak bone mass accretion. This study investigated the effects of high-level sport/exercise participation commenced before 16 years of age on body composition in ambulatory adults with CP. METHODS: Body composition was measured via dual-energy X-ray absorptiometry in a cross-sectional observational pilot study of 26 adults (m=19; f=7; GMFCS I-III) grouped via self-reported activity level into Low (<150 minutes moderate-vigorous activity weekly; n=10), Post-16 (active but commenced participation after 16; n=6), and Pre-16 (active and commenced participation before 16; n=10). Between-group Z-score differences were assessed via Kruskal-Wallis one-way ANOVA, with post-hoc comparisons via Mann-Whitney U-test. RESULTS: Whole body, spine and hip BMD Z-scores were significantly higher in Pre-16 (1.020 (0.639), 1.210 (1.102), and 0.450 (1.325), respectively) versus Low (-0.500 (0.715), -0.840 (0.957), and -1.020 (1.059), respectively) ($p<0.001$-0.008). Thirteen participants, including four competitive athletes, had low BMD, and 15, including eight athletes, had moderate-significant ALM deficits, versus age- and sex-specific reference populations. CONCLUSION: Ambulatory adults with CP who exceed physical activity guidelines and commenced participation before 16 years of age have higher BMD than those who are sedentary or commenced participation after 16 years. Sport and exercise across the lifespan are critical to ameliorate adverse body composition outcomes common in CP, however, some athletes remain at-risk and require targeted combined resistance training and dietary interventions in addition to sport training to address low ALM and BMD.

#389

TITLE: EXERCISE PHYSIOLOGIST-LED PAIN SCIENCE COACHING VIA TELEHEALTH IMPROVED PAIN AND FUNCTION IN LIFE INSURANCE CLAIMANTS: A PRAGMATIC COHORT STUDY

AUTHORS: Dr Vicky Phillips[1], Dr Niamh Mundell[2], Mr Chris Sinclair[1], Dr Patrick Owen[2,3]

Affiliations: [1]EXPHYS, Sydney, NSW, Australia, [2]Institute for Physical Activity and Nutrition, School of Exercise and Nutrition Sciences, Deakin University, Geelong, Victoria, Australia, [3]Eastern Health Emergency Medicine Program, Melbourne, Victoria, Australia

First author's contact: vicky.phillips@exphys.com.au

INTRODUCTION & AIMS: Personal injury and illness compensation claimants are more likely to experience persistent pain and poorer clinical/vocational outcomes than non-compensated clients. Evidence supports the effectiveness of pain science coaching to help people understand and re-train their pain system. This consequently reduces pain intensity, improves function and quality of life. However, the effectiveness of telehealth-delivered, exercise physiologist-led pain science coaching is yet to be evaluated. This study aimed to determine the effectiveness of an accredited exercise physiologist-led pain science coaching intervention via telehealth in Australian life insurance claimants. METHODS: This pragmatic cohort study included 1,275 claimants receiving a pain science coaching intervention supported by life insurance compensation. Ethics was approved via Deakin University Human Research Ethics Committee (2023-347). Outcome measures were pain intensity (11 item numerical pain rating scale, range: 0-10 points) and function (two 11-item patient-specific functional scale, range: 0-20 points). Linear mixed models determined within-group change over time. RESULTS: Clients (female: 75%, male: 25%) had a mean (SD) age of 50 (10) years (range: 20-69 years) and claim duration of 2 (2) years (range: 0-20 years). Mean (SD) intervention duration was 10 (6) weeks (range: 3-41 weeks), financial cost was A$1,149 (A$202; range: A$510-A$2,040) and included 5 (1) hours (range: 2-11 hours) of pain science coaching. Following the intervention, pain intensity decreased 25% (estimated marginal mean change [95%CI]: -1.49 [-1.59, -1.40] points, P<0.001) and function increased 76% (4.41 [4.21, 4.62] points, P<0.001). Changes surpassed established clinically meaningful effect thresholds for pain intensity (1.17 points) and function (2.6 points). Client Net Promotor Score was +60 (Australian Healthcare Index benchmark ≥ +30) and 91% were satisfied with the intervention. CONCLUSION: An exercise physiologist-led pain science coaching intervention resulted in clinically meaningful improvements in pain intensity and function in compensation claimants. Clients reported high satisfaction rates.

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#390

TITLE: THE EFFECTS OF MODERATE TO HIGH-LOAD RESISTANCE TRAINING WITH BLOOD FLOW RESTRICTION IN HEALTHY ADULTS: A SYSTEMATIC REVIEW

AUTHORS: Dr Isaac Selva Raj[1,2], Dr Kieran Marston[1,2], Mr James Mckee[3], Ms Kristen De Marco[2,3], Mr Michael Beere[3], Prof Ken Nosaka[4], Professor Jeremiah Peiffer[1,2], Dr Brook Galna[1,2], Brendan Scott[1,2]

Affiliations: [1]Murdoch Applied Sports Science Laboratory, Discipline of Exercise Science, School of Allied Health, Murdoch University, Perth, WA, Australia, [2]Centre for Healthy Ageing, Health Futures Institute, Murdoch University, Perth, WA, Australia, [3]School of Allied Health, Murdoch University, Perth, WA, Australia, [4]Edith Cowan University

First author's contact: Isaac.SelvaRaj@murdoch.edu.au

INTRODUCTION AND AIMS: Low-load resistance training (RT) with blood flow restriction (BFR; 20–40% of 1-repetition maximum [1RM]) increases muscle mass and strength comparably to unrestricted high-load RT. As healthy populations are not limited to low-loads, some researchers have also examined whether the adaptations to high-load RT could be enhanced with BFR, though results are inconsistent. Therefore, we conducted a systematic review to investigate whether moderate to high-load resistance training (M-HL RT) with BFR increases muscle mass or strength more than the equivalent training without BFR. METHODS: Studies involving M-HL RT (≥60% 1RM) with BFR applied during exercise sets or rest intervals were included. The following databases were searched: PubMed, Web of Science, Scopus, ScienceDirect, ProQuest Central, and Google Scholar. Two researchers independently screened the titles and abstracts for eligibility based on the inclusion and exclusion criteria. The full texts of included studies were then independently screened by two researchers. Conflicts were resolved by a third researcher. Following screening, study and participant characteristics, intervention protocol for each group and outcome measures were extracted for each included study. RESULT: Ten studies met the criteria for inclusion in this review. All included studies measured muscle strength, with only three reporting greater strength increases after M-HL RT with BFR compared to equivalent training without BFR. Five studies assessed muscle mass, with four reporting similar increases after M-HL RT with and without BFR. One observed a smaller increase in mass after M-HL RT with BFR than without. CONCLUSION: Most studies did not observe additional benefit of applying BFR during M-HL RT for muscle strength or mass. Studies which did report benefits of BFR may be limited by methodological issues, impacting the applicability of their findings. Overall, this review does not support using BFR during M-HL RT for additional improvements in muscle strength or mass.

#391

TITLE" UPRIGHT BIPEDAL EXERCISE TRAINING IMPROVES INTERVERTEBRAL DISC HEALTH: A SYSTEMATIC REVIEW AND META-ANALYSIS.

AUTHORS: Claire L Samanna[1], Patrick Owen[1,2], Ulrike Mitchell[3], Katja Ehrenbrusthoff[4], Tobias Saueressig[4], Eva Moreira4, Nitin K Arora[4], Niamh Mundell[5], Jamie L Tait[5], Lars Donath[6], Vera Karner[4], Daniel Belavy[4]

Affiliations: [1]Eastern Health Clinical School, Monash University, Melbourne, Victoria, Australia; [2]Eastern Health Emergency Medicine Program, Melbourne, Victoria, Australia; [3]Department of Exercise Sciences, Brigham Young University, Provo, Utah, United States of America; [4]Hochschule für Gesundheit (University of Applied Sciences), Department of Applied Health, Bochum, Germany; [5]Institute for Physical Activity and Nutrition, School of Exercise and Nutrition Sciences, Deakin University, Geelong, Victoria, Australia; [6]Deutsche Sporthochschule Köln, Cologne, Germany

First author's contact: clairesama24@gmail.com

INTRODUCTION & AIMS: The structure and function of human tissue, such as bone, muscle and tendon, can be improved with targeted exercise training. However, the effects of exercise training on intervertebral disc tissue has received comparably less attention. With a scope to identify types of exercise training that improve intervertebral disc health, this study examined the impact of historical exercise, sport and/or physical activity on quantitative intervertebral disc outcomes. METHODS: The protocol was prospectively registered with PROSPERO (CRD42022366391). Five databases (inception to 30th September 2022), 17 trial registries and reference lists and forwards/backwards citations were searched. Inclusion criteria followed the Participants (human), Exposure (exercise, sport or physical activity for greater than one week), Comparators (non-exercise, sport or physical activity control group), Outcomes (magnetic resonance imaging measures of lumbar intervertebral disc health on a continuous scale [e.g. T2, signal intensity, intervertebral disc height]) and Study design (any) framework. Pairwise random-effects restricted maximum likelihood meta-analysis estimated standardised mean difference (Hedges g). RESULTS: From the search yield of 2,150 records, 12 reports representing 10 studies (participants: 874) were deemed eligible. When compared to any comparator, upright bipedal exposures (g [95%CI]: 0.31 [0.06, 0.55]; P=0.014; studies: 6; participants: 346; I2: 87%), were associated with greater intervertebral disc health. However, no physical loading exposure (g [95%CI]: 0.29 [-0.23, 0.82]; P=0.275; studies: 10; participants: 874), non-upright/non-contact exposures (g [95%CI]: 0.70 [1.25, 2.64]; P=0.336; studies: 5; participants: 260), extreme trunk range of motion exposures (g [95%CI]: -0.28 [-1.60, 1.04]; P=0.456; studies: 3; participants: 230) and aerobic-based exposures (g [95%CI]: 0.48 [0.08, 1.04]; P=0.094) were associated. Sensitivity analyses supported the robustness of primary and secondary effect estimates. CONCLUSION: Greater intervertebral disc health associated with a prior history of upright bipedal physical loading indicates prospective interventions examining upright bipedal exercise effects on intervertebral disc health are warranted.

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#392

TITLE: EDUCATION FOR EXERCISE PROFESSIONALS, DELIVERED BY EXERCISE PROFESSIONALS: THE ACTIVE EDUCATION PROGRAM

AUTHORS: Miss Nicola Pithers[1], Miss Tijana Sharp[1,2]

Affiliations: [1]The Active Education Program, Sydney, NSW, Australia, [2]School of Sport, Exercise and Rehabilitation, University of Technology Sydney, Human Performance Research Centre, Moore Park, NSW, Australia

First author's contact: theactive.edu@gmail.com

CASE SETTING: Experience as director of a young exercise physiology clinic has facilitated extensive supervision of practicum students and graduates. This exposure has highlighted the inconsistent learning opportunities offered in pilates exercise prescription. This is alarming given the emergence of recent findings that suggest pilates is beneficial in the management of various pathologies. TREATMENT/ INTERVENTION: "The Active Education Program" was developed in January 2023 to facilitate structured learning opportunities for allied health students, graduates and professionals, particularly in the prescription and delivery of pilates based exercise. The courses involved in the program provide professional development in matwork, reformer, other studio equipment and rehabilitation based pilates exercise. Course participants receive a workbook and online exercise library for each course. The foundations and learning outcomes of this program are also embedded in a self-developed exercise science and physiology student placement strategy. Participants were asked to complete a survey on course completion pertaining to resource quality, experience and satisfaction. RESULTS: A total of 32 participants completed at least one course in 2023. The quality and volume of the online exercise library was rated as 'exceeding expectations' by 87.5% and 90.6% participants respectively. The majority of participants (93.8%) felt confident in their ability to prescribe and deliver a matwork pilates class following participation, while 84.4% felt the course provided a high value of contribution to their professional development. Finally, 100% of attendees felt they received enough feedback during the course. REFLECTIONS/ LEARNINGS: The Active Education Program has demonstrated high quality learning experiences and promoted industry readiness. Previous feedback has facilitated the refinement of content and delivery strategies for forthcoming courses. For example, future endeavours include offering an online delivery option to increase program reach. The program will continue to connect professionals and provide a network of support while providing a high quality of professional development.

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#393

TITLE: COMPARING EXERCISE AGAINST A PLACEBO FOR PAIN AND DISABILITY OUTCOMES IN MUSCULOSKELETAL CONDITIONS: A SYSTEMATIC REVIEW & META-ANALYSIS

AUTHORS: Isha Mishra[1,2], Harrison J Hansford[1,2], Sam A Williams[1,2], Jack J Devonshire[1,2], Michael C Ferraro[1,2], Yannick Gilanyi[1,2], ,Avi Goodman[1,2], Matthew D Jones[1,2] and James H McAuley[1,2]

Affiliations: [1]Neuroscience Research Australia, Sydney, New South Wales, Australia, [2]University of New South Wales, Sydney, New South Wales, Australia

First author's contact: isha.mishra0303@gmail.com

BACKGROUND: Musculoskeletal conditions are the leading cause of years lived with disability globally, with pain and disability being two of the most important patient-reported outcomes. Exercise is a commonly recommended treatment for musculoskeletal conditions, though it is unclear whether exercise outperforms sham for improving pain and disability. AIM: To determine if exercise improves pain and disability more than sham for people with musculoskeletal conditions. METHODS: We searched 5 databases and 3 clinical trial registers for randomised controlled trials comparing exercise against sham in people with a musculoskeletal condition. The co-primary outcomes were pain and disability. Data were analysed using random effects meta-analysis or narrative synthesis if < 5 studies were available to be pooled. The certainty of findings was assessed using the Grading of Recommendations, Assessment, Development and Evaluations tool. Data are presented as mean difference [95% CI], with a difference of >10/100 for pain and >14.5/68 for disability (WOMAC physical function sub-scale) considered clinically meaningful. RESULTS: Within the 15 included studies, all reported pain intensity and 13 reported disability. There was low certainty evidence that exercise was more efficacious than sham for lowering low back pain (-5.94 [-7.74, -4.15], n=1091), osteoarthritis pain (-6.19 [-14.36, 1.97], n=447) and osteoarthritis disability (-7.95 [-11.45, -4.46], n=211). Narrative synthesis showed varied effects of exercise versus sham on pain and disability in neck pain, as well as on disability in low back pain and other measures of disability in osteoarthritis. No studies were located for rheumatoid arthritis. CONCLUSION: Based on low certainty evidence from a limited number of studies, exercise may not cause clinically significant differences for pain and disability compared to sham in adults with osteoarthritis and back pain. Further research is needed to confirm this for low back pain and osteoarthritis and to extend the findings other musculoskeletal conditions.

#394

TITLE: THE ACUTE AND LONG-TERM EFFECTS OF REPEATED SUB-CONCUSSIVE IMPACTS ON MENTAL HEALTH OF ATHLETES: A NARRATIVE REVIEW

AUTHORS: Dr Caitlin Fox-Harding[1], Mr Troy White[1], Ms Tyler Taylor[1], Dr Kristina Kendall[1]

Affiliations: [1]School of Medical and Health Sciences, Edith Cowan University, Perth, Australia

First author's contact: c.foxharding@ecu.edu.au

INTRODUCTION & AIMS: Sub-concussive impacts—traumatic blows to the head that fail to present clinically as concussions—may be contributing factors that lead to long-term negative health consequences seen in athletes, including cognitive and emotional disturbances. The aim of this project is to consolidate the current body of literature examining the relationship between sub-concussive impacts and mental health in athletes via a narrative review examining the acute and long-term effects of sub-concussive impacts in athletes. METHODS: Two undergraduate research cadets assisted the research team with identifying and organizing relevant literature in the topic area. This systematic search was first conducted in April 2023 with a final search conducted in August 2023 using a combination of manual searching and databases (e.g., PubMed). Studies were saved and exported to Excel for further analysis. Inclusion criteria included the need for the study to have been conducted in an athletic population with mental health outcomes being surveyed as a result of concussion or sub-concussion head impacts. Components of the articles were documented in an Excel spreadsheet with considerations for year of publication, country of origin, study design, sport, and purpose of study. RESULTS: Fifty-seven studies were thoroughly reviewed via a full-text analysis to determine whether inclusion criteria were met. Six studies were included in the final review. Despite a consistent positive association between history of concussion and depression being identified, limited and inconsistent findings were observed in studies evaluating sub-concussive impacts. Definitions varied for what constituted a sub-concussive head injury, further diluting the availability of high-quality research in this topic area. CONCLUSION: This narrative review has identified a limited amount of research conducted on the impact of sub-concussive head injuries on the mental health of athletes. This warrants further investigation as the implications of concussion and sub-concussive head impacts continue to affect the lives of athletes everywhere.

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#395

TITLE: EXERCISE PHYSIOLOGY SERVICES FOR INPATIENTS IN AN ACUTE TRANSDIAGNOSTIC MENTAL HEALTH SERVICE

AUTHORS: Dr Kemi Wright[1], Dr Bonnie Furzer[2,3], Caleb McMahen[2,3], Jessica Luke[2], Brittany Herbert[2], Conor Boyd[2], Azam Edoo[2]

Affiliations: [1]School of Health Sciences, Discipline of Exercise Physiology, Faculty of Medicine and Health, The University of New South Wales (UNSW), Sydney, NSW, Australia, [2]Fremantle Hospital Mental Health Service, South Metropolitan Health Service, Perth, WA, Australia, [3]School of Human Sciences (Exercise & Sport Science), University of Western Australia, Perth, WA, Australia

First author's contact: kemi.wright@unsw.edu.au

BACKGROUND & AIMS: Exercise interventions are increasingly utilised in mental health services to mitigate the poor physical health and elevated health risks seen in mental illness. To-date much of the research has focused on specific diagnostic classifications, rather than the commonly occurring transdiagnostic presentation. We sought to determine the feasibility of exercise physiology services for inpatients in an acute, transdiagnostic mental health service and whether general affect changed following exercise sessions. METHODS: Data was collected from service records over a period spanning January 2020 – August 2022, and patient demographics and service information were explored. Additionally, a subset of inpatients (n= 108), reported perceptions of exercise and associations between variables were assessed between- and within-person. RESULTS: During the 32-month audit 371 inpatients engaged, mean age 36 years (SD=12.33, range = 18-69) and mean length of stay was 36 days (SD=45, range = 3-445). The most frequent principal diagnosis was Schizophrenia or other psychotic disorder (38.4%), with 72% of inpatients had multiple psychiatric diagnoses. Physical health comorbidity was common, with 56% of patients having physical health diagnoses, predominantly cardiometabolic diseases (n= 94). There were 1386 exercise service engagements, with patient engagement ranging from 1-36 exercise session during their stay, of which 98.7% were in the hospital gym. There was a significant positive change in affect, with exertion was not related to changes in affect, however those who exercised for greater than 30min saw larger positive changes in affect. CONCLUSION: Embedding Clinical Exercise Physiology services within mental healthcare settings can provide tailored exercise interventions for people with transdiagnostic presentations to address both physical and mental health outcomes. Participation in—and importantly, enjoyment of—exercise was linked to changes in general affect and may present a novel and important component of acute mood support for those in inpatient services.

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#396

TITLE: REAL-TIME HIP RANGE OF MOVEMENT MEASUREMENT IN TELEREHABILITATION; COMPARISON OF HUMAN POSE ESTIMATION TOOL, PHYSIOROM, VS 3D MOTION CAPTURE SYSTEM.

AUTHORS: Mr Ray Seaby[1,2], Dr Jay Ebert[1,3], Dr Brendan Joss[1,3], Dr Peter Edwards[2,4], Prof Tim Ackland[1]

Affiliations: [1]University of Western Australia, Perth, Western Australia, Australia, [2]Curtin University, Perth, Western Australia, Australia, [3]HFRC, Perth, Western Australia, Australia, [4]Orthopaedic Research Foundation of Western Australia, Claremont, Western Australia, Australia

First author's contact: rlseabs@gmail.com

INTRODUCTION AND AIMS: Telerehabilitation is widely acknowledged, but its adoption in musculoskeletal cohorts has been restricted due to challenges in accurately measuring objective parameters such as range of movement (ROM). This research assesses the accuracy of a human pose estimation tool utilising two-dimensional (2D) video (PhysioROM, Coviu) for evaluating active hip flexion and abduction ROM during common rehabilitation exercises, compared to three-dimensional (3D) motion capture. METHODS: Fifty participants (18 to 80 years) were recruited, each performing three common hip movements; standing hip flexion, standing hip abduction and a sit-to-stand. The motions were captured using the 12-camera, 3D Vicon motion capture system in conjunction with simultaneous 2D video, simulating a home telehealth consultation scenario. Joint kinematics were computed using either the Vicon Plug-in Gait model (3D Vicon) or the human pose estimation tool integrated into the PhysioROM algorithm (2D PhysioROM). RESULTS: No significant differences were observed in peak hip ROM measurements during the tasks undertaken. Mean peak hip flexion was 2.4° ($p=1.0$) less for 3D Vicon versus 2D PhysioROM in standing hip flexion, though 2.1° ($p=0.46$) greater during sit-to-stand movement. Hip abduction was 5.3° ($p< 0.001$) less for 3D Vicon versus 2D PhysioROM in standing hip abduction. Statistical parametric mapping revealed significant differences ($p<0.001$) in hip flexion between Vicon 3D and 2D PhysioROM for 32% of timepoints for both standing hip flexion and sit-to-stand movements, clustered around full hip extension. During standing hip abduction, significant differences ($p<0.001$) were found at 58% of timepoints clustered around neutral postures. Overall mean absolute deviation was 10.1°, 9.7° and 9.0° for hip flexion/extension, sit-to-stand, and hip abduction respectively. CONCLUSION: Validity of PhysioROM to accurately measure peak hip flexion and peak hip abduction was high. PhysioROM may provide an effective method of accurately and objectively quantifying hip movement during a telerehabilitation session using 2D video.

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#397

TITLE: TELEREHABILITATION ASSESSMENT OF KNEE RANGE OF MOVEMENT; COMPARISON OF HUMAN POSE ESTIMATION TOOL, PHYSIOROM, VS 3D MOTION CAPTURE SYSTEM.

AUTHORS: Mr Ray Seaby[1,2], Dr Jay Ebert[1,3], Dr Brendan Joss[1,3], Dr Peter Edwards[2,4], Prof Tim Ackland[1]

Affiliations: [1]University of Western Australia, Perth, Western Australia, Australia, [2]Curtin University, Perth, Western Australia, Australia, [3]HFRC, Perth, Western Australia, Australia, [4]Orthopaedic Research Foundation of Western Australia, Claremont, Western Australia, Australia

First author's contact: rlseabs@gmail.com

INTRODUCTION AND AIMS: Telerehabilitation is increasingly acknowledged, though uptake remains limited by an inability to accurately undertake objective measurement. This study sought to determine the validity of a human pose estimation tool (PhysioROM, Coviu) assessed via two-dimensional (2D) video to measure active knee flexion and extension movement during common rehabilitation exercises, versus gold-standard three-dimensional (3D) motion capture. METHODS: Fifty participants were recruited (aged 18 to 30), each performing three common knee rehabilitation exercises; sit-to-stand, seated and reclined active knee flexion. Movements were recorded using the 12-camera, 3D Vicon motion capture system simultaneously with 2D video simulating a home telehealth consultation. Joint kinematics were calculated using the Vicon Plug-in Gait model (3D Vicon) or the human pose estimation tool within the PhysioROM algorithm (2D PhysioROM). RESULTS: Mean peak knee flexion was 3.1°, 9.9° and 24.8° ($p<0.001$) greater for 3D Vicon versus 2D PhysioROM (sit-to-stand, seated flexion and reclined flexion, respectively). For peak knee extension, Vicon 3D was 2.4° and 1.93° greater than 2D PhysioROM in sit-to-stand ($p=0.020$) and seated flexion ($p< 0.001$), whilst 3.6° less than PhysioROM for reclined knee flexion ($p=0.030$). Statistical parametric mapping revealed significant differences between Vicon 3D and PhysioROM for 71% and 42% of timepoints ($p<0.001$) for seated and reclined movements, clustered around full knee flexion. Significant differences were also found at an additional 37% ($p<0.001$) of timepoints clustered around knee extension for reclined postures. Overall mean absolute deviation was 8.7°, 7.6° and 16.5° for sit-to-stand, seated flexion and reclined flexion, respectively. CONCLUSION: Validity of PhysioROM to accurately measure knee flexion was high, less so in extension, during sit-to stand movements in a seated posture. Measurement in a reclined position were less accurate. PhysioROM may provide an effective method of accurately and objectively quantifying knee movement during a telerehabilitation session using 2D video.

#398

TITLE: EXERCISE IS MEDICINE, BUT FOR WHAT? A MAPPING REVIEW OF PHYSICAL ACTIVITY RECOMMENDATIONS IN THE UK NICE CLINICAL GUIDELINES

AUTHORS: Matthew D Jones[1,2], Mr Avi Goodman[1,2], Mr Michael Ferraro[1,2], Mr Harrison Hansford[1,2], James H McAuley[1,2]

Affiliations: [1]School of Health Sciences, Faculty of Medicine and Health, UNSW Sydney, Australia, [2]Centre for Pain IMPACT, Neuroscience Research Australia, Sydney, Australia

First author's contact: matthew.jones@unsw.edu.au

INTRODUCTION & AIMS: Clinical guidelines are used to inform best practice care, with research evidence a key aspect informing guideline recommendations. Physical activity is recommended for the management of a large variety of health conditions; however, the conditions that physical activity is recommended for has not been synthesised, nor has the quality of the evidence that informs these guideline recommendations. METHODS: To understand the extent and type of evidence for physical activity recommendations across different health conditions in the UK National Institute for Health and Care Excellence (NICE) clinical guidelines. METHODS: NICE was searched for clinical guidelines that recommended physical activity in the management/treatment of a health condition. Data relating to the condition, guideline date, physical activity recommendation(s) (general or specific), and evidence underpinning the recommendations was extracted. Where applicable, recommendations for research, priorities for implementation, and impact of the recommendations was also extracted. RESULTS: 221 clinical guidelines were reviewed, of which 52 provided one or more physical activity recommendations and were included in the analysis. The guidelines covered a range of conditions including cardiovascular, mental health, metabolic, neurological, musculoskeletal, and others. Most guidelines (n=43) provided general physical activity recommendations (e.g. advice to be active) whereas only 9 provided specific recommendations (e.g. type and dose of physical activity). The evidence underpinning the physical activity recommendations in the guidelines was mixed but was mostly based on very low-moderate quality evidence. Despite this, few guidelines recommended further research around physical activity. CONCLUSION: Physical activity is recommended in many clinical guidelines, demonstrating its perceived importance for improving health across a wide range of different conditions. The mostly low-quality evidence on which these recommendations are based questions why more guidelines do not recommend further high-quality research into physical activity. This would improve confidence in the evidence and hence confidence in the recommendations made by the guidelines.

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#399

TITLE: EFFECTS OF PRE-MATCH TRAVEL AND TRAINING ON PHYSICAL AND TECHNICAL PERFORMANCE IN INTERNATIONAL FOOTBALL MATCHES.

AUTHORS: Ewan Clements[1,2], Fabian Ehrmann[2], Andrew Clark[2], Dr Mark Jones[2], Dr Alan McCall[1,2], Professor Rob Duffield[1,2]

Affiliations: [1]University of Technology Sydney, School of Sport, Exercise, and Rehabilitation, Ultimo, NSW, Australia, [2]Football Australia, Sydney, NSW, Australia

First author's contact: ewan.clements@hotmail.com

INTRODUCTION & AIMS: International footballers (soccer) are regularly required to travel directly from club to national team with only a few days to recover and prepare for matches. The combined stress of travel and training loads may therefore influence match performance. This research aims to examine the relationship of pre-match travel and in-camp training on ensuing physical and technical match performance of footballers competing for a national team. METHODS: Match running and technical performance data were obtained from 68 national team footballers competing in international matches (n=108). Match performance data was aligned with confirmed travel durations, time zone change, travel direction, and the time between arrival and kick-off for travel into the match. Additionally, in-camp training loads for GPS for the 3 days prior to national team matches were also collated. Linear mixed models assessed relationships between travel and training measures with physical and technical match performance outcomes. RESULTS: Travel variables explained little variance in outcomes (R2=0.02-0.16). Travelling eastward was associated with an increase in total (p=0.042) and very high-speed distance (p=0.030) in matches and a 5% decrease in pass accuracy (p=0.012). Greater time zone difference was associated with increased match decelerations (p=0.027), while arriving earlier for matches was associated with decreased total tackles (p=0.041). Increases in training high-speed distance were associated with increases in match high-speed distance (p=0.004) and number of decelerations (p<0.001). An increase in training total distance was associated with a decrease in match decelerations (p=0.002). CONCLUSIONS: Pre-match travel appeared to have minimal effects on physical and technical performance in this national team, especially given most players arrived at least 40h prior to matches. Training loads prior to matches may have some relationship with match running performance and thus readiness to train should be a priority for athletes arriving in national team camps.

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#400

TITLE: IT'S NEVER TOO LATE TO START: A CASE FOR PREVENTATIVE OUTPATIENT GERIATRIC SERVICES

AUTHORS: Ms Tess Hawkins[1], Ms Ella Cooper[1], Ms Kate Williamson[1], Ms Taylah Pepper[1], A/Prof John Cullen[1,2], A/Prof Louise Waite[1,2]

Affiliations: [1]Centre for STRONG Medicine, Concord Hospital, Sydney, New South Wales, Australia., [2]Centre for Education and Research on Ageing, The University of Sydney and Concord Hospital, Sydney, New South Wales, Australia

First author's contact: tess.hawkins@health.nsw.gov.au

INTRODUCTION & AIMS: The population is ageing and the chronic disease burden growing, seeing more older adults present to hospital with preventable non-communicable diseases. Multidisciplinary outpatient teams are well placed to manage modifiable risk factors to prevent disease progression and hospitalisations. A preventative service was launched at Concord Hospital integrating geriatrician, exercise physiologist and dietitian care to optimise the physical and mental health of older adults with chronic disease and frailty. This evaluation aims to determine the success of service implementation and feasibility of the model. METHODS: Between November 2022 and June 2023, 59 patients (mean age 80.2 years (SD 6.2), 47.5% female) completed 12-weeks of concurrent exercise and diet interventions with medical oversight. Patients were assessed pre- and post-interventions. Exercise was individualised and multimodal, performed twice weekly in a supervised group. Diet was individualised with a protein supplement prescribed as appropriate. The outcomes measured were Fried Frailty Phenotype (FFP), leg strength (one repetition maximum leg press), Short Physical Performance Battery (SPPB), Geriatric Depression Scale Short Form (GDS), and Mini Nutritional Assessment Long Form (MNA). Service activity was measured monthly via rate of referral and occasions of service (OOS). Data were analysed using JASP (v.0.18.1). RESULTS: Monthly rate of referral and OOS increased from 18 to 51 patients and 49 to 479 occasions respectively, indicating service demand. After 12-weeks there were significant improvements in FFP (mean difference [95%CI] -0.4 [-0.7, -0.2] points), leg strength (34.0 [27.1, 40.8] kilograms), SPPB (1.1 [0.8, 1.5] points), GDS (-1.4 [-2.2, -0.6] points) and MNA (2.6 [1.6, 3.5] points), with no effect of sex observed. CONCLUSION: Initial implementation of a preventative outpatient geriatric service was successful with increasing service demand and significant physical and mental health improvements. The service model is feasible; however, further evaluation is required to determine outcomes after continued service provision.

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#401

TITLE: THE EFFECTIVENESS OF PROGRESSIVE RESISTANCE TRAINING IN MANAGING PROGRESSIVE SUPRANUCLEAR PALSY: A CASE STUDY

AUTHORS: Ms Tess Hawkins[1], Ms Ella Cooper[1], Ms Kate Williamson[1], Ms Taylah Pepper[1], A/Prof John Cullen[1,2], A/Prof Louise Waite[1,2]

Affiliations: [1]Centre for STRONG Medicine, Concord Hospital, Sydney, New South Wales, Australia., [2]Centre for Education and Research on Ageing, The University of Sydney and Concord Hospital, Sydney, New South Wales, Australia

Second author's contact: ella.cooper@health.nsw.gov.au

SETTING: The Centre for STRONG Medicine is an outpatient multidisciplinary geriatric service at Concord Hospital, Sydney. An 82-year-old male with a primary diagnosis of Progressive Supranuclear Palsy (PSP) with cardiac and metabolic comorbidities was referred in March 2023. PSP is a rare neurological disorder that affects gait, balance, vision, and cognition. The participant mobilised with a rollator and had previously sustained vertebral and wrist fractures secondary to falls. MANAGEMENT: Management was to use progressive resistance training (PRT) to combat mobility decline, prevent falls and provide education to encourage independent exercise. Initial assessment determined current health status using Falls Self Efficacy Scale (FSE-I) and Fried Frailty Phenotype (FFP) questionnaires, and measured function and strength using maximal gait speed, five times sit-to-stand (5xSTS) and one repetition maximum (1RM), respectively. FSE-I determined a high fear of falling and FFP determined frail classification. Outcomes informed the PRT exercise prescription targeting the major muscle groups for 2-3 sets of 7-9 repetitions at 70-85% 1RM progressed gradually and preformed twice weekly in a supervised group. Education regarding breathing, exercise tempo, rest, progression, and risk mitigation were provided. All outcomes were reassessed after 12-weeks of training. RESULTS: Attendance was 100% (23 sessions) with improvement in all outcomes. Functional improvements included 0.25metres/second increase in maximal gait speed, 2.5 second reduction in 5xSTS, and safe mobilisation without a rollator. Strength improvements included 101% increase in 1RM leg press, 100% increase in 1RM triceps extension and 72% increase in 1RM seated row. Frailty status improved to pre-frail and fear of falling reduced. Self-reported improvements included increased steadiness and confidence exercising unsupervised. DISCUSSION: Although PSP is progressive, PRT resulted in meaningful benefits in strength and function that improved daily task performance and confidence. Further research is needed to investigate the effects of PRT on PSP management in a larger cohort.

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#403

TITLE: EFFECTIVENESS OF EXERCISE VIA TELEHEALTH FOR CHRONIC DISEASE: UPDATED SYSTEMATIC REVIEW AND META-ANALYSIS OF EXERCISE INTERVENTIONS DELIVERED VIA VIDEOCONFERENCING

AUTHORS: Mr Riley Brown[1,2], Prof Jeff Coombes[2,3], Dr. Klaus Jungbluth Rodriguez[2,4], Associate Professor Ingrid Hickman[5,6], Dr Shelley Keating[2,7]

Affiliations: [1]University of Queensland, Brisbane, Queensland, Australia, [2]Centre for Research on Exercise, Physical Activity & Health, The University of Queensland, Brisbane, QLD, Australia, [3]The University of Queensland, Brisbane, Queensland, Australia, [4]School of Human Movement and Nutrition Sciences, The University of Queensland, Brisbane, QLD, Australia, [5]Faculty of Medicine, The University of Queensland, Brisbane, QLD, Australia, [6]Department of Nutrition and Dietetics, Princess Alexandra Hospital, Brisbane, QLD, Australia, [7]Centre for Research on Exercise, Physical Activity & Health, The University of Queensland, Brisbane, QLD, Australia,

First author's contact: riley.brown@uq.edu.au

INTRODUCTION & AIMS: Videoconferencing exercise interventions (VC) involve the synchronous and remote delivery of exercise via a video-linked appointment. A 2022 review investigated the effectiveness and feasibility of VC for people with chronic disease. Considering the emergence of recent trials, this review aimed to investigate these findings with high-quality contemporary evidence. METHODS: Databases were searched from 1st August 2021 (last date searched in previous review) to April 30th 2023 for randomised controlled trials (RCTs) VC in chronic disease. Meta-analyses were conducted for between-group comparisons of exercise capacity and quality of life for RCTs to determine effectiveness. Standardised Mean Difference (SMD) for pre-post quality of life data was used to combine assessment methods. Feasibility was assessed via session attendance rates, adherence to exercise prescription, safety, technical issues and participant satisfaction. Risk of bias was analysed using the Downs & Black (D&B) quality checklist and the certainty of evidence with GRADE. RESULTS: Sixteen trials were included in the updated review. RCT-only meta-analyses identified effects favouring VC for exercise capacity (6MWT; Mean Difference (MD)=31.0m (95% CI: 8.3 to 53.6m), p=0.007) and quality of life (SMD=0.365 (95% CI: 0.096 to 0.633), p=0.008) in studies with non-exercising comparators. An effect favouring VC was observed for quality of life in exercising comparator studies (SMD=0.335 (95% CI: 0.078 to 0.592), p=0.011) but not for exercise capacity (MD=4.6m (95% CI: -7.4 to 16.7m), p=0.451). The RCT-only analysis identified good risk of bias (D&B: 20.7±2.7/28), with GRADE certainty ratings of 'Moderate' for quality of life and exercise capacity outcomes. Of the new RCTs, session attendance was 74%, no serious adverse events related to VC were identified, 33% of sessions experienced technical issues and positive satisfaction outcomes were identified. CONCLUSION: In patients with chronic disease, videoconferencing exercise interventions are feasible and effective for improving exercise capacity and quality of life.

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#404

TITLE: EFFECTS OF A SINGLE HEART RATE-CLAMPED CYCLING SESSION UNDER SYSTEMIC HYPOXIA ON RECOVERY OF PHYSICAL AND PSYCHO-PHYSIOLOGICAL RESPONSES FROM EXERCISE-INDUCED FATIGUE

AUTHORS: Mr Siu Nam Li[1], Prof Peter Peeling[1,2], Associate Professor Brendan Scott[3,4], Professor Jeremiah Peiffer[3,4], Dr Alex Shaykevich[1,5], Dr Olivier Girard[1]

Affiliations: [1]School of Human Sciences (Exercise and Sports Science), University of Western Australia, Perth, Western Australia, Australia, [2]Department of Sport Science, Western Australian Institute of Sport, Perth, Western Australia, Australia, [3]Murdoch Applied Sports Science Laboratory, Discipline of Exercise Science, School of Allied Health, Murdoch University, Perth, WA, Australia, [4]Centre for Healthy Ageing, Health Futures Institute, Murdoch University, Perth, WA, Australia, [5]Perron Institute for Neurological and Translational Science, Perth, Western Australia, Australia

First author's contact: casper.li@research.uwa.edu.au

AIMS: We investigated whether a single heart-rate clamped cycling session under systemic hypoxia affects the recovery of physical and psycho-physiological responses from residual fatigue compared to normoxia. METHODS: On separate occasions, twelve trained males had countermovement jump height, leg stiffness, and perceptual fatigue assessed daily during a 3-d acute training camp scenario. On days 1 and 3, participants cycled for 60 min at a constant heart rate (80% of ventilatory threshold). On day 2, fatigue was induced through a simulated team game circuit (STGC), followed by a 60-min heart rate clamped cycling bout in either normoxia, hypoxia (simulated altitude ~3500 m), or no cycling. RESULTS: Compared to baseline, jump height decreased at all timepoints following the STGC (all $p < 0.05$). Leg stiffness and cycling power output only decreased immediately following the STGC, with a 48% further decrease in cycling power output in hypoxia compared to normoxia ($p < 0.05$). The well-being questionnaire showed that perceived fatigue, decreased sleep quality, and increased muscle soreness responses occurred on day 3 ($p< 0.05$). CONCLUSION: In a pre-fatigued state, a single heart rate-clamped cycling session in hypoxia reduced mechanical output without affecting recovery of physical performance and perceptual measures from residual fatigue induced through team sport activity.

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#405

TITLE: PHYSICAL AND TECHNICAL ATTRIBUTES ASSOCIATED ON-WATER ROWING PERFORMANCE IN JUNIOR AND ELITE ROWERS

AUTHORS: Natalie Legge[1,2,3], Dr Katie Slattery[2,4], Dr Damien O'Meara[5], Dr Erin McCleave[6], David Young[5], Sophie Crichton[1], Prof. Mark Watsford[2,4]

Affiliations: [1]School of Sport, Exercise and Rehabilitation, Faculty of Health, University of Technology Sydney (UTS), Moore Park, NSW, Australia, [2]Human Performance Research Centre, University of Technology Sydney (UTS), Sydney, Australia, [3]Australian Catholic University, Sydney, NSW, Australia, [4]University of Technology Sydney, Sydney, NSW, Australia, [5]NSW Institute of Sport, Sydney, NSW, Australia, [6]Rowing Australia, Yarralumla, ACT, Australia

First author's contact: natlegge@yahoo.com

INTRODUCTION & AIMS: On-water rowing performance consists of the integration of both physical and technical attributes. The aims of this exploratory study were to describe key physical and technical variables for elite and junior rowers and to examine the associations and predictive capacity of these variables with on-water rowing performance outcomes. METHODS: Twenty-eight junior (16 females, 16 ± 0.8 years and 12 males, 17 ± 0.7 years) and 24 elite rowers (12 females, 24 ± 2.7 years and 12 males, 27 ± 2.6 years) volunteered to participate in the study. Participants completed an on-water single sculling biomechanics assessment combined with a series of physical, strength and power tests conducted in a high-performance training facility. RESULTS: Descriptive analysis identified differences between junior and elite rowers separated by sex in several physical and on-water characteristics. Elite men and women were superior in mean gate force, distance per stroke and recovery distance compared to junior groups ($P<0.0.17$). Large correlations ($P<0.01$) were found between anthropometry, strength and power assessments with the on-water measures of catch angle, mean gate force, recovery distance and boat speed. Differences in ROM and flexibility attributes did not distinguish between elite and junior rowers, with other factors potentially involved. CONCLUSION: This unique exploratory study combined a comprehensive physical assessment with an on-water single sculling biomechanical assessment to explore the interaction of physical attributes with on-water rowing technical variables. This battery of testing with world class athletes represents an excellent level of ecological validity for the assessment of rowers pertinent to on-water performance. The results provide a descriptive dataset of physical and technical characteristics for elite and junior rowers, of both sexes, which may be useful when evaluating the status of development rowers and to gauge the possibility of achieving further success in the sport.

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#407

TITLE: ARE THERE NON-RESPONDERS TO HIIT IN CANCER SURVIVORS? CHANGES IN CARDIORESPIRATORY FITNESS, BODY COMPOSITION AND SYSTEMIC INFLAMMATION

AUTHORS: Alex Boytar[1], Dr Morgan Farley[2], Chloe Salisbury[1], Tina Skinner[1], Professor David Jenkins[1,3]

Affiliations: [1]School of Human Movement and Nutrition Sciences, The University of Queensland, Brisbane, QLD, Australia, [2]Human Performance Research Centre, INSIGHT Research Institute, Faculty of Health, University of Technology Sydney (UTS), Sydney, NSW, Australia, [3]The University of the Sunshine Coast, Sunshine Coast, Queensland, Australia

First author's contact: alexander.boytar@uqconnect.edu.au

INTRODUCTION: High intensity interval training (HIIT) has been shown to elicit significant improvements in VO2peak in cancer survivors. Only 46-60% of healthy individuals are reported to respond to exercise interventions, though this rate has not been investigated in cancer survivors. AIMS: To determine the response rate in cancer survivors over 28-weeks of HIIT as measured by changes in cardiorespiratory fitness. Secondarily, the study aimed to observe associations between changes in cardiorespiratory fitness, body composition and inflammatory markers. METHODS: 131 survivors of breast, prostate or colorectal cancer were observed over 28-weeks of HIIT (4x4 minutes; 85-95% HRpeak). VO2peak, body composition and markers of systemic inflammation were assessed at baseline, four-, 16- and 28-weeks. An improvement in VO2peak of 3.5 ml.kg-1.min-1 was used as a standard of minimal clinically important difference (MCID). Body composition was measured using DEXA, and inflammatory markers were assessed for each timepoint. RESULTS: 59.6% of participants improved their VO2peak greater than MCID (+3.5 ml.kg-1.min-1) and these individuals were retrospectively classified as responders. Responders showed improvements in VO2peak at four- and 16-weeks and maintained this change through to 28-weeks (0-4 weeks: +2.92 ml.kg-1.min-1, $p<0.001$; 0-16 weeks: +5.70 ml.kg-1.min-1, $p<0.001$; and 0-28 weeks: +5.30 ml.kg-1.min-1, $p<0.001$). No significant change in VO2peak was seen in non-responders (40.4%). Time since treatment, cancer type, and cancer treatment were all found to contribute to a model predicting VO2peak change ($R=0.464$, $R2 = 21.5\%$., adj $R2=16.1\%$, $p<0.001$). Body composition and inflammatory markers improved in response to training however were not associated with VO2peak change. CONCLUSIONS: HIIT elicited a MCID in VO2peak in almost 60% of cancer survivors. Independent to VO2peak change and cancer type, survivors showed significant favourable changes in inflammation and body composition in response to training.

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#408

TITLE: DETERMINANTS OF PHYSIOLOGICAL RESPONSE TO EXERTIONAL HEAT STRESS IN HUMANS

AUTHORS: Mr Jesse Criddle[1], Mr Andrew Haynes[1], Mr Howard H. Carter[1], Ms Julie Collis[1], Ms Kristanti Wigati[1], Ms Juliene Goncalves Costa Dechichi[1], Mr Joao Carlos Loacatelli[1], Prof Robert McLaughlin[2,3], Daniel Green[1]

Affiliations: [1]Cardiovascular Research Group, School of Human Sciences (Exercise and Sport Science), The University of Western Australia, Perth, AUSTRALIA, [2]School of Biomedicine, Faculty of Health and Medical Sciences, The University of Adelaide, Adelaide, AUSTRALIA, [3]Institute for Photonics and Advanced Sensing, The University of Adelaide, Adelaide, AUSTRALIA,

First author's contact: jesse.criddle@research.uwa.edu.au

INTRODUCTION AND AIMS: Previous field studies of exercise undertaken in hot conditions reported dissociation between heat-related symptoms and body core temperature (Tc) elevation. This prompted us to examine physiological mechanisms underpinning responses to exertional heat exposure in a controlled laboratory experiment. METHODS: Thirty-eight apparently healthy participants had body composition (DEXA) and fitness (V̇O2peak) measured in a preliminary visit. Tc, heart rate (HR), exercise intensity (V̇O2) and echocardiographic measures of end-diastolic volume (EDV), stroke volume (SV) and cardiac output (Q̇) were measured at rest and at 30-minute intervals throughout a two-hour walk (5km/h and 2% gradient) in a climate-controlled chamber (40◦C and 50% relative-humidity). RESULTS: Twenty-seven participants completed the experiment (Completers; Com), 7 were stopped due to Tc exceeding 39◦C (Hyperthermics; Hyp). Four participants did not complete the protocol due to adverse symptoms and were excluded from this analysis. Hyp had significantly greater Tc at 60-minutes (38.6±0.5◦C vs. 38.0±0.3◦C; P=<0.001) and 90-minutes (39.0±0.3◦C vs. 38.3±0.3◦C; P=<0.001) than Com. Baseline V̇O2peak (ml.kg-1.min-1) did not differ between Hyp and Com (P=0.248). Whilst body weight and lean body mass did not significantly differ between Hyp and Com, visceral adipose tissue (VAT) volume (463.2±194.3cm3 vs. 259.9±284.4cm3 P=0.014) and mass (437.0±183.1g vs. 245.2±268.2g P=0.013) were significantly greater in Hyp vs Com. In Hyp, HR change from baseline was greater at 60-minutes (Δ57±15bpm vs. Δ36±18bpm; P=0.01) and 90-minutes (Δ63±20bpm vs. Δ42±19bpm; P=0.017), whilst change in EDV (Δ-22.7±11.4ml vs. Δ-6.92±11.2ml; P=0.016) and SV (Δ-19.4±6.1ml vs. Δ-0.7±7.5ml; P=<0.001) were significantly reduced in Hyp compared to Com. CONCLUSION: During walking in the heat, subjects who became hyperthermic had significantly higher baseline visceral fat mass and early signs of exaggerated haemodynamic burden during exertional heat exposure. This study has implications for the identification of appropriate variables for establishing safe work limits during heat exposure in military and work-related contexts.

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#409

TITLE: FRAILTY REDUCTION VIA IMPLEMENTATION OF EXERCISE, NUTRITION AND DEPRESCRIBING (FRIEND) TRIAL: NOVEL IMPLEMENTATION OF THE ASIA-PACIFIC FRAILTY GUIDELINES IN AGED CARE

AUTHORS: Dr Michael Inskip[1,2], Dr Trinidad Valenzuela Arteaga[1,2], Mrs Carolina Almendrales Rangel[2], Sr Chidiamara Njoku[1], A/Prof Fiona Barnett[1], Ms Isabel Shih[2], Ms Sally Dahl[3], Mrs Leonie O'Neill[3], Yorgi Mavros[2], Maria A. Fiatarone Singh AM[1,4]

Affiliations: [1]College of Healthcare Sciences, James Cook University, Townsville, Australia., [2]Faculty of Medicine and Health, School of Health Sciences, the University of Sydney, Sydney, Australia., [3]The Good Shepherd Home, Townsville, QLD, Australia, [4]Hinda and Arthur Marcus Institute for Aging Research, Hebrew SeniorLife, Boston, Massachusetts, USA

First author's contact: michael.inskip@jcu.edu.au

INTRODUCTION: Virtually all adults in aged care are frail, contributing to falls, cognitive decline, hospitalisation, and mortality. polypharmacy, malnutrition, sedentariness, and sarcopenia are risk factors amenable to intervention. Asia-Pacific Frailty treatment guidelines recommend anabolic exercise, medication and dietary optimisation. However, no study has evaluated this best practice intervention in aged care. AIM: Evaluate institutional translation of best-practice frailty treatment in aged care residents. METHODS: The Frailty Reduction via Implementation of Exercise, Nutritional support and Deprescribing (FRIEND) trial (ANZCTR#:ACTRN12622000926730p) is a 6-month translational trial evaluating resident outcomes, staff/caregiver knowledge and institutional translation in a Townsville aged care facility. Residents received high-intensity resistance and balance training, medication and nutrition optimisation co-implemented by investigators (AEP, geriatrician, pharmacist, nutritionist) and facility staff. Staff and caregivers completed comprehensive education modules and training. We report resident outcomes for Phase-one (6 months exercise with staggered implementation of medication/nutritional arms) in preparation for full implementation (Phase-two). RESULTS: 29 residents (21 female, age:88.6±6.3yrs) were recruited. At baseline, residents were frail (FRAIL-NH;6.3±2.4/14), cognitively-impaired (MoCA;13.8±6.8/30), had low physical function/capacity (SPPB;4.9±3.1/12,, 6MWT;222.2±104.4m) and numerous prescribed medications (15.5±5.9). Two residents died & one withdrew before intervention, and nine residents declined exercise intervention. Exercising residents' adherence was 73.4±18.3% (28±7/38 sessions), with non-significant baseline differences compared to decliners ($p>0.05$). FRAIL-NH worsened significantly across the entire sample (0.93±1.87,$p=.019$), however this progression was attenuated in exercisers (0.71±1.83,$p=0.35$). Furthermore, clinically meaningful improvements in frailty (Fried phenotype;-0.73±1.09,$p=.022$), Leg press (median{IQR}:40.9%{26.5%)) and knee extension strength (median{IQR):61.9%(259%),$p<0.001$), 6MWD (35.4±45.8m,$p=0.022$;30m-MCID), Physical Function (SPPB;1.9±2.3,$p=0.007$;1-point MCID), and cognition (MoCA;1.31±3.4,$p=.131$;1.22-point MCID) were observed in exercisers. Only 1 minor exercise-related adverse event occurred. CONCLUSION: Six months of AEP-led high-intensity exercise with preliminary, staggered implementation of medication and nutrition optimisation in aged care improved frailty and risk factors in residents. Phase-two results following 6-months of full, concurrent implementation of exercise, medication and nutrition arms are anticipated May, 2024.

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#410

TITLE: IDENTIFYING BARRIERS AND ENABLERS TO EXERCISE ADHERENCE IN PEOPLE WITH CHRONIC LOW BACK PAIN: A QUALITATIVE STUDY

AUTHORS: Mr Yannick Gilanyi[1,2], Dr Rodrigo Rizzo[2], Saurab Sharma[1,2], Ms Martjie Venter[2,3], James H McAuley[1,2], Matthew D Jones[1,2]

Affiliations: [1]School of Health Sciences, Faculty of Medicine and Health, University of New South Wales, Sydney, New South Wales, Australia, [2]Centre for Pain IMPACT, Neuroscience Research Australia, Sydney, New South Wales, Australia, [3]School of Health Sciences, University of New South Wales, Sydney, Australia

First author's contact: y.gilanyi@student.unsw.edu.au

INTRODUCTION: Exercise leads to clinically meaningful pain reductions in people with chronic low back pain and is recommended as a first line treatment. However, it has been shown that exercise effectiveness decreases over time and no longer has a meaningful effect for chronic low back pain at long-term follow up. It is likely that a lack of exercise adherence is a major contributing factor responsible for these reductions in efficacy. We aimed to identify the barriers and enablers to exercise adherence from the perspective of people with chronic low back pain. METHODS: This qualitative study was underpinned by a constructivist epistemology and used a critical realist ontological perspective. Adults (18-65yrs) with chronic low back pain who had exercised since the onset of their back pain were recruited to participate in focus groups and individual interviews. Audio data were transcribed and then analysed in two stages: (1) inductive coding using reflexive thematic analysis, followed by (2) deductive analysis through mapping codes onto the Theoretical Domains Framework. RESULTS: Five enablers and three barriers were identified across six of the fourteen Theoretical Domain Framework domains. Exercise identity and confidence in deciding to self-manage pain were enablers, whereas beliefs about the consequences of exercise, exercise context and relationships could function as either/both barriers and enablers. CONCLUSION: Analysis of these barriers and enablers found that they were not static factors isolated to influencing a single decision of 'to exercise or not'. Instead barriers and enablers were complex and fluid, with participants reporting conflicting barriers and enablers that were subject to change, depending on context. These findings improve our understanding of the barriers and enablers to exercise adherence from the individual perspective of people with chronic low back pain and can be utilised for more effective exercise treatment in this population.

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#411

TITLE: THE EFFECTS OF DOWNHILL WALKING ON INSULIN SENSITIVITY, ARTERIAL HEALTH, MUSCLE STRENGTH AND FUNCTIONAL PHYSICAL FITNESS IN PEOPLE WITH TYPE 2 DIABETES MELLITUS

AUTHORS: Mrs Misha Ansari[1], Associate Professor Andrew Williams[1], Dr Sibella Hardcastle[1], Dr Matthew Schmidt[1], Dr Stephen Myers[1]

Affiliations: [1]University of Tasmania, Launceston, Tasmania, Australia

First author's contact: misha.ansari@utas.edu.au

INTRODUCTION & AIMS: Exercise is effective in preventing and managing Type 2 Diabetes Mellitus (T2DM). However, a significant number of people do not exercise as they perceive exercise to be physically challenging. Eccentric exercise, a novel aerobic exercise modality is less metabolically demanding and has been shown to have positive effects on blood glucose levels, cardiovascular fitness, and muscle strength in healthy populations. This research was conducted to explore the impact of eccentric exercise, specifically downhill walking, on insulin sensitivity, arterial health, muscle strength, and physical functional fitness in individuals with T2DM. METHODS: A 12-week randomised controlled trial was conducted to investigate the effects of downhill, level, and uphill walking on people with T2DM. Sedentary adult participants with T2DM were randomised to perform downhill walking (DW), level walking (LW), or uphill walking (UW) for 30 minutes twice a week for twelve weeks at a standard speed of 2.5km/hr. The primary outcome measure was glycosylated haemoglobin (HbA1c), while secondary measures included arterial stiffness, strength, and physical fitness. RESULTS: A significant reduction in HbA1c between baseline and 12 weeks was observed in the UW group However, per-protocol analysis showed a significant decrease in HbA1c in the DW group post-intervention as well. Central Systolic blood pressure significantly decreased between baseline and post-intervention in the DW group. Participants in DW group and UW group showed significant improvements in distance walked in 6MWT post-intervention. A significant increase in knee extensors isometric strength between baseline and 12 weeks was observed for the DW group only. CONCLUSION: DW was as effective as UW for improving insulin sensitivity and more effective than LW and UW for improving central systolic blood pressure, muscle strength and functional physical fitness. DW is a viable option for those seeking a less demanding form of exercise.

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#412

TITLE: BARRIERS AND ENABLERS TO EXERCISE ADHERENCE IN PEOPLE WITH CHRONIC LOW BACK PAIN: A SYSTEMATIC REVIEW OF QUALITATIVE EVIDENCE

AUTHORS: Mr Yannick Gilanyi[1,2], Ms Brishna Shah[2,3], Dr Aidan Cashin[2,3], Dr Mitchell T. Gibbs[2,3], Ms Jessica Bellamy[3], Dr Richard Day[4], James H McAuley[1,2], Matthew D Jones[1,2]

Affiliations: [1]School of Health Sciences, Faculty of Medicine and Health, University of New South Wales, Sydney, New South Wales, Australia, [2]Centre for Pain IMPACT, Neuroscience Research Australia, Sydney, New South Wales, Australia, [3]School of Health Sciences, University of New South Wales, Sydney, Australia, [4]St Vincent's Clinical Campus, Faculty of Medicine and Health, University of New South Wales, Sydney, Australia

First author's contact: y.gilanyi@student.unsw.edu.au

INTRODUCTION: Exercise is a first line treatment for chronic low back pain, reducing pain and disability in the short-term. However, exercise benefits decrease over time, with a lack of long-term exercise adherence a potential reason for this. This study aimed to synthesize the perceptions and beliefs of individuals with chronic low back pain and identify their barriers and enablers to exercise adherence. METHODS: We searched CENTRAL, EMBASE, CINAHL, SPORTDiscus, PubMed, PsycINFO, CINAHL, and Scopus databases from inception to 28th February 2023 for qualitative studies that explored the factors influencing exercise adherence for people with chronic low back pain. A hybrid approach combining inductive analysis using thematic synthesis and a deductive analysis, which included the Theoretical Domains Framework of behaviour change was used to analyse data. We assessed methodological quality using the Critical Appraisal Skills Programme checklist and the level of confidence of the themes found using the Confidence in the Evidence from Reviews of Qualitative Studies (GRADE-CERQual). RESULTS: Twenty-three papers (n=21 studies) were included (n=478 participants). Four main themes impacted exercise adherence: 1) exercise, pain, and the body, 2) psychological factors, 3) social factors and 4) external factors. These themes contained 16 subthemes that were predominantly both barriers and enablers to exercise adherence. There was moderate to high confidence across the findings. CONCLUSION: Our analysis found that individual's experiences of barriers and enablers were most appropriately represented across a spectrum, where influencing factors could be a barrier or enabler to exercise adherence. Barriers and enablers were also found to be specific to pre-exercise, during exercise and post-exercise situations. This may lead to an improved and targeted approach to increasing exercise adherence. Further research is required to develop interventions that can use these findings for a more personalised and patient centred approach to treatment.

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#413

TITLE: CARDIOVASCULAR RESPONSE AND COST OF DOWNHILL WALKING: A NOVEL EXERCISE MODALITY FOR PEOPLE WITH TYPE 2 DIABETES MELLITUS (T2DM)

AUTHORS: Mrs Misha Ansari[1], Associate Professor Andrew Williams[1], Dr Matthew Schmidt[1], Dr Sibella Hardcastle[1], Dr Stephen Myers[1]

Affiliations: [1]University of Tasmania, Launceston, Tasmania, Australia

First author's contact: misha.ansari@utas.edu.au

INTRODUCTION & AIMS: Exercise is a cornerstone in managing T2DM, along with diet and medication. Walking is the easiest to perform and most widely recommended exercise for people with T2DM. However, people with T2DM appear to walk 1200 to 2500 less steps per day than healthy people as many find exercise or walking to be exhausting. Downhill walking may be an alternative to conventional exercise for people with T2DM. Little is known about the metabolic cost of incline walking in people with T2DM. This study determined the energy cost of walking downhill, uphill, and on a flat level surface in people with T2DM. METHODS: Participants walked on a treadmill at 2.5 km/hr, starting at 0% grade for 4 minutes and progressing to 4%, 8%, 12%, and 16% for four minutes at each grade. After resting for 10 minutes, they walked downhill at -4%, -8%, -12%, and -16% grades. Borg's 6-20 RPE scale measured perceived exertion, while VO2, pulmonary ventilation, and energy expenditure were measured using an automated gas analysis system. Expired gas was collected every 15 seconds, and the average of the four readings of the fourth minute of walking at each grade was used for analysis. RESULTS: Compared to flat-level the 4%, 8%, 12% and 16% incline increased energy cost by 17.5 %, 42.6%, 68.3% and 95.1% respectively. Compared to level walking, walking at -4%, -8%, -12% and -16% treadmill decline decreased the metabolic energy cost by 13.1 %, 15.2 %, 17.9% and 13.4% respectively. Similarly, cardiometabolic response (HR) and perceived effort during downhill walking were lower than walking uphill. CONCLUSION: Health professionals wanting to promote exercise as part of a lifestyle approach to manage T2DM could consider downhill walking as an exercise option as it induces lower cardiovascular and metabolic responses and is perceived as easier than uphill walking.

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#415

TITLE: HIITING CANCER BACK: THE EFFECTS OF ONE MONTH OF HIGH INTENSITY INTERVAL TRAINING ON INFLAMMATION, BODY COMPOSITION, AND CARDIORESPIRATORY FITNESS IN CANCER SURVIVORS

AUTHORS: Dr Morgan Farley[1], Mr Alexander Boytar[2], Ms Kirsten Adlard[2], Dr Chloe Salisbury[2], Dr Mia Schaumberg[3], Professor David Jenkins[2,3], Associate Professor Tina Skinner[1]

Affiliations: [1]Human Performance Research Centre, INSIGHT Research Institute, Faculty of Health, University of Technology Sydney (UTS), Sydney, NSW, Australia, [2]School of Human Movement and Nutrition Sciences, The University of Queensland, [3]The University of the Sunshine Coast, Sunshine Coast, Queensland, Australia

First author's contact: Morgan.Farley@uts.edu.au

INTRODUCTION/AIMS: Chronic inflammation, low fitness, and unfavourable body composition are often side effects of anti-cancer therapies and are associated with an increased risk of cancer recurrence. However, the response of these variables to high intensity interval training (HIIT), and the relationship among these predictors of cancer recurrence, is yet to be explored in cancer survivors. The aim of this study was to investigate the effect of one month of HIIT on inflammation, body composition, and cardiorespiratory fitness and explore the relationships among these variables in breast, prostate, and colorectal cancer survivors. METHODS: Survivors (n=131) of breast, prostate, and colorectal cancer (60.1±10.3 years, 26.9±4.9 kg/m2, 67% female) completed one month of HIIT (12 sessions: 4x4min at 85-95% peak heart rate (HRpeak), interspersed with 3-minutes at 50-75% HRpeak). Body composition via dual-energy X-ray absorptiometry, cardiorespiratory fitness via V̇O2peak, and fasted blood were measured at baseline and at one month. Blood was analysed for inflammatory factors (interleukin (IL)-6, IL-10), and tumour necrosis factor alpha (TNF-α)). RESULTS: HIIT resulted in significant reductions in IL-6, IL-10, TNF-α (-37-39%, $p<0.001$) and significant increases in leg lean mass (+400g, $p=0.008$) and absolute V̇O2peak (+0.2 L/min, $p<0.001$). Despite this, the only significant association among the changes in these variables was a weak correlation between IL-10 and absolute V̇O2peak ($r_s=0.256$, $p=0.013$). CONCLUSION: One month of HIIT elicited significant improvement in markers of systemic inflammation, body composition, and cardiorespiratory fitness. However, improvements in these variables were not strongly related and occur independent of each other. The findings of this study demonstrate 4x4 HIIT is an effective prescriptive tool to elicit rapid improvements in physiological markers, through apparent independent pathways. Therefore, exercise physiologists working with cancer survivors should consider utilising 4x4 HIIT to their exercise prescriptions as a time efficient means to reduce the risk of cancer recurrence and improve survivorship.

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#416

TITLE: PHYSICAL ACTIVITY IS ASSOCIATED WITH IMPROVED SECONDARY PREVENTION OF CARDIOVASCULAR DISEASE IN THE UK BIOBANK

AUTHORS: Bethany Gower[1], Dr Danielle Girard[1], Dr Terry Boyle[2], A/Prof Kade Davison[1]

Affiliations: [1]Alliance for Research in Exercise, Nutrition and Activity (ARENA), University of South Australia, Adelaide, South Australia, Australia., [2]University of South Australia, Australian Centre for Precision Health, Adelaide, South Australia, Australia

First author's contact: gowbs001@mymail.unisa.edu.au

INTRODUCTION & AIM: Physical activity (PA) is known to be associated with a decreased risk of all-cause and cardiovascular mortality in apparently healthy adults. The association between PA and risk of death for individuals with prevalent cardiovascular disease (CVD) at baseline is less well understood. Therefore, the aim of this study was to determine the association between PA levels and survival in individuals with prevalent CVD at baseline. METHODS: A survival analysis involving 38,291 UK Biobank participants with prevalent CVD at baseline was conducted. Physical activity was assessed using accelerometry-calibrated PA which measures total energy expended in PA. Prevalent CVD, all-cause mortality, and CVD mortality were determined through ICD-10 codes and data linkage through death and hospital records. Cox proportional hazard models were used to estimate the risk of all-cause, overall cardiovascular, and specific CVD category mortality for quartiles of PA after adjusting for known confounders. RESULTS: There were 6,540 all-cause deaths and 3,559 cardiovascular deaths with median follow up time of 11.98 years. The risk of all-cause and overall cardiovascular mortality reduced with increasing dose of PA (highest vs lowest PA; HR = 0.70, 95% CI: 0.64 - 0.76 and 0.70, 95% CI: 0.62 - 0.79, respectively). Those in the highest quartile of PA had a 41% reduced risk of dying from cerebrovascular disease and a 38% reduced risk of dying from and hypertensive diseases (including hypertensive heart disease with heart failure). CONCLUSION: Higher levels of PA are associated with lower risk of all-cause and overall cardiovascular mortality in individuals with prevalent CVD at baseline. These findings highlight the importance of PA in secondary prevention of cardiovascular disease.

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#417

TITLE: OPTIMISING SPRINT PERFORMANCE: CONCURRENT VALIDITY AND RELIABILITY OF 25HZ GNSS UNITS FOR SPEED PROFILING

AUTHORS: Louis Dennison[1], Grant. M. Duthie[1], Michael. A. Psarakis[1]

Affiliations: [1] School of Exercise Science, Australian Catholic University, Strathfield, New South Wales, Australia

Third author's contact: michael.psarakis@acu.edu.au

Sprint performance profiling is crucial for understanding an athlete's capabilities and identifying potential areas for improvement. While traditional gold standard systems provide valid and reliable measurements, they are often costly, laboratory-based, or impractical for field-based settings. New GNSS units (25Hz) with higher sampling rates may address some of these limitations. The purpose of the project was to evaluate the concurrent validity and inter-unit reliability of 25Hz GNSS units by examining their agreement with laser devices for velocity measurements and timing gates for interval times. Validity was assessed during a track and field training session. 30 participants performed between 3 and 6 sprints over 40m whilst being assessed simultaneously through all systems. Inter-unit reliability was assessed on a closed athletics track by placing 3 GNSS units on a motor vehicle and completing 60 accelerations from 0-60m. Low mean bias (<1%) and typical error less than <2% for all measurements demonstrate excellent agreement between GNSS and criterion devices. The units demonstrated good reliability for the 0-10m interval (ICC = 0.86), excellent reliability for all remaining 10m intervals to 60m (ICC = 0.91-0.99), full times 0-60m (ICC = 0.97) and maximal sprint velocity (ICC = 1.0). These GNSS units offer a more efficient and practical alternative to traditional measurement devices. For coaches, this technology offers a scalable method to concurrently assess the sprint performances of multiple athletes during training and competitions, enabling evidence-based decisions to guide athletic development.

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#418

TITLE: PASIFIKA MOVING: A CO-DESIGNED AND CULTURALLY INCLUSIVE PHYSICAL ACTIVITY PROGRAM FOR PASIFIKA COMMUNITIES IN WESTERN SYDNEY

AUTHORS: Dr Oscar Lederman[1,2], Professor Cristina Caperchione[1]

Affiliations: [1]School of Sport, Exercise and Rehabilitation, Faculty of Health, University of Technology Sydney, Moore Park, Australia, [2]School of Health Science, Faculty of Medicine and Health, University of New South Wales, Sydney, NSW, Australia

First author's contact: oscar.lederman@uts.edu.au

INTRODUCTION & AIMS: Pasifika migrant communities in Western Sydney, including Tongan, Samoan, Cook Islander, Fijian, and Māori face significant health disparities including higher rates of obesity, Type two diabetes and cardiovascular disease. Modifiable risk factors including physical inactivity are primary drivers. Previous lifestyle interventions have been unsuccessful due to inadequate community consultation. This study aims to work with Western Sydney's Pasifika community to design and deliver a sustainable and culturally responsive physical activity program. METHODS: The project comprises two phases. Phase A involved 2 co-design workshops or 'Talanoas', comprising community leaders, service users, caregivers, Pasifika practitioners, and Academics. Participatory research methods including mixed qualitative and quantitative methods were used to understand barriers, facilitators and preferences for a tailored physical activity program. Phase B, set to commence in 2024 includes the implementation of this program, which will be evaluated for its feasibility, acceptability, and effectiveness. RESULTS: Phase 1 co-design included consultation with 24 individuals including; Pasifika community members, Pasifika community leaders, service users, Pasifika clinicians, and Academics. Results exposed essential cultural and practical considerations for the physical activity program. Pasifika Mothers were identified as a priority group considering their influential role within family structures and the broader Pasifika community. A focus on community-led, sustainable, accessible, and enjoyable group-based activity was evident. Co-design sessions were rated as highly acceptable. CONCLUSION: The study not only lays the foundation for both Pasifika Moving, but also will inform future community health initiatives which target health disparities in under-served and culturally diverse communities. Pasifika Moving is an example of an initiative that is designed by, for, and led by the community. The outcomes from this study have broader implications to improve health equity and enhance the healthcare landscape by developing culturally competent healthcare professionals and services.

#419

TITLE: EXPLORATION OF PHYSICAL PERFORMANCE CAPACITIES IN EMERGING ADOLESCENT SURFING TALENT

AUTHORS: Tyson Zuin[1], Dr Jenny Conlon[2], Dr Ashley Cripps[2]

Affiliations: [1]The University of Notre Dame Australia, 32 Mouat Street, Fremantle, Western Australia 6160, Australia, [2]School of Health Sciences & Physiotherapy, The University of Notre Dame Australia, Fremantle, Western Australia, Australia

First author's contact: tyson.zuin00@outlook.com

Open water surfing conditions are unpredictable and dynamic, requiring athletes to possess well-rounded physical attributes to compete successfully. Current research focuses on adolescent athletes in competitive pathways at state and national levels, however few studies have explored the emerging talent pathway where most athletes compete. Further, adolescent female surfers are underrepresented in surfing research. This study aimed to examine the physical performance capacities of emerging adolescent athletes within a state surfing talent pathway and explore how these athletic properties vary between different sex and age cohorts. Participants (age: 13.89 ± 1.29 years) were recruited from state-based competitions (female n=14, male n=20) during the 2022-2023 season. Athletes completed a testing battery inclusive of anthropometric measures, upper and lower body strength, and power outcomes (dynamic push-up, isometric push-up, counter-movement jump, and isometric mid-thigh pull). Findings revealed significant between sex differences for anthropometric measures, with females demonstrating greater height, body mass and body fat compared to males. However, there were no significant strength or power differences evidence between males and females. Age group comparisons highlighted under-16 female athletes demonstrated superior, but non-significant, upper body strength compared to under-14 females. Contrastingly, under-16 male athletes reported significantly greater lower body strength and power outcomes relative to their younger counterparts. In conclusion, this study provides coaches with greater insight into the development of strength and power in adolescent surfing athletes involved in emerging talent pathways.

#420

TITLE: ENHANCING FUNCTIONAL CAPACITY AND QUALITY OF LIFE WITH ECCENTRIC CYCLING TRAINING IN HEART FAILURE PATIENTS: A RANDOMIZED CONTROLLED TRIAL.

AUTHORS: Ms Lucy Stauborg[1,2], Prof Andrew Mairoana[2,3], Mr Andrew Haynes[1], Prof Graham Hillis[4,5], Dr Lawrence Dembo[2], Prof Kazunori Nosaka[6], Mr Daniel John Green[1], Ms Louise H. Naylor[1]

Affiliations: [1]Cardiovascular Research Group, School of Human Sciences (Exercise and Sport Science), The University of Western Australia, Perth, Australia, [2]Fiona Stanley Hospital, Murdoch, WA, Australia, [3]Curtin University, Bentley, WA, Australia, [4]The University of Western Australia, Crawley, WA, Australia, [5]Royal Perth Hospital, Perth, WA, Australia, [6]Edith Cowan University, Joondalup, WA, Australia,

First author's contact: lucy.bolam@research.uwa.edu.au

INTRODUCTION: Exercise training is recommended for comprehensive management of patients with heart failure and reduced ejection fraction (HFrEF). However, limited exercise capacity prevents many patients from gaining optimal training benefit. Given eccentric cycling is well tolerated in HFrEF, and enables greater power output, we hypothesized that eccentric cycling training would result in superior functional outcomes than concentric cycling training when the interventions were matched for heart rate (HR). METHODS: Forty-five participants (9♀, 57±13 y; BMI 27±5 kg/m2) with HFrEF (ejection fraction 33±10%, New York Heart Association class II) were randomized in a 1:1 superiority clinical trial to either eccentric cycling training (ET, n = 25) or concentric cycling training (CT, n = 20). Each intervention involved 2-weeks of familiarization and 12-weeks of training at matched relative intensity (40-80% of HR reserve), twice weekly. Primary outcome was peak oxygen consumption (V̇O2peak), secondary outcomes included 6-minute walk, functional lower extremity strength and health-related quality of life (Minnesota Living with Heart Failure, MLHF). RESULTS: Repeated measures ANOVA revealed significant interaction effects for 6-min walk (ET 476±77 to 547±80 m vs CT 485±106 to 516±113 m, P=0.015), 30s sit-to-stand (ET 12±3 to 16±3 repetitions vs CT 13±4 to 14±3 repetitions, P=0.002), and timed up-and-go (ET 7.2±1.2 to 6.2±1.1 s vs CT 7.6±1.5 to 7.3±1.9 s, P=0.019). There were significant time effects for V̇O2peak (ET: 17.7±4.8 to 19.1±5.2 ml/kg/min and CT 17.4±6.0 to 19.8±6.0 ml/kg/min, P<0.001), and MLWHF (ET 31±24 to 23±16 and CT 32±19 to 27±16, P=0.003). CONCLUSION: When matched for heart rate to control cardiovascular burden, ET demonstrated superior effect in functional capacity, and similar benefits in aerobic capacity (V̇O2peak) and health-related quality of life, when compared to CT. ET is a novel and efficacious approach for clinical benefit in highly compromised HFrEF patients, who represent a challenge in terms of exercise prescription.

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#421

TITLE: "CLIMBING IS MY WEAPON" - A PSYCHOSOCIAL BOULDERING INTERVENTION FOR ADOLESCENTS AND ITS IMPACT ON THE PSYCHOLOGICAL WELL-BEING OF ADOLESCENTS IN LEBANON

AUTHORS: Prof. Dr. Katharina Luttenberger[1], PhD Simon Rosenbaum[2], PhD Charbel Najem[3], Beat Baggenstoß[4]

Affiliations: [1]University Clinic Erlangen, Erlangen, Bavaria, Germany, [2]UNSW, Sydney, New South Wales, Australia, [3]Antonine University, Baabda, Lebanon, [4]Climbaid, Zurich, Switzerland

First author's contact: katharina.luttenberger@uk-erlangen.de

INTRODUCTION AND AIMS: Previous research highlights the positive effects of physical activity, also climbing therapy, on mental health, including benefits on depression and self-esteem. Recognising the mental health challenges faced by young people in Lebanon, particularly in the context of multiple crises and forced displacement, this interventional study explores the benefits of a psychosocial climbing programme in eastern Lebanon. METHODS: In collaboration with the non-profit organisation ClimbAID, this waitlist-controlled, partially randomised, mixed-methods study examines the effects of an eight-week psychosocial bouldering group intervention on overall mental well-being, levels of psychological distress, self-efficacy and social cohesion among a group of host and refugee youth in the Bekaa Valley. Qualitative interviews with 40 participants provide insights into their experiences, lessons learned and subjective outcomes. The intervention, delivered by 2 trained facilitators and up to 2 volunteers, took place weekly for 2 hours with groups of up to 12 young people. RESULTS: With 233 participants, the trial had a dropout rate of approximately 33%. The intervention group showed significant improvements in overall mental well-being and psychological distress compared with the waitlist groups. Group allocation was the only significant predictor of improved mental well-being, in addition to baseline scores. While no significant differences in self-efficacy and social cohesion were observed, qualitative analysis revealed that participants highly valued the non-judgmental approach, highlighting significant benefits in interpersonal relationships and mental well-being. CONCLUSION: In the challenging humanitarian context of forced displacement, the psychosocial bouldering intervention effectively enhanced well-being and reduced psychological distress among host and refugee youth in Bekaa, Lebanon. As a group intervention, bouldering emerges as a valuable option for supporting host and refugee populations in low-income countries.

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#422

TITLE: A CASE STUDY OF THE PHYSIOLOGICAL AND PSYCHOLOGICAL RESPONSES TO COACHING PROFESSIONAL AUSTRALIAN FOOTBALL

AUTHORS: Prof. Mark Watsford[1,2], Mr Adam Trama[3], Dr Yael Grasko[4], Ms Suzie Rhydderch[5], Dr Milo Arne-Wilkinson, Dr Simon Eggleton[6], Dr Tom Cross[7]

Affiliations: [1]University of Technology Sydney, Sydney, NSW, Australia, [2]Human Performance Research Centre, University of Technology Sydney (UTS), Sydney, Australia, [3]School of Sport, Exercise and Rehabilitation, Faculty of Health, University of Technology Sydney (UTS), Moore Park, NSW, Australia, [4]4Cyte Pathology, North Ryde, Australia, [5]Sydney Swans Football Club, Sydney, Australia, [6]Randwick Cardiology, Sydney, Australia, [7]Stadium Sports Medicine Clinic, Moore Park, Australia, [6.2]Sydney Swans Football Club, Sydney, Australia

First author's contact: mark.watsford@uts.edu.au

INTRODUCTION & AIMS: Coaching professional sport is stressful, yet there is little information detailing the physiological and psychological responses of coaches during match-play. The burden of measurement instruments during competition may preclude their use with coaches during this high-pressure part of the coaching cycle. This exploratory case study examined physiological and psychological alterations when coaching professional Australian football to determine the potential health implications and enhance health literacy in coaches. METHODS: One head coach of a professional football team was monitored for heart rate (HR), stress-related hormones (C-Reactive Protein, Cortisol, Troponin, Brain Natriuretic Peptide) and psychological stress prior to, during and following seven matches and descriptive data was examined. RESULTS: The HR response indicated sustained elevation during match-play, with the intermittent nature of the game causing an undulating profile. Periods of locomotion during breaks in play led to elevations in HR, with maximum HR recorded as 8% above age-predicted maximum. Further, differences in HR were evident in the final five minutes between small (145 ± 7.0 bpm) and large (113 ± 5.1 bpm) score margins. There were no irregularities for stress hormones, while the psychological questionnaire revealed differences in perceptions of accomplishment, success, recovery and stress related to match outcome. CONCLUSIONS: This exploratory case study indicated that substantial elevations in HR are evident while coaching professional football, yielding implications for health management. Coaches require appropriate levels of cardiovascular health to cope with the demands of coaching and targeted health intervention programs may be warranted. Further, differences in psychological outcomes from winning or losing may reflect the need to develop recovery and coping strategies that are contextualised to match results. Since match-play observation elicits alterations to physical and psychological markers, confirmatory research with larger cohorts is warranted to examine and enhance well-being and health management strategies in these elite performers.

#424

TITLE: PHYSICAL ACTIVITY RECOMMENDATIONS FOR PEOPLE WITH CHRONIC KIDNEY DISEASE: ARE RESEARCH PARTICIPANTS REPRESENTATIVE OF REAL-WORLD PATIENTS?

AUTHORS: Mr Thai Binh Tran[1,2], Ms Noor Ul Eman Tahir[3], Mr Alexander Bates[3], Ms Jennifer Nguyễn[2,4], Doctor Hicham Ibrahim Cheikh Hassan[2], A/Prof Jeanette Thom[5,6], Dr Shaundeep Sen[2,7], Assoc Prof Kelly Lambert[8], Ria Arnold[2,8]

Affiliations: [1]School of Medical, Indigenous and Health Sciences, Faculty of Science, Medicine and Health, University of Wollongong, Wollongong, New South Wales, Australia, [2]Department of Renal Medicine, Concord Repatriation General Hospital, Concord, New South Wales, Australia, [3]University of Wollongong, Wollongong, New South Wales, Australia, [4]School of Health Sciences, Faculty of Medicine and Health, University of New South Wales, Sydney, New South Wales, Australia, [5]Discipline of Exercise and Sport Science, Sydney School of Health Sciences, Faculty of Medicine and Health, The University of Sydney, Camperdown, NSW, Australia, [6]School of Health Sciences, University of New South Wales, Sydney, NSW, Australia, [7]Concord Clinical School, Faculty of Medicine and Health, University of Sydney, Sydney, New South Wales, Australia, [8]Department of Exercise, Sport Science and Rehabilitation, University of Wollongong, Wollongong, NSW, Australia

First author's contact: tbt548@uowmail.edu.au

Physical activity is important to maintain good health for people with chronic kidney disease (CKD). However, people with CKD often have a complex health status which necessitates advice tailored to their safety profile. As such, this study aimed to review clinical practice recommendations on physical activity for people with CKD and evaluate how representative research participants are compared to a real-world cohort.

A systematic search was completed to identify physical activity recommendations for people with CKD Stage 3-5. Primary studies that informed these recommendations were identified and data extracted. Meta-analysis of proportion was undertaken for sex, age, and comorbidities and compared to n=679 people with CKD from the Centre for Health Research Illawarra-Shoalhaven Population database.

There were 17 physical activity recommendations for people with CKD. Thirteen provided physical activity guidelines for general adult populations. Three provided specific guidance on exercise prescription. Thirty-four primary studies informed these recommendations, including 22 intervention (65%); 6 aetiology (18%); 4 prognosis (12%); and 2 screening studies (6%). Twelve interventional studies were randomised controlled trials (55%). Primary intervention studies comprised 1,792 participants. Compared to the real-world cohort, research participants were significantly younger (mean age 59.7 vs 78.2); had higher proportions of male (60% vs 51%), hypertension (89% vs 80%) and peripheral vascular disease (12% vs 6%); but lower proportions of coronary artery disease (16% vs 20%) and diabetes (35% vs 38%).

Physical activity recommendations for people with CKD lacked specific, tailored advice to address the complex health status and safety profile of people with CKD. Primary intervention studies that inform these recommendations included participants that were younger and had different comorbid profile when compared to a real-world cohort. Future intervention trials with pragmatic design are needed to improve the evidence base and specificity of recommendations.

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#425

TITLE: ASSESSING THE RESPONSE OF HYPERTHERMIC MEN AND WOMEN TO THE CURRENT COLD-WATER IMMERSION GUIDELINES FOR EXERTIONAL HEAT STROKE TREATMENT

AUTHORS: Miss Kate Hutchins[1], Ms Bruna Bittencourt Sotomaior[1], Mr Alexander Gibson[1], Dr David Borg[1], A/Prof Geoffrey Minett[1], Prof Ian Stewart[1]

Affiliations: [1]Queensland University of Technology Exercise and Nutrition Sciences, Brisbane, QLD, Australia

First author's contact: kate.hutchins@hdr.qut.edu.au

INTRODUCTION: According to best-practice guidelines, whole-body cold-water immersion is the most effective treatment for exertional heat stroke. How women respond to this treatment has received limited consideration despite some evidence suggesting women may cool more rapidly than men. This research evaluated the suitability of the existing exertional heat stroke guidelines for women. METHODS: Endurance trained men (n=20, VO2max: 52.5±7.3 ml/kg/min, Body surface area (BSA): 1.63±0.77, Body fat %: 14.3±6.8, Lean mass %: 81.4±6.7) and women (n=18, VO2max: 46.7±5.3 ml/kg/min, BSA: 1.68±0.13, Body fat %: 26.1±6.3, Lean mass %: 69.6±6.1) ran in the heat (40°C, RH 20-40%) until their rectal temperature reached 39.5°C or above. Individuals were then immersed to the clavicle in a 2°C circulated water bath until rectal temperature lowered to 38.6°C. Rectal temperature was assessed throughout. Linear regression models were used to analyse immersion time. RESULTS: Immersion time was not statistically different between men and women (mean difference [95% CI] = 68.4 sec [-48.9, 185.6]; p = 0.24) after adjusting for rectal temperature on immersion. The 90% confidence interval on the mean difference spanned from -30 sec to positive 2 min 45 sec, meaning that relatively large effects, favouring a longer immersion time for males, could not be ruled out, and therefore, the results are inconclusive. A model containing sex, immersion rectal temperature, and BSA explained the highest proportion of variance in immersion time (38%) compared to when lean mass (32%) or fat mass (34%) were included instead of BSA. CONCLUSION: There was weak evidence that hyperthermic females cooled more rapidly than hyperthermic males during cold-water immersion (2°C); thus with further enquiry, females may require a shorter immersion time than males to reach the safety cooling limit. Future studies are needed to investigate the effect of BSA, lean and fat mass on cooling rate in heat stroke cases.

#426

TITLE: PERSPECTIVES OF PEOPLE WITH CHRONIC KIDNEY DISEASE REGARDING DIGITAL HEALTH INTERVENTIONS THAT PROMOTE A HEALTHY LIFESTYLE: QUALITATIVE SYSTEMATIC REVIEW.

AUTHORS: Mr Thai Binh Tran[1,2], Dr Meghan Ambrens[3,4], Ms Jennifer Nguyễn[2,5], Ms Eve Coleman[3,5], Mr Yannick Gilanyi[5,6], Meg Letton[3,7], Mr Anurag Pandit[5], Mr Logan Lock[5], Jeanette Thom[5,8], Shaundeep Sen[2,9], Kelly Lambert[7], Ria Arnold[2,7]

Affiliations: [1]School of Medical, Indigenous and Health Sciences, Faculty of Science, Medicine and Health, University of Wollongong, Wollongong, New South Wales, Australia, [2]Department of Renal Medicine, Concord Repatriation General Hospital, Concord, New South Wales, Australia, [3]Falls, Balance and Injury Research Centre, Neuroscience Research Australia, Randwick, New South Wales, Australia, [4]School of Population Health, Faculty of Medicine and Health, University of New South Wales, Sydney, New South Wales, Australia, [5]School of Health Sciences, Faculty of Medicine and Health, University of New South Wales, Sydney, New South Wales, Australia, [6]Centre for Pain IMPACT, Neuroscience Research Australia, Sydney, New South Wales, Australia, [7]Department of Exercise, Sport Science and Rehabilitation, University of Wollongong, Wollongong, NSW, Australia, [8]Discipline of Exercise and Sport Science, Sydney School of Health Sciences, Faculty of Medicine and Health, The University of Sydney, Camperdown, NSW, Australia, [9]Concord Clinical School, Faculty of Medicine and Health, University of Sydney, Sydney, New South Wales, Australia

First author's contact: tbt548@uowmail.edu.au

Chronic kidney disease (CKD) is a life-limiting condition that affects 1 in 10 adults and accounts for 12% of all deaths in Australia. Diet and physical activity are crucial to attenuate disease progression and reduce mortality risk. Digital health interventions have been proposed as a feasible model to deliver lifestyle interventions. Users' perspectives are key to ensure the intervention is aligned with their needs and goals. As such, this systematic review aimed to synthesise the perspectives of people with CKD and develop higher order concepts that elucidate users' preferences regarding digital health interventions that promote heathy lifestyle.

This was a qualitative systematic review. A database search was conducted on CENTRAL, Scopus, MEDLINE, CINAHL and SPORTDiscus between 2000-2023. Eligibility criteria included primary research that reported the preferences of adults with CKD regarding digital lifestyle interventions. Two independent reviewers completed title, abstract and full text screening. Quotes were extracted verbatim, coded and categorised. Categories were then used to generate themes.

Database search identified 5,761 records. One additional record was included following communication with a primary author. Fifteen papers were eligible, including 197 participants (age 51.0±7.2 years; 47% female). There were 83 people with CKD 1-5; 61 transplant recipients; and 53 people receiving maintenance dialysis. The overarching theme identified was that people with CKD considered digital interventions to be important platforms to access lifestyle interventions. There were five underlying themes that elucidated users' preferences for digital interventions , including simple instruction and engaging design; individualised interventions; virtual communities of care; education and action plans; and timely reminders and automated behavioural monitoring.

Digital health interventions were considered important platforms to deliver lifestyle interventions. Future research may apply users' preferences in this review to inform the development and conduct of a digital lifestyle intervention for people with CKD.

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#427

TITLE: HEALTHY LIFESTYLES PROGRAM IN AN OUTPATIENT SETTING (HELPOUT)

AUTHORS: Dr Rhiannon Dowla[1], Prof Nicholas Lintzeris[2], Mr Matthew Burdess[2], Dr Llew Mills[2], Assoc. Prof Bridin Murnion[3], Dr Elizabeth Machan[1,4], Dr Yorgi Mavros[1], Assoc. Prof Kieron Rooney[1]

Affiliations: [1]Faculty of Medicine and Health, Susan Wakil Health Building, University of Sydney, Sydney, Australia, [2]Drug and Alcohol Services, South Eastern Sydney Local Health District, [3]Northern Sydney Local Health District, [4]CIRUS Centre for Sleep and Chronobiology, Woolcock Institute of Medical Research, Macquarie Park, Australia

First author's contact: rhiannon.dowla@sydney.edu.au

INTRODUCTION AND AIMS: Substance use disorder is a major public health concern and is associated with elevated rates of physical illnesses. It is known that exercise is safe in a substance use population, with engagement in exercise being reported to increase periods of abstinence, metabolic health, and physical capacity. There is little evidence exploring the willingness and capacity of a substance use patient to perform exercise. This study explores the physical activity habits and preferences of substance use patients, their capacity to perform exercise and the impact of acute exercise on psychological outcomes. METHODS: Participants accessing opioid maintenance therapy were recruited from drug and alcohol clinics in metropolitan Sydney. 98 participants completed questionnaires assessing recent exercise and diet, quality of life, and anthropometry. Of these, 22 participants also completed fitness testing with changes in mood assessed acutely. RESULTS: 46% of participants reported planned physical activity however only 32% met ACSM guidelines. Higher levels of perceived physical health and quality of life had a notable positive association with volume of planned exercise completed. 95% of the cohort were interested in participating in an exercise program, with a lack of motivation and having an injury being the primary barriers to participation. 19.6% reported levels of extreme pain compared to 6.4% of the Australian population. Exercise capacity varied, with average performance in upper body endurance and hand grip strength assessments, but poor capacity in lower limb strength, balance and functional capacity. An acute bout of exercise lead to an increase in positive affect ($p<0.001$) and a decrease in negative affect ($p=0.011$). CONCLUSIONS: Exercise therapy has the potential to offer numerous benefits to patients seeking treatment for opioid use disorder, with planned physical activity correlation with improved physical and mental health outcomes. Clinical support from exercise physiologists is needed to assist in overcoming barriers to exercise and managing comorbid medical conditions.

#429

TITLE: FITNESS FOR RECOVERY- FEASABILITY AND IMPACT OF AN EXERCISE PROGRAM DURING RESIDENTIAL REHABILITATION.

AUTHORS: Dr Rhiannon Dowla[1], Mrs Carolyn Stubley[2], Miss Scarlett Hardy[1], Miss Phoebe Fraser[1], Assoc. Prof Bridin Murnion[3], Dr Elizabeth Machan[1,4], Dr Yorgi Mavros[1], Assoc. Prof Kieron Rooney[1]

Affiliations: [1]Faculty of Medicine and Health, Susan Wakil Health Building, University of Sydney, Sydney, Australia, [2]We Help Ourselves, Rozelle, [3]Northern Sydney Local Health District, [4]CIRUS Centre for Sleep and Chronobiology, Woolcock Institute of Medical Research, Macquarie Park, Australia

First author's contact: rhiannon.dowla@sydney.edu.au

INTRODUCTION AND AIMS: Opioid use disorder has the lowest quality of life (QOL) and highest disease burden of all substance use disorders (SUD). While opioid treatment does improve QOL, it remains below that of the general population. Previous reviews have indicated that exercise offers benefits for QOL, however the evidence in an opioid treatment population is lacking. This study investigates the feasibility and impact of a 10-week exercise intervention on QOL and mood in a residential rehabilitation program. METHODS: Participants admitted to an opioid substitution program within the We Help Ourselves (WHOS) rehabilitation service in Sydney, NSW Australia were invited to participate in a 10-week exercise intervention. Participants completed baseline screening assessing QOL, mood, exercise habits, and a fitness assessment. Willing participants then completed a twice weekly program delivered as part of the group therapy program. Sessions typically consisted of bodyweight exercises such as squats and push ups, and boxing. Following the completion of the training program assessments were repeated. Within group pre-post measures for QOL and mood outcomes were analysed using two-way ANOVA. This clinical trial was registered with Australia New Zealand clinical trial registry (ACTRN12622000213741). RESULTS: 45 Participants completed baseline assessments with nine participants completing the intervention and follow up assessment. Significant improvements were seen in QOL ($p=0.005$), Psychological distress ($p<.001$), and PCL-5 scores ($p=.011$). Participants performed well in grip strength, but below norms in all other exercise assessments. Exercise capacity improved following the intervention. CONCLUSIONS: Exercise programs are both feasible and beneficial when run as part of SUD improving a range of QOL and mood outcomes. Exercise capacity was generally poor, however improved through the course of the study, often nearing population norms. Exercise should be integrated widely as an adjunct therapy for SUD.

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#430

TITLE: RELIABILITY AND VALIDITY OF FULLTRACK AI APP TO MEASURE CRICKET BALL SPEED UNDER TRAINING CONDITIONS.

AUTHORS: Dr Kathleen Shorter[1,2], Kevin Tissera[3], Dr Minh Huynh[4], Professor Amanda Benson[3]

Affiliations: [1]Allied Health and Human Performance, University of South Australia, Adelaide, South Australia, Australia, [2]School of Science and Technology, University of New England, Armidale, New South Wales, Australia, [3]Department of Health Sciences and Biostatistics, School of Health Sciences; Sport Innovation Research Group, Swinburne University of Technology, Melbourne, Victoria, Australia, [4]School of Allied Health, Human Services & Sport, La Trobe University, Melbourne, Victoria, Australia

First author's contact: kath.shorter@unisa.edu.au

INTRODUCTION: Radar guns are commonly used to accurately and reliably measure ball speed(1), a key cricket bowling performance indicator. App-based approaches, such as Fulltrack AI, are gaining popularity. This study investigated the reliability and validity of Fulltrack AI to measure cricket ball speed compared to a validated radar gun(1). METHODS: Ball speed of 1081 deliveries (pace=783; spin=298) from a range of training sessions and conditions (batter, no batter; indoor and outdoor wickets) were recorded simultaneously using a radar gun (Stalker ATS2) and iPad running Fulltrack AI (version 1.13.1). Fulltrack AI data (ball speed (km/hr), line, length (m)) were extracted post-session for tabulation with radar gun data. Statistical analyses were conducted in R Statistical Software independently for bowling type (pace, spin) following exclusion of outliers. Reliability was assessed with standard error of measurement (SEM), coefficient of variation (CV) and intraclass correlation coefficient (ICC). Agreement was assessed using Bland Altman's, 95% limits of agreement (LOA)(2). Validity was assessed using generalised additive models (GAM), controlling for line, length and interaction of training conditions. RESULTS: Whilst reliability coefficients for pace deliveries demonstrated very good agreement (ICC=0.90; SEM=2.61) and lower variability (CV=2.56%) in contrast to spin (ICC=0.76; SEM=2.17; CV=3.08%); LOA demonstrated poor to fair levels of agreement, exceeding maximal allowable differences (>3%). When controlling for line, length and training conditions, GAMs 'average model' identified Fulltrack AI significantly ($p<0.05$) overestimated ball speed (pace: estimate 2.58km/hr, SE=1.24; spin: estimate 3.93km/hr, SE=0.81) when compared to the radar gun. CONCLUSION: Fulltrack AI is a reliable method for monitoring ball speed where accuracy is not of paramount importance. Significant overestimation of ball speed in contrast with a radar gun, even after controlling for different training conditions, suggests software refinement is required before such technology is readily adopted for the measurement of speed.

1.Smith & Burke (2021) 2.Bland & Altman (1986)

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#433

TITLE: THE VALIDITY OF USING THE FULLTRACK AI APP TO DETERMINE CRICKET BOWLING LINE AND LENGTH COMPARED TO 3D MOTION CAPTURE

AUTHORS: Mr Kevin Tissera[1], Dr Kathleen Shorter[2,3], Dr Minh Huynh[4], Professor Amanda Benson[1]

Affiliations: [1]Department of Health Sciences and Biostatistics, School of Health Sciences; Sport Innovation Research Group, Swinburne University of Technology, Melbourne, Australia, [2]Allied Health and Human Performance, University of South Australia, Adelaide, South Australia, Australia, [3]School of Science and Technology, University of New England, Armidale, New South Wales, Australia, [4]School of Allied Health, Human Services & Sport, La Trobe University, Melbourne, Victoria, Australia

First author's contact: kath.shorter@unisa.edu.au

INTRODUCTION: A bowler's ability to manipulate line and length of a delivery is a key performance attribute in cricket. 3D-motion capture (3DMocap), the gold standard in quantifying ball trajectories1 lacks ecological validity2. Fulltrack AI app may provide a feasible alternative to quantify and provide immediate ball trajectory feedback. This study explored the validity of Fulltrack AI to measure ball landing position compared with 3DMocap. METHODS: 836 deliveries under various conditions (pace, spin; bowled, thrown (SidearmTM); batter, no batter), were recorded using a Qualisys 8-camera 3DMocap system and iPad running Fulltrack AI (version 1.13.1). Line and length were extracted from Quintic Spline filtered 3DMocap data and tabulated with Fulltrack AI data. Statistical analyses were conducted in R Statistical Software following removal of outliers. Bland Altman's, 95% limits of agreement (LOA)3 were calculated, with line and length interaction further explored using 95% confidence ellipse area (CEA) to assess practical difference between 3DMocap and Fulltrack AI relative to ball landing position. Validity between Fulltrack AI and 3DMocap, and the interaction of conditions, were assessed with generalised additive models (GAMs). RESULTS: Whilst LOA (line= -0.15 to 0.10; length= -0.88 to 0.27) demonstrated good agreement, CEA ranged from 0.17m2 to 0.42m2 depending on ball landing location relative to the stumps (2-4m or >8m, respectively). GAMs 'average model' established no significant ($p>0.05$) difference between 3DMocap and Fulltrack AI, or the interaction effects of training conditions. CONCLUSION: Although Fulltrack AI appears statistically and ecologically valid in identifying cricket ball landing position, practitioners should be cognisant that practically, error varies relative to where on the wicket a ball lands. Thus, hindering the accuracy of feedback if needing to precisely quantify ball landing position when using Fulltrack AI app.
REFERENCES: 1. Aughey et al. (2022) 2. McNamara et al. (2015) 3. Bland & Altman (1986)

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#434

TITLE: SCOPING THE AVAILABILITY AND APPROPRIATENESS OF EXERCISE SERVICES FOR PEOPLE WITH CANCER IN REGIONAL WESTERN AUSTRALIA

AUTHORS: Mr Christopher Andrew[1,2], Dr Annie De Leo[3], Dr Carolyn McIntyre[3], Dr Joshua Lewis[3], Dr Amy Dennett[3], Dr Yvonne Zissiadis[4], Dr Mar Kennedy[2]

Affiliations: [1]Edith Cowan University, Bunbury, Western Australia, Australia, [2]Edith Cowan University, Perth, Western Australia, Australia, [3]La Trobe University, Melbourne, Australia, [4]GenesisCare

First author's contact: c.andrew@ecu.edu.au

BACKGROUND: National guidance directs oncology healthcare professionals to refer patients to exercise in standard care, yet referrals happen rarely in practice resulting in a critical research-to-practice gap. One major barrier preventing referrals—especially in rural and regional areas—is the lack of appropriate exercise programming available to people with cancer. Therefore, the aims of this study are to 1) determine the availability of exercise oncology programs in a regional area of Western Australia; and 2) explore the appropriateness of these resources to meet the needs of people living with cancer in this region so that a comprehensive referral resource can be created for the region. METHODS: A comprehensive online search identified all exercise services available in the region for people with cancer. Services were categorised using the Cancer Rehabilitation to Recreation (CaReR) framework to describe the level of care each provided. The geographical makeup and demographics of the cancer population in the region were matched to the services to identify service-gaps. RESULTS: Approximately 194 000 people live in the Soutwest, with ~1300 residents diagnosed with cancer each year. Sixty-six exercise oncology services were identified as appropriate for serving this entire population. 62% of all programs were located in the two largest shires across the region. 66% of services were categorised as CaReR Phase 1, providing targeted, supervised care for high-needs patients; 79% as Phase 2, providing targeted, supervised care for medium needs patients; and 28 percent as Phase 3, independent, community-based care for low needs patients. CONCLUSION: The Southwest region is significantly under-resourced to meet the national directive to embed exercise referrals into care for people with cancer. Lack of available exercise services for this population, and few programs catering for a diverse range of patient needs underpin this. Implementation-focused research is required to address this critical research-to-practice gap.

#438

TITLE: COMBINED HIGH-INTENSITY INTERVAL TRAINING FOR PEOPLE WITH DISORDERS OF GUT BRAIN INTERACTION: A CASE REPORT

AUTHORS: Ms Jacinta Durney[1,2], Prof Jeff Coombes[4,5], Dr Myles Young[1,3], Prof Nicholas Talley[5,6], Prof Ronald Plotnikoff[1,3], Dr Emily Hoedt[5,7], Dr Emily Cox[2,3]

Affiliations: [1]Active Living Research Program, Hunter Medical Research Institute, New Lambton, NSW, Australia, [2]School of Biomedical Sciences and Pharmacy, University of Newcastle, Callaghan, NSW, Australia, [3]Centre for Active Living and Learning, University of Newcastle, Callaghan, NSW, Australia, [4]The University of Queensland, Brisbane, Queensland, Australia, [5]Centre for Research in Excellence in Digestive Health, Faculty of Health and Medicine, University of Newcastle, Newcastle, NSW, Australia, [6]School of Medicine and Public Health, University of Newcastle, Callaghan, NSW, Australia, [7]Hunter Medical Research Institute, New Lambton, NSW, Australia

First author's contact: jp.rose.d@gmail.com

AIMS: The efficacy of high intensity exercise for improving symptoms of chronic idiopathic constipation, a highly prevalent disorder of gut brain interaction (DGBI), remains uncertain. The aim of this case report was to investigate the feasibility, safety, and efficacy of 8-weeks of combined high-intensity interval training (C-HIIT) for a person (female, 23 years old) with chronic constipation. METHODS: The participant enrolled in the C-HIIT for DGBI controlled trial that aims to recruit 32 participants with DGBI. Following comprehensive assessments of gastrointestinal symptoms, neuromuscular fitness, cardiorespiratory fitness and mental health, the participant completed an 8-week intervention consisting of thrice weekly 26-minute C-HIIT sessions. These consisted of a 3-minute aerobic warm-up (treadmill; 50-60% peak heart rate [HRpeak]) followed by 4-minutes of high-intensity aerobic exercise at ≥85% HRpeak. After 1-minute rest, eight whole body resistance exercises were performed. These involved continuous repetitions with good technique for 1-minute at an ≥8/10 (very hard) rating of perceived exertion; 1-minute rest separated each exercise. Adverse events were recorded throughout the intervention. RESULTS: The participant adhered to the intervention, attending 100% of sessions and reaching the prescribed intensity for 100% of aerobic and 80% of resistance exercises. Efficacy of the exercise training was indicated by a reduction in the severity of gastrointestinal symptoms measured via the irritable bowel syndrome-symptom severity scale (from 111 to 100) and the structured assessment of gastroIntestinal symptoms (39 to 12). There were some improvements in neuromuscular fitness (handgrip strength: 27 to 29.5 kg, 30-second sit to stands: 12 to 10 repetitions) and cardiorespiratory fitness (VO2max: 36.7 to 38.2 mL/kg/min). No changes were observed in mental health (Hospital Anxiety and Depression scale), and one non-serious adverse event (nausea post-eating), which was deemed not related to the intervention. CONCLUSION: The C-HIIT intervention in a person with DGBI was feasible, efficacious and safe.

#439

TITLE: WALKING WITH BLOOD FLOW RESTRICTION: A NOVEL METHOD TO IMPROVE PHYSICAL FITNESS IN OLDER ADULTS?

AUTHORS: Mr Michael Beere[1], Dr Isaac Selva Raj[1,2], Professor Jeremiah Peiffer[1,2], Professor Keith Hill[3], Dr Peter Edwards[4,5], Dr Belinda Brown[2], Associate Professor Brendan Scott[1,2]

Affiliations: [1]Murdoch Applied Sport Science Laboratory, Discipline of Exercise Science, School of Allied, Health, Murdoch University., [2]Centre for Healthy Ageing, Health Futures Institute, Murdoch University, Perth, WA, Australia, [3]Rehabilitation Ageing and Independent Living (RAIL) Research Centre, Monash University, Melbourne, VIC, Australia, [4]Curtin University, Perth, Western Australia, Australia, [5]Orthopaedic Research Foundation of Western Australia, Claremont, Western Australia, Australia

First author's contact: michael.beere94@gmail.com

INTRODUCTION AND AIMS: Alternative physical activity modalities and methods are needed to combat low adherence among older populations. Therefore, we are investigating whether blood flow restricted (BFR) walking improves measures of lower limb strength, and functional performance, compared to traditional walking in older adults. METHODS: Healthy adults ≥60 years were randomised into BFR (n=5) or non-BFR (n=4) walking groups. Both groups walked outdoors, 3 days/week for 12 weeks starting at 4km/h and increasing walking speed by 0.5km/h every 4 weeks. The BFR group walked for 25min with BFR applied (60% arterial occlusion pressure) to the lower limbs in 2x 10mins bouts (separated by 5mins walking without occlusion). The non-BFR group walked for 50mins without occlusion, matching current best practice for low-moderate intensity physical activity. Participants were assessed at baseline and post-intervention (12 weeks) for knee extension maximal voluntary torque (MVTpeak) and functional capacity (four square step test [4SST], 5x sit-to-stand [STS], timed up and go [TUG], gait speed, and 6-minute walk test [6mWT]). RESULTS: There were no differences at baseline between groups (p>0.05). Both groups improved across all measures from baseline to post-intervention, with significant effects for time observed for: 4SST (7.92±1.2s – 6.83±1.39s; p=0.035) , TUG (6.16±0.81s – 5.58±0.9s; p=0.04), STS (11.30±1.70s – 10.14±1.7s; p=0.032), but not for gait speed (3.98±0.69s – 3.71±0.69s; p=0.456), 6mWT (564.72±72.13m – 601.27±64.2m; p=0.129) and MVTpeak (112.33±25.8Nm – 120.55±23.5Nm; p=0.995). No group x time effect was observed from baseline to 12 weeks (p>0.05). SUMMARY: The current results demonstrate significant improvements in functional measures (4SST, TUG, STS) from baseline to post-intervention, with no differences observed between groups. This indicates that low-intensity BFR walking may provide comparable physical fitness improvements to non-BFR walking while completing only 50% of the volume.

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#441

TITLE: VIRTUAL-REALITY PAIN SCIENCE POSITIVELY IMPACTS PAIN AND FUNCTION, RETURN TO WORK, CUSTOMER EXPERIENCE AND RETURN ON INVESTMENT: A CASE STUDY

AUTHORS: Mr Chris Sinclair[1], Mr Michael Craven[1], Dr Vicky Phillips[1]

Affiliations: [1]EXPHYS, Sydney, NSW, Australia

First author's contact: chris.sinclair@exphys.com.au

CASE SETTING: 52-year-old male client referred for post-operative cervical-spine two-level fusion rehabilitation, two-years following a motor accident. History of prior motor accident five-years earlier with cervical-spine discectomy resolving symptoms. Referred under compensable insurance policy with 13-years claim benefit remaining. Referral objective to restore health and function for return-to-work (RTW). Experiencing intolerable neck pain with reduced left arm function, pain medication side effects, and low mood. Loss of hope resulting from significant pain post-operatively, whereas prior surgery resolved similar symptoms. Not working at referral. Pre-disability work was full-time self-employed barista. TREATMENT/REHABILITATION PROVIDED: Six hours of EXPHYS BETTER Pain VR program, consisting of virtual-reality (VR) pain science coached by an exercise physiologist (AEP) over 10-weeks, face-to-face, within the pain mechanism and bio-psycho-social models. Learning consisted of VR modules and workbook with practical application of six key target pain concepts: pain is always real, doesn't accurately measure tissue health, relies on context, is a protector, has a buffer zone, and can be retrained. Two functional goals of self-care and cooking were established, and RTW. RESULTS: Validated inventories demonstrated self-reported improvements in; pain intensity: 11 item numerical pain rating scale, range: 0-10 points [8 referral; 1 closure]; and function; two 11-item patient-specific functional scale [self-care, cooking], range: 0-20 points) [2 referral; 16 closure]. Work mindset improved from pre-contemplation [referral] to maintenance [closure]. Work capacity improved from no capacity to full capacity. Work status improved from not working to working pre-disability hours and duties. Insurance claim closed. Direct return-on-investment of $300 for every $1 spent on the EXPHYS BETTER Pain VR Program. Client net promotor score (NPS) was promoter (10/10), and customer satisfaction (CSAT) was very satisfied (5/5). REFLECTIONS/LEARNINGS: Virtual-reality pain science, delivered by an AEP within the pain mechanisms model, positively impacts pain and function, RTW, and customer experience, with demonstrated return-on-investment.

#443

TITLE: BLUNTED SKELETAL MUSCLE MICROVASCULAR BLOOD FLOW IS A POTENTIAL UNDERLYING MECHANISM FOR EXERCISE INTOLERANCE IN ADULTS WITH ATRIAL FIBRILLATION.

AUTHORS: Dr Kimberley Way[1,2,3], Dr Lewan Parker[1,3], Dr Hannah Thomas[1,4], Ms Sian O'Gorman[1], Dr Barbara Brayner[1], Dr. Jenna McVicar[1], Dr. Christian Verdicchio[5,6], Prof. Ralph Maddison[1], Geoff Wong[7,8], Jennifer Reed[2,9], Michelle Keske[1,3]

Affiliations: [1]Institute for Physical Activity and Nutrition (IPAN), School of Exercise and Nutrition Sciences, Deakin University, Geelong, Victoria, Australia, [2]Exercise Physiology and Cardiovascular Health Lab, University of Ottawa Heart Institute, Ottawa, Canada, [3]Baker Heart and Diabetes Institute, Melbourne, Victoria, Australia, [4]Institute for Health and Sport (IHES), Victoria University, Melbourne, Victoria, Australia, [5]Faculty of Medicine & Health, University of Sydney, Sydney Australia, [6]Centre for Heart Rhythm Disorders, University of Adelaide, and South Australian Health & Medical Research Institute, Adelaide, Australia, [7]Austin Health, Melbourne, Victoria, Australia, [8]Department of Medicine, University of Melbourne, Victoria, Australia, [9]School of Epidemiology and Public Health, Faculty of Medicine, University of Ottawa, Ontario, Canada

First author's contact: kim.way@deakin.edu.au

INTRODUCTION & AIMS: Approximately 45% of adults living with atrial fibrillation (AF) experience exercise intolerance (EI). However, the mechanisms of EI in AF are not well understood. We aimed to determine whether impaired skeletal muscle microvascular blood flow (MBF), not macrovascular, responses to peak exercise is a plausible explanation for EI in adults with AF. METHODS: Adults with AF and healthy controls completed a Modified Bruce treadmill protocol to obtain peak oxygen uptake (V̇O2peak). Skeletal muscle microvascular blood volume, velocity, and flow in the vastus lateralis muscle was assessed using contrast enhanced ultrasound. Superficial femoral artery diameter, blood velocity and flow were assessed using 2D and Doppler ultrasound. Vascular measurements were collected at rest, immediately post-exercise, and 30 minutes post-exercise. RRESULTS: Nine adults with AF (age: 62±5 years, 66% females, BMI: 29.7±4.2 kg/m2, V̇O2peak: 24.3±6.1 mL/kg/min) and seven controls (age: 63±10 years, 57% females, BMI: 26.7±1.7 kg/m2, V̇O2peak: 31.0±7.5 mL/kg/min) participated. One participant was in AF during testing. A significant group x time interaction in skeletal muscle MBF (p=0.04) and near significant interaction in blood volume (capillary recruitment, p=0.08) was observed. Post-hoc analysis revealed adults with AF had a significantly blunted MBF at 30 minutes post-exercise (-1.3 fold versus control, p=0.01) and reduced microvascular blood volume (i.e. capillary recruitment) pre- and 30 minutes post-exercise (-6.6 fold [p=0.01] and -9.4 fold [p=0.01] versus controls). No differences were observed for changes in skeletal muscle microvascular blood velocity, or femoral artery diameter, blood velocity or flow. CONCLUSION: Despite similar femoral artery blood flow responses, adults with AF have lower skeletal muscle MBF responses to peak exercise which may be driven by a reduced capillary recruitment in the skeletal muscle. Our findings provide new insight into vascular complications which may partially explain EI in those with AF.

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#444

TITLE: THE POTENTIAL ROLE OF EXERCISE IN DELAYING GENETIC DESTINY: EXAMINING THE RELATIONSHIP BETWEEN EXERCISE AND KEY BIOMARKERS IN DOMINANTLY INHERITED ALZHEIMER'S DISEASE

AUTHORS: Associate Professor Belinda Brown[1], Dr Kelsey Sewell[2], Dr James Doecke[3], Professor Hamid Sohrabi[4], Professor Jeremiah Peifer[4], Associate Professor Stephanie Rainey-Smith[4], Professor Ralph Martins[5]

Affiliations: [1]Murdoch University, Perth, Western Australia, Australia, [2]Centre for Healthy Ageing, Health Futures Institute, Murdoch University, Murdoch, Western Australia, Australia, [3]Australian E-Health Research Centre, CSIRO, Herston, Queensland, Australia, [4]Centre for Healthy Ageing, Health Futures Institute, Murdoch University, Murdoch, Western Australia, Australia, [5]School of Medical and Health Sciences, Edith Cowan University, Joondalup, Western Australia, Australia

First author's contact: b.brown@murdoch.edu.au

INTRODUCTION: Greater physical activity is associated with reduced risk for Alzheimer's disease (AD), and lower levels of AD-related biomarkers, such as beta-amyloid (Aβ) and tau, measured in the cerebrospinal fluid (CSF) and brain. A small proportion of Alzheimer's disease (<1%) cases are caused by a rare dominant genetic mutation. The aim of the current study was to examine associations between self-reported exercise participation and AD-related biomarkers (from CSF and brain imaging) over time, in individuals we know will develop Alzheimer's disease at an early age (i.e., dominant AD mutation carriers). METHODS: The sample included n = 308 mutation carriers from the Dominantly Inherited Alzheimer's Network (DIAN) study with data available for self-reported exercise participation, brain imaging (hippocampal volume, total brain volume, gray matter volume, white matter hyperintensities, brain Aβ levels), and biomarkers quantified from CSF (several Aβ and tau species and ratios). Participants were assessed regularly (time interval depending on mutation type) from baseline to 10+ years post-baseline. Associations between exercise and AD biomarkers (i.e., from brain imaging and CSF) were examined using linear mixed models, corrected for various confounding variables. RESULTS: The sample had a mean age of 39.7 ± 10.8 years and were 56% female. Greater baseline exercise was associated with a slower decrease in right ($B=0.06$, $p < 0.001$) and left ($B=0.06$, $p<0.05$) hippocampal volume; and slower accumulation of brain Aβ ($B=0.04$, $p<0.001$). CONCLUSION: These findings demonstrate that exercise is associated with more favourable profiles of AD-related biomarkers in those with ADAD mutations. This work may have implications for our understanding of how exercise influences disease development in late-onset sporadic AD. Nevertheless, the causal direction of our findings is difficult to ascertain, and future study designs investigating the therapeutic potential of exercise in both ADAD and late-onset AD should be considered.

#445

TITLE: USE OF POST-EXERCISE RECOVERY STRATEGIES IN TEAM AND INDIVIDUAL SPORTS

AUTHOR: Dr Mandy Plumb[1]

Affiliation: [1]Central Queensland Univeristy, Cairns, QLD, Australia

Author's contact: a.plumb@cqu.edu.au

INTRODUCTION: The study aims to identify perceptions of recovery and actual post-exercise recovery utilized by team and individual athletes in Far North Queensland. METHODS: The recovery techniques used by team and individual sport athletes of different competition levels was investigated by survey. Specifically, this study investigated if, when, why and how the following recovery strategies were used: active land-based recovery (ALB), active water-based recovery (AWB), stretching (STR), cold water immersion (CWI) and contrast water therapy (CWT). RESULTS: Seventy-eight athletes (47 male: 31 female) mean age 25.59 ±8.48 yrs completed survey. Local competition was most represented (44%), followed by state (37%), regional (13%), national (5%) and international (1%). Rugby league/ruby union were the most represented team sport (42%), followed by soccer (16%), AFL (6%), netball (6%) and remaining team sports (8%). Individual sports (24%) included swimming, running, and ultra-marathon. A total of 84% of participants self-reported performing a recovery strategy following either competition, after pre-season training or after in-season training. Most popular recovery methods, stretch (28%), ice bath (26%), massage (14%) and sleep (10%). Stretching was the most effective recovery strategy, with 38% 'always' performing stretching after a game, 36% during pre-season training and 40% in season training. Self-report by athletes was suggestive of the more physiological being the most important, stating that the strategies helped speed up recovery, increase blood flow, decrease inflammation, swelling and soreness. CONCLUSION: To date the survey data suggests athletes reporting why they believe recovery strategies are effective/ineffective are more aware of the physiological recovery aspects, and less so on psychological aspects. This suggests potential targeted education on psychological aspects of recovery and recovery related to heat and humidity aspects to assist in developing best practice guidelines and education for athletes and coaches.

#446

TITLE: ANTHROPOMETRIC AND PHYSICAL QUALITIES OF SEMI-PROFESSIONAL RUGBY LEAGUE PLAYERS

AUTHOR: Dr Mandy Plumb[1]

Affiliation: [1]Central Queensland Univeristy, Cairns, QLD, Australia

Author's contact: a.plumb@cqu.edu.au

AIM: The aim of the current study was to investigate the physiological and anthropometric characteristics of semi-professional rugby league players across a typical season, including pre- and post-season data. METHODS: Thirty-five semi-professional rugby league players, mean age 25.38 ± 2.35 years were measured for height, body mass, sum of skinfolds, and speed (20m sprint). Global positioning system (GPS) data, sampling at 10 Hz, were collected, two pre-season and eighteen Queensland Cup rugby league matches in the 2023 season for 10 players (backs and forwards). Data was categorized into total distance (km), sprint distance (m), power plays, energy expenditure (kcal), player load, and top speed (m/s). RESULTS: Compared with forwards the backs had significantly lower body mass (99.4kg vs 90.8kg), and significantly greater speed during 20m sprint (3.00 vs 3.1sec). Sum of skinfolds, no differences between backs and forwards across the three time points, 104.2 vs 106.2mm, 103.9 vs 110.9mm and 93.8 vs 108.1mm. Reviewing the GPS data across the trial and cup games revealed a number of significant differences between backs and forwards, backs greater overall distance (6.63km vs 5.26km), sprint distance (467.53 vs 264.63m), power plays (37 vs 25), energy expenditure (1002.42 vs 778.90 kcal), player load (311.50 vs 275.16), top speed (8.02 vs 7.02m/s). CONCLUSION: Retrospective analysis of our data has allowed us to understand the activity demands between match types and differences in activity demands between seasonal phases of training in semi-professional male rugby league players and will permit further specificity of training and improve performance. Determining the fitness and physiological profiles and how they relate to training and match demands will allow the coaching staff to develop more targeted training strategies in order to optimally develop the fitness characteristics that predominantly underpin match demands.

#448

TITLE: DOES MOTOR PROFICIENCY INFLUENCE SLEEP, PHYSICAL ACTIVITY AND MENTAL WELLBEING IN AUSTRALIAN CHILDREN?

AUTHORS: Dr Mandy Plumb[1], Dr Amanda Timler[2], Dr Gabrielle Rigney[3]

Affiliations: [1]Central Queensland Univeristy, Cairns, QLD, Australia, [2]The University of Notre Dame Australia, Fremantle, WA, Australia, [3]CQUniversity, Appleton Institute, Wayville, SA, Australia

First author's contact: a.plumb@cqu.edu.au

INTRODUCTION: Motor impairments such as poor timing, balance, sequencing, and dexterity often impact on the child's quality of life, both physically and emotionally. Sleep and physical activity are modifiable behaviours that have a bi-directional association with mental health outcomes. However, there is very limited research on sleep in children with motor difficulties. The aim of this study is to examine if level of motor proficiency influences physical activity, sleep behaviour, and mental well-being. METHODS: Children aged between 6 and 12 years attended one ~90-minute testing session where they completed the Movement Assessment Battery for Children (MABC; 2nd edition), the Test of Gross Motor Development (TGMD; 3rd edition), and a brief physical activity assessment. Questionnaire were completed by the children and parents (Adolescents Motor Competence Questionnaire (AMCQ), Short Moods and Feelings, Kids Screen, Strength and Difficulties Questionnaire, Children's Sleep Habits Questionnaire (CSHQ). RESULTS: Currently, 15 children (9 males, mean age 9.2 ± 1.97 yrs) have completed the study. Preliminary results show a mean TGMD index of 104.93 ±1.97, suggesting motor skills performed to an average level. The MABC percentile rank was 56.93 ±27.05, one participant below 5th percentile (motor impairment). AMCQ mean 87.00±8.9, however four participants had perceived low motor competence. Interestingly mean sleep score suggests high sleep disturbance among the sample (CSHQ mean 42.33 ± 9.73) with 9 out of 15 participants identifying with a paediatric sleep disorder (three low motor competence and six high motor competence has a paediatric sleep disorder). CONCLUSION: Results indicate some interesting findings with both high and low motor competence children demonstrating a sleep disorder. Further analysis looking at actigraph sleep data, sleep diary and physical activity collected over 7 days will be presented during the conference.

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#452

TITLE: THE ACUTE EXERCISE-INDUCED INFLAMMATORY RESPONSES IN GASTROINTESTINAL DISORDERS.

AUTHORS: Miss Kelly Baker[1], Dr Tegan Hartmann[1], Professor Frank Marino[2]

Affiliations: [1]School of Allied Health, Exercise and Sports Sciences, Charles Sturt University, Bathurst NSW 2795, Australia [2]School of Rural Medicine, Charles Sturt University, Orange NSW 2800, Australia

First author's contact: kbaker@csu.edu.au

INTRODUCTION & AIMS: Inflammatory bowel disease (IBD) and irritable bowel syndrome (IBS), are characterised by intestinal inflammation that presents severe symptoms and continued complications throughout the lifespan. These gastrointestinal (GI) disorders have a growing prevalence worldwide with no known cure. Management strategies often require a 'trial and error' process before an effective pharmacal/s is established; the successful interim varies considerably with prevalent adverse side-effects and gradual decline in the effectiveness of medication. Accordingly, alternative mechanisms to complement management options, reduce side-effects, and improve well-being warrant investigation. Physical activity is known to be beneficial for a variety of inflammatory conditions; the advantageous effects are associated with the exercise-induced inflammatory response directly from active muscle tissue. Despite this knowledge, minimal studies have attempted to quantify the inflammatory effect of exercise. This study investigates the inflammatory response of acute exercise. METHODS: Participants were allocated into one of two groups: GI disorders (IBD & IBS; n = 11) or apparently healthy control (AHC; n = 11). All participants completed three sessions: 1) initial familiarisation: questionnaires, anthropometry measures, DEXA scan, and a graded exercise test; 2) protocol 1: moderate-intensity continuous exercise; and 3) protocol 2: alternating high- and low-intensity exercise. Participants were randomly allocated to the acute exercise protocols. Each protocol had a fasted pre-exercise venous blood sample, 35-minutes cycle, fasted blood sample immediately post-, 2hrs post-, and 24hr post-exercise. RESULTS: Significant differences were observed between groups in body mass index, waist and hip circumstances, percentage of fat mass, and VO2peak ($p < .05$). Analyses of venous blood samples will be presented. CONCLUSION: With no known cure, lifestyle management is important for those with GI disorders. Exercise hosts several benefits; however, given the inflammatory nature of the condition, the acute responses of exercise are important for clinicians working with IBD/IBS patients.

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#471

TITLE: PAINFUL VS NON-PAINFUL EXERCISE IN PEOPLE WITH KNEE OSTEOARTHRITIS: A FEASIBILITY STUDY

AUTHORS: Mr Adrian Ram[1], Matthew D Jones[2,3], A/Prof Jeanette Thom[2,4], Dr John Booth[1], Dr Mitchell T. Gibbs[1,3], Mr Anurag Pandit[1], Mr Alexandre Kovats[1], Mr Pramod Ram[5]

Affiliations: [1]School of Health Sciences, University of New South Wales, Sydney, NSW, Australia, [2]School of Health Sciences, Faculty of Medicine and Health, UNSW Sydney, Australia, [3]Centre for Pain IMPACT, Neuroscience Research Australia, Sydney, Australia, [4]Discipline of Exercise and Sport Science, Sydney School of Health Sciences, Faculty of Medicine and Health, The University of Sydney, Camperdown, NSW, Australia, [5]School of Medical Sciences, University of New South Wales, Sydney, NSW, Australia5

First author's contact: adrian.ram@unsw.edu.au

INTRODUCTION & AIMS: Painful exercise reduces pain in the short-term compared to non-painful exercise in people with chronic pain. However, integration of painful exercise into knee osteoarthritis (OA) treatment is contentious among clinicians, with the clinical implications unknown. This study aimed to explore the feasibility of painful versus non-painful exercise in people with knee OA. METHODS: Participants were randomised into a painful (INT; RPE 5-6) or non-painful (CON; RPE 4-5) who performed exercise twice per week for 6 weeks. Both groups also received standardised education. The primary outcomes were feasibility, assessed using participant recruitment, retention, adherence, and compliance rates. Secondary outcomes included pain, function, strength, pressure pain thresholds, psychosocial measures and adverse events. Immediate pre- and post-exercise pain were also measured. RESULTS: 21 people with knee OA (66 ± 9 years old; BMI: 29.4 ± 8.1) completed the study. Feasibility was achieved and supported by high rates of recruitment (INT = 89%, CON 89%), retention (INT = 91%, CON = 100%), adherence (INT = 91%, CON = 92%), and compliance (INT = 72%, CON = 81%). Pain reduced in both groups (mean difference [95% CI]; INT = -0.7 [-1.8 to 0.4]; CON = -1.5 [-2.7 to 0.4]), and strength (1-RM leg press) improved with a moderate effect in favour of INT (12.8 [0.2 to 25.9], d = 0.97, p = 0.046). CONCLUSION: Incorporating painful exercise into treatment for individuals with knee OA is feasible. Several potential benefits include positive changes in maladaptive beliefs and behaviours and enhanced systemic benefits associated with higher intensity exercise. Future research comparing the efficacy of painful versus non-painful exercise in knee OA and other chronic musculoskeletal conditions is warranted.

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#472

TITLE: DEVELOPMENT OF A NOVEL ALGORITHM FOR THE AUTOMATIC DETECTION OF MULTIDIRECTIONAL LOCOMOTION WITHIN TEAM SPORTS

AUTHORS: Dr Cloe Cummins[1,2], Mr Caleb Handley[1], Mr Glen Charlton[3], Dr Kathleen Shorter[1,4]

Affiliations: [1]School of Science and Technology, University of New England, Armidale, New South Wales, Australia, [2]Carnegie Applied Rugby Research (CARR) Centre, Carnegie School of Sport, Institute for Sport, Leeds Beckett University, Leeds, United Kingdom, [3]Advanced Analytics & AI (3AI) Platform, Intersect Australia, [4]Allied Health and Human Performance, University of South Australia, Adelaide, South Australia, Australia

First author's contact: cloecummins@gmail.com

INTRODUCTION & AIMS: Field-based sports are characterised by their intermittent nature requiring both, multidirectional locomotion and, sports-specific movements at a range of intensities. Traditionally, athlete-monitoring has focused on quantifying workload based on movement intensity with minimal regard to the direction of locomotion [1]. The aim of this study was to develop and evaluate an algorithm to detect and classify multidirectional movement using signal characteristics from a microtechnology device. METHODS: Rugby league referees (n=13) undertook a match-play simulation protocol (i.e., changes in movement speed and locomotion direction) [2], with microtechnology and video data collected across five-trials. Video data was reviewed to identify movement anomalies outside of the simulation protocol for exclusion. From the 100Hz microtechnology data, acceleration measures were used to classify the start and end point of each movement (i.e., backwards, forwards, sideways or other) or marked for exclusion from the algorithm development. The classified sensor data was processed in Python (v3.11), where data were split into training and testing datasets. A Recurrent Neural Network (Long Short-Term Memory) [3] was implemented to develop and validate an algorithm. Model performance was assessed via accuracy, sensitivity, precision and Area Under the Receiver Operating Characteristic Curve (AUC), using the testing dataset. RESULTS: The accuracy of the model was 0.973 ± 0.010. Sensitivity and precision of the model varied between movement direction, but was >0.928 and >0.922, respectively. The AUC of the model was 0.988 ± 0.007. CONCLUSION: The current study highlights the effectiveness of a microtechnology based algorithm for automatically classifying multidirectional locomotion of various velocities. Practically, such algorithm can be used to inform evidence-based training in relation to multidirectional locomotion. Whilst model performance was very-high, further research should examine the feasibility of applying the algorithm to match-play datasets to enhance athlete-monitoring processes.
REFERENCES: 1.Glassbrook et al, 2019. 2.O'Hara et al, 2013. 3.Hochreiter and Schmidhuber, 1997.

#516

TITLE: IMPROVING MENTAL HEALTH, PAIN AND QUALITY OF LIFE IN PERSONS LIVING WITH OSTEOPOROSIS AND DEPRESSION OR ANXIETY: A SYSTEMATIC REVIEW.

AUTHORS: Caroline Fitzgerald[1], Dr Claire Burley[1,2], Dr Kemi Wright[3], Dr Kelly McLeod[3], A/Prof Belinda Parmenter[1]

Affiliations: [1]UNSW Medicine & Health Lifestyle Clinic, School of Health Sciences, Faculty of Medicine & Health, UNSW Sydney, Sydney, Australia; [2]Centre for Healthy Brain Ageing, School of Clinical Medicine, Faculty of Medicine & Health, UNSW Sydney, Sydney, Australia; [3]School of Health Sciences, Faculty of Medicine & Health, UNSW Sydney, Sydney, Australia

First author's contact: caroline.fitzgerald@unsw.edu.au

Osteoporosis (OP) is a progressive, age-related condition impacting approximately 3.8% of Australians. OP is associated with increased psychological distress, increased pain and decreased quality of life. Correlations exist between OP and psychological distress, with people living with OP three times more likely to experience very high levels of psychological distress compared to those without. Emerging evidence suggests a connection between bone loss and depressive symptoms. For people living with OP, depression and/or anxiety, increasing physical activity is recommended to improve overall health outcomes. Currently, no guidelines for exercise recommendations exist for people living with these co-occurring conditions. The aim of this systematic review is to identify the most effective physical activity intervention to improve mental and physical health, quality of life and pain in people with co-occurring OP and symptoms of depression and/or anxiety. The research question, eligibility criteria and search strategy were developed, and peer reviewed by the research team, and the search was registered through PROSPERO (CRD42023440020). A systematic search of the following databases was conducted using the Cochrane Highly Sensitive Search Strategy for identifying randomized trials and Polyglot search translator: PubMed, CINAHL, Embase, PsycInfo, Scopus & Web of Science. From 7,405 results, 2,372 were excluded as duplicates leaving 5,033. Covidence was used to screen by title and abstract, with a further 5,009 excluded based on study design, population and outcome measures. Full-text screening by two researchers (CF & KM) led to 19 studies included for data extraction, with 5 excluded based on population (OP diagnosis), questionnaire validity and availability of data. Data extraction and analysis is currently underway with results to be presented at the conference. Findings will be used to design and implement a tailored lifestyle intervention program for people living with OP and symptoms of anxiety and/or depression.

This research has been generously funded by the Estate of the Late Faye Patricia Williams.

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#450

TITLE: LEGACY EFFECT OF EXERCISE TRAINING TRIALS ON COGNITION IN OLDER ADULTS: SYSTEMATIC REVIEW AND META-ANALYSIS

AUTHORS: Mrs Ferstera Naomi[1], *Mr Riley Brown*[1,2], *Ms Jamie Chong*[2], *Dr Patrick Owen*[3,4], *Dr Niamh Mundell*[3], *Dr Shelley Keating*[1], *Prof Jeff Coombes*[2,5]

Affiliations: [1]Centre for Research on Exercise, Physical Activity & Health, School of Human Movement and Nutrition Sciences, The University of Queensland, Brisbane, Queensland, Australia, [2]University of Queensland, Brisbane, Queensland, Australia, [3]Institute for Physical Activity and Nutrition, School of Exercise and Nutrition Sciences, Deakin University, Geelong, Victoria, Australia, [4]Eastern Health Emergency Medicine Program, Melbourne, Victoria, Australia, [5]Centre for Research in Excellence in Digestive Health, Faculty of Health and Medicine, University of Newcastle, Newcastle, NSW, Australia

First author's contact: n.ferstera@uq.edu.au

INTRODUCTION & AIMS: Exercise training trials consistently show efficacy for improving cognitive outcome in older adults, especially when the intervention is supervised. However, whether this improvement in cognition is sustained long-term (i.e. a legacy effect) is unknown. While this is likely impacted by long-term adherence to exercise, the legacy effect of exercise training trials on cognition has not been established. Therefore, the aim of this study was to review the literature and investigate the legacy effect of an exercise trial on cognitive function in older adults. METHODS: A systematic review of the literature published in English was conducted in PubMed, Scopus, CINAHL, SPORTdiscus, Web of Science and Cochrane Central Register of Controlled Trials electronic databases. Study screening and data extraction were undertaken by two independent researchers. The main inclusion criteria were randomised controlled trial design with non-exercise control, older adult cohort (average age □50 years), supervised exercise intervention and cognitive assessments at post-trial and follow up (□3 months). Pairwise random-effects restricted maximum likelihood meta-analysis estimated the standardised mean difference (Hedges' g) between intervention and control groups for each cognitive function outcomes at post-trial and follow-up. RESULTS: A total of 12,539 articles were screened with 21 trials (n=2,504 participants aged 75.2□6.4 and mostly (56%) female) included in a meta-analysis. After 5.2□3.2 months, a legacy effect was seen with a small-to-moderate between-group effect for the cognitive domain of executive function favouring the exercise interventions (SMD=0.30, 95% CI 0.11 to 0.49; p=0.002). No effect was observed for other cognitive domains. The Cochrane risk-of-bias tool for randomized trials (RoB2) tool identified that 73.7% of the trials had "some concerns" and 26.3% had high risk for bias. CONCLUSION: In older adults who received an exercise intervention there was a small-to-moderate legacy effect for improved executive function compared to controls, five months after trial completion.

#453

TITLE: HOW IS CARDIOPULMONARY EXERCISE TESTING CONDUCTED IN NSW AND ACT?

AUTHORS: Kate Drury[1,2], Dr Rocco Cavaleri[2,3], A/ Prof Belinda Cochrane[4,5], Charlotte Anderson[1], Josie Seeto[1], A/ Prof Simon Green[2,6]

Affiliations: [1]School of Health Sciences, University of New South Wales, Sydney, NSW, Australia, [2]School of Health Sciences, Western Sydney University, Sydney, NSW, Australia, [3]Brain Stimulation and Rehabilitation (BrainStAR) Lab, School of Health Sciences, Western Sydney University, NSW, Australia, [4]Department of Respiratory and Sleep Medicine, Campbelltown Hospital, NSW, Australia, [5]School of Medicine, Western Sydney University, NSW, Australia, [6]Department of Cardiology, Campbelltown Hospital, NSW, Australia

First author's contact: k.drury@unsw.edu.au

INTRODUCTION/AIM: Cardiopulmonary exercise testing (CPET) is considered the gold standard of assessing functional capacity under stress. Given the growing utility of CPET, understanding the current standards of practice is crucial. However, little is known about CPET accessibility, protocols used, or barriers to testing in NSW and ACT. This study aimed to understand clinical CPET practices and identify possible areas of protocol variability. METHOD: 40 hospitals were contacted: 28 in metropolitan Sydney, 9 in regional / remote NSW, and 3 in metropolitan Canberra. Hospitals confirming that they had a CPET service were asked to complete a 28-question survey of CPET practices via Qualtrics. The survey explored testing personnel, medical supervision, protocol design, data reporting, and barriers to CPET. RESULTS: Most hospitals (n = 28) did not have a CPET service. Of the 11 sites that performed CPET, respondents were split evenly between adult (n = 6) and paediatric (n = 5) testing capacity. Cycle ergometry (n = 10) was the dominant exercise modality. Most sites reported using ramp (n = 8) rather than stepwise (n = 3) protocols. 73% of sites adapted the test work-rate to facilitate a test duration of 8-12 minutes. 27% used a standard work-rate, regardless of patient presentation or test indication. All sites reported anaerobic threshold-related variables, ECG-related measurements, and Borg scores. CPET endpoints were typically in line with American College of Sports Medicine guidelines (73%). Barriers to CPET included lack of suitable staffing (n = 10), lack of medical availability (n = 4), and space (n = 3). CONCLUSION: Despite its value, CPET appears to be underused in NSW/ACT. While consistency in CPET reporting and endpoints was identified, there was variability in protocols across testing sites. This variation has potential to impact consistency and comparability of test results, affecting clinical decision-making.

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#454

TITLE: PERCEPTUAL AND HAEMODYNAMIC RESPONSES DURING MODERATE-SPEED WALKING ARE INCREASED BY BLOOD FLOW RESTRICTION IN OLDER ADULTS, BUT DO NOT EXCEED UNRESTRICTED FAST WALKING

AUTHORS: Associate Professor Brendan Scott[1,2], Professor Keith Hill[3], Dr Kieran Marston[1,2], Mr Morteza Ghayomzadeh[4], Dr Isaac Selva Raj[1,2], Professor Jeremiah Peiffer[1,2]

Affiliations: [1]Murdoch Applied Sports Science Laboratory, Discipline of Exercise Science, School of Allied Health, Murdoch University, Perth, WA, Australia, [2]Centre for Healthy Ageing, Health Futures Institute, Murdoch University, Perth, WA, Australia, [3]Rehabilitation Ageing and Independent Living (RAIL) Research Centre, Monash University, Melbourne, VIC, Australia, [4]School of Health Sciences, Faculty of Medicine and Health, University of Sydney, Sydney, NSW, Australia

First author's contact: brendan.scott@murdoch.edu.au

INTRODUCTION & AIMS: Moderate-speed blood flow restriction (BFR) walking is an efficient exercise modality for older adults who cannot tolerate vigorous activity. However, limited data exist to guide the prescription of this exercise. This study examined the impact of different walking speeds and BFR cuff pressures on perceptual and haemodynamic responses, and compared these to unrestricted fast walking. METHODS: Fifteen older adults (67-77 years) performed 10 sessions of 10-minute treadmill walking. In the first session, participants walked "as quickly as possible" to calculate mean fast walk speed. The following nine randomised sessions included moderate-speed walking with 50, 60 or 70% fast walk speed and 0%, 40 or 60% arterial occlusion pressure (AOP). Ratings of perceived discomfort (RPD) and exertion (RPE) were obtained, and blood pressure was assessed to calculate mean arterial pressure (MAP) and pulse pressure (PP). Perceptual scores were examined with Friedman ANOVA and Wilcoxon signed ranks tests, while MAP and PP were examined using linear mixed models (participants as random effects and speed, AOP or condition as fixed effects). RESULTS: Higher RPD was observed using 60% AOP, followed by 40%, and 0% ($p<0.001$). RPE was higher for the fast walk (5.1±0.8 AU) than all other sessions (1.1±0.4 to 2.9±1.4 AU; $p<0.001$). MAP and PP were increased with higher AOP and walking speeds ($p\leq0.043$). However, MAP (87.2±8.8 to 102.7±15.6 mmHg) and PP (66.3±14.4 to 80.3±21.7 mmHg) from moderate-speed BFR sessions did not significantly exceed measurements during the fast walk trial (MAP=100.1±13.6 mmHg, PP=89.0±22.5 mmHg). CONCLUSION: Walking with BFR at 40% and 60% AOP increased limb discomfort and haemodynamic demands. Importantly, these responses did not exceed unrestricted fast walking, which caused the highest RPE. This study suggests a dose-response relationship of BFR cuff pressure with limb discomfort and haemodynamics, though these responses were not exacerbated more than unrestricted fast walking.

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#455

TITLE: EFFECTS OF DAILY 5-MINUTE ECCENTRIC-BIASED EXERCISES ON PHYSICAL FITNESS, BODY COMPOSITION, CRITICAL HEALTH MARKERS AND WELL-BEING IN SEDENTARY INDIVIDUALS

AUTHORS: Mr Ben Kirk[1], Prof Ken Nosaka[1], Prof Anthony Blazevich[1], Dr Jodie Cochrane Wilkie[2], Dr Georgios Mavropalias[1], Dr Aus Molan[3]

Affiliations: [1]Edith Cowan University, [2]Southern Cross University, [3]PathWest Laboratory Medicine

First author's contact: b.kirk@ecu.edu.au

INTRODUCTION: Exercise is fundamental for maintaining and improving health and fitness; however, many individuals do not participate in regular exercise, with perceived lack of time a key barrier. Minimal dose strategies, which reduce weekly exercise volumes to less than recommended guidelines, might improve health outcomes with minimal time investment. However, minimal dose strategies and their effects on health and fitness are still unclear. Therefore, we developed a bodyweight eccentric-biased exercise program consisting of 4 exercises (1 set of 10 repetitions each), which took just 5-min to complete, and investigated the effects of the program performed daily for 4 weeks on health and fitness outcomes in sedentary individuals. METHODS: We recruited 22 healthy but sedentary individuals (32 – 69 years) whose daily steps were <5000. Participants completed a two-week control period, followed by a 4-week daily exercise intervention. Muscular strength, physical fitness, body composition and critical health markers were assessed before (PRE-1) and after the control period (PRE-2), as well as after the intervention (POST). RESULTS: Participants adhered to the exercise program >90%. No significant changes in any measures were observed from PRE-1 to PRE-2. Following the exercise intervention, no significant changes in body mass, bone mineral density, fat mass, lean mass, heart rate, blood pressure, grip strength, squat jump or countermovement jump were evident. However, isometric mid-thigh pull, representing lower limb muscle strength (13%), push-ups (42%) and sit-ups (44%), representing upper body strength and sit and reach, representing flexibility (12%) increased significantly ($P<0.05$), and the increase in heart rate from a 3-minute step test was attenuated (8%) from PRE-2 to POST ($P<0.05$). Finally, mental health assessed by SF-36 significantly improved (15%) ($P<0.05$). CONCLUSION: These results suggest that the 5-min eccentric exercise program was effective for improving physical fitness and mental health of sedentary individuals when performed every day for 4 weeks.

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#456

TITLE: EFFECT INITIAL FOOT POSITION HAS ON WEIGHT DISTRIBUTION SYMMETRY AND FORCE PRODUCTION DURING A SIT-TO-STAND TASK IN OLDER ADULTS

AUTHORS: Dr. Deborah Pascoe[1], Mr Michael Donaldson[1]

Affiliations: [1]Federation University, Mount Helen, VIC, Australia

First author's contact: d.pascoe@federation.edu.au

INTRODUCTION AND AIMS: Transitioning from a seated position to standing is an important component to everyday living which can be affected by age-related muscle strength loss. Changing foot position has been found to affect a sit-to-stand transition in healthy younger populations however the effect it has on healthy older populations is unknown. The aim of this study was to provide clinicians with greater insight into the effect asymmetrical initial foot positions have on weight distribution symmetry and force production during a sit-to-stand transition in adults over 60 years of age. METHODS: Three symmetrical and six asymmetrical initial foot positions were investigated on two separate testing sessions. The maximum vertical ground reaction forces collected from each foot placed on individual Kistler force platforms were used to calculate body weight symmetry percentage. RESULTS: Body weight symmetry reduced when the dominant foot was moved posteriorly 1/3 and 2/3 participant's foot length compared to the symmetrical positions (102-107%). When the non-dominant foot was moved posteriorly by 1/3 and 2/3 the participant's foot length, body weight symmetry increased (99-102%) above the symmetrical positions. Maximum vertical ground reaction forces occurred (5.6-6.2N/kg) in the asymmetrical positions with the anterior foot positioned in neutral. CONCLUSIONS: Asymmetrical foot positions which involved shifting one extremity posteriorly by 1/3 or 2/3 the participant's foot length reduced transitional stability but increased force production. These results will help guide clinicians to scaffold progressions when prescribing sit-to-stand exercises to rehabilitate unilateral strength deficiencies within an older population.

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#458

TITLE: IMPROVING SPORT SCIENCE IMPACT IN ATHLETE-LED PRACTICE ENVIRONMENTS: A PERSEPCTIVE FROM TRACK CYCLING

AUTHORS: Dr Antony Stadnyk[1,2], Prof Franco Impellizzeri[1], Dr Jamie Stanley[3,4,5], Dr Paolo Menaspà[6,7], Dr Katie Slattery[1]

Affiliations: [1]University of Technology Sydney, Human Performance Research Centre, School of Sport, Exercise, and Rehabilitation, Faculty of Health; [2]New South Wales Institute of Sport; [3]South Australian Sports Institute; [4]Australian Cycling Team; [5]University of South Australia, Allied Health and Human Performance; [6]Australian Institute of Sport; [7]Edith Cowan University, Centre for Exercise and Sports Science Research, School of Medical and Health Sciences

First author's contact: antony.stadnyk@uts.edu.au

INTRODUCTION & AIMS: Like most high performance sports, track cyclists are typically supported within the training environment by coaches and interdisciplinary practitioners who, through evidence-based practices, guide the athlete through the process of performance development. To effectively impact practice and athlete performance, practitioners must be able to implement their knowledge and expertise in a way that complements the wider performance team. The aim of this study was to examine track cycling coaches' perspectives of the role and impact of sport science and research on their practice and the athlete development process. METHODS: Semi-structured interviews were conducted with elite track cycling coaches (n=8) who had been working at the highest level of the sport (Olympics, UCI World Championships). The interviews addressed factors contributing to athlete preparation, and the current and potential impact of sport science on the development of elite track cyclists. Reflexive thematic analysis was conducted to identify common themes in participants' experiences and perspectives. RESULTS: Three principal themes were identified from the data: 'conversation & the information dynamic', highlighting the impact of information and feedback within the performance team for developing collective training intelligence; 'integrating performance components for the individual', detailing the importance of individualised and integrated approaches to athletes' performance needs; and, 'science to complement the vision', examining the value of filtered data, and limitations of research in practice. CONCLUSION: The findings highlighted two key contributors to performance team effectiveness: athletes deeply invested in, and actively contributing to, the development process; and, performance staff identifying and filtering research and data to impact decision making and athlete development. A four-stage model was developed from the collective findings for guiding sport scientists' impact in athlete-led practice environments. Additionally, the model outlines sport scientist-supportive actions for coaches and athletes, along with practice-supportive actions for researchers, to improve impact within the sport.

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#459

TITLE: COMPARISON OF CONCENTRIC AND IMPACT FORCES ON LAND AND IN WATER

AUTHORS: Dr. Deborah Pascoe[1], Ms Jessica Cheslett[1]

Affiliations: [1]Federation University, Mount Helen, VIC, Australia

First author's contact: d.pascoe@federation.edu.au

INTRODUCTION AND AIMS: Plyometric jump training has been used in athletic training to improve muscle strength and power and injury prevention in young people and adults. There is evidence to support aquatic plyometric training in young athletes for improving strength and power while providing a safer environment with less impact when landing. The aim of this study was to extend the research to include middle-aged adults (40-60 years) who are at a greater risk of physical decline and would benefit from a greater understanding of the forces generated in land-based and aquatic plyometric jumps for adults aged 40-60 years. METHOD: Thirteen healthy individuals aged 40- 60 years participated in this study. Participants attended three sessions including a familiarisation session, land-based testing and water-based testing. Participants performed three vertical jumps (VJ) on land, three countermovement jumps (CMJ) and three squat jumps (SJ) on a force plate on land and in water. Force traces were analysed for peak force, impact force, flight time, and jump height. RESULTS: Peak forces normalised for bodyweight, jump height, and flight time were significantly higher in the water than on land for the CMJ and SJ ($p<.000$). Impact forces showed an insignificant increase in the water compared to on land. There was a strong correlation between the VJ and the two land based jumps for all jump characteristics ($p<.01$) and a strong positive correlation between the percentage of participant height immersed and peak force at take- off for CMJ ($r=.794$, $p<.01$) and SJ ($r=.682$, $p<.05$). CONCLUSION: Jump height, flight time, and peak force all increased in the water compared to on land. As the percentage of height immersed increased, so did peak force on take-off. Immersion depths must be considered when prescribing plyometric exercise for adults aged 40-60 years to ensure appropriately targeted exercise prescription.

#460

TITLE: DELIVERING GROUP-BASED TELE-EXERCISE SESSIONS FOR PEOPLE WITH TYPE 2 DIABETES: RESULTS AND EXPERIENTIAL INSIGHTS OF A PILOT STUDY

AUTHORS: Mr Matthew Kolasinski[1], Prof Ronald Plotnikoff[2,3], Dr Myles Young[2,3], Dr Shelley Keating[4,5], Dr Ryan Drew[1,2], Dr Emily Cox[1,2]

Affiliations: [1]School of Biomedical Sciences and Pharmacy, University of Newcastle, Callaghan, NSW, Australia, [2]Centre for Active Living and Learning, University of Newcastle, Callaghan, NSW, Australia, [3]Active Living Research Program, Hunter Medical Research Institute, New Lambton, NSW, Australia, [4]Centre for Research on Exercise, Physical Activity and Health, School of Human Movement and Nutrition Sciences, The University of Queensland, St Lucia, QLD, Australia, [5]Centre for Research on Exercise, Physical Activity & Health, The University of Queensland, Brisbane, QLD, Australia

First author's contact: matthew.kolasinski@newcastle.edu.au

INTRODUCTION & AIMS: Delivery of group-based tele-exercise is an emerging treatment option for people with type 2 diabetes (T2D), but best practice is not yet understood. We evaluated the results and experiential insights of a pilot study investigating this model of care. METHODS: Sixteen people with T2D (age 58.7±12.6, 63% male, duration of T2D 10.0±8.4years) underwent an 8-week tele-exercise intervention. Participants were assessed at baseline (in-person and via telehealth; results compared using intra-class correlations coefficients) and post-intervention (in-person only). The program was delivered in groups of 3-5, by an Accredited Exercise Physiologist using Zoom. Sessions were held once weekly and incorporated whole-body aerobic and resistance exercise (45min) and health behaviour change education (15min), reflecting the structure of Medicare-subsidised group exercise physiology sessions. Semi-structured interviews were conducted to gain participant and clinician feedback. Adverse events were monitored throughout. RESULTS: The intervention demonstrated efficacy, with improvements in HbA1c (mean change -0.3±0.5%), fasting glucose (-0.8±0.8mmol/L), systolic blood pressure (-6.4±8.4mmHg), waist circumference (-0.8±4.2cm), muscular strength (30sec sit-to-stand score 1.6±2.9; 30sec bicep curl score 5.6±3.0) and fitness (2min step test score 24.5±11.9). Clients could reliably self-assess outcomes such as waist circumference (ICC 0.98, 95%CI 0.95-0.99), 30sec sit-to-stand (0.94, 0.82-0.98), and 2min step test (0.96, 0.87-0.99) when supervised by the clinician via telehealth, negating the need for in-person consults. No serious adverse events were reported. Key experiential insights include 1) Technological issues were minimised by providing clients with a guide for using Zoom, and conducting individual Zoom familiarisation sessions, prior to program start. 2) Client confidentiality could be managed by using breakout rooms for private conversations. 3) Creative exercise selection (e.g., TheraBand anchor points, non-traditional equipment) allowed participants to envision exercising in their home, which assisted in self-management. CONCLUSION: This study contributes practical insights to optimise the delivery of group-based tele-exercise interventions to people with T2

#462

TITLE: THE INFLUENCE OF RESISTANCE TRAINING VARIABLES ON MUSCLE STRENGTH: A SYSTEMATIC REVIEW AND META-ANALYSIS

AUTHORS: Mr. Philip Lyristakis[1], Dr. Daniel Wundersitz[1], Dr. Stephen Cousins[1], Dr. Emma Zadow[2], Associate Professor Brett Gordon[1,3]

Affiliations: [1]La Trobe University, La Trobe Rural Health School, Holsworth Research Initiative, Bendigo, Victoria, Australia., [2]University of Tasmania, School of Health Science, Tasmania, Australia, [3]Holsworth Research Initiative, Bendigo, Victoria, Australia

First author's contact: 20284962@students.ltu.edu.au

BACKGROUND: Development of muscle strength through resistance training (RT) is associated with health and performance benefits. Prescribing resistance training utilising six different variables (sets × repetitions × exercises × intensity × frequency × duration) is complex to optimise outcomes. It is unclear if, the prescription of these variables to derive a composite variable, RT dosage, influences the development of muscle strength. OBJECTIVES: This study aimed to investigate if variations in RT dosage influence muscle strength. METHODS: CINAHL, MEDLINE, and SPORTDiscus were systematically searched; adults performing RT were compared against non-exercise controls where muscle strength was assessed. Only randomised controlled trials assessing chest and quadriceps muscle strength were considered. The six RT variables were extracted from eligible studies and were multiplied to generate RT dosage. Quadratic non-linear regressions were performed on pooled muscle strength data. Variable importance and model selection were performed to explore different linear combinations of RT variables to determine the most effective variable in developing muscle strength. RESULTS: 207 articles were eligible that enabled the calculation of RT dosage. Meta-analyses confirmed a significant effect of RT on muscle strength (SMD $\geq$ 1.3, CI = 1.1-1.6, $p < 0.001$). Quadratic non-linear regression models for the chest and quadriceps strength indicated that RT dosage as a continuous variable showed a significant dose-response for muscle strength (SMD = > 1.5, CI = 0.01-3.1, $P < 0.05$). The individual variables of most importance to develop muscle strength appear to be volume and duration ($p < 0.03$). CONCLUSIONS: As expected, RT significantly influences muscle strength and as RT dosage increases, so too does muscle strength; however, only up to a point (~1.5 million arbitrary units) before further increases in RT dosage don't appear to further develop muscle strength. Prescription of RT volume and duration should be prioritised for developing muscle strength.

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#463

TITLE: COMPARISON OF INTER-SESSION, INTRA-RATER AND INTER-RATER RELIABILITY OF SINGLE AND DOUBLE LEG LANDING ERROR SCORING SYSTEM USING DIFFERENT CALCULATION METHODS

AUTHORS: Mr Priyankara Manoj Rajakaruna[1,2], Associate Professor Yvonne C. Learmonth[1,2,3], Associate Professor Alasdair R. Dempsey[1,2]

Affiliations: [1]Discipline of Exercise Science, School of Allied Health, Murdoch University, Murdoch, WA, Australia; [2]Centre for Molecular Medicine and Innovative Therapeutics, Health Futures Institute, Murdoch University, Murdoch, WA, Australia; [3]Perron Institute for Neurological and Translational Science, Perth, WA, Australia

First author's contact: primanraj@gmail.com

INTRODUCTION & AIMS: The Landing Error Scoring System (LESS) is used for screening noncontact anterior cruciate ligament (ACL) injury risk. The LESS is deemed a valid and reliable indicator of landing biomechanics that predict noncontact ACL injuries. We have sought to validate a Single-Leg Landing Error Scoring System (SLESS) against the established LESS. There are seven distinct calculation methods for final LESS scores, adding variability to the original version and the risk of misinterpreting results. This study used different calculation methods to investigate the inter-session, intra-rater and inter-rater reliability of the SLESS and LESS scores. METHODS: Thirty-five team sports players performed four drop jump landing variations (dominant leg, non-dominant leg, double-leg and cognitive loading drill with double-leg) over three sessions. Sessions 1 and 2 were conducted on the same day, with Session 3 a week later. Video footage from frontal and sagittal views captured all landings. Three professionals scored recorded trials using standard SLESS and LESS protocols. One scorer assessed intra-session and inter-session reliability, while three evaluated inter-rater reliability. The final SLESS and LESS scores were calculated using original version/OG, average of 3 trials-AV, worst trial/WT, best score/BS, first trial/FT, last trial/LT, error present in at least two of three trials/TT). Reliability was assessed using intraclass correlation coefficient (ICC), standard error of measurement (SEM), and coefficient of variation (CV) with 95% confidence intervals. RESULTS: The study observed acceptable inter-session reliability across single-leg and double-leg drop jump landing tasks using all seven calculation methods (SLESS: ICC=0.80-0.91, SEM=1.07-1.10, CV=6.5-10.1%; LESS: ICC=0.63-0.90, SEM=1.06-1.11, CV=5.7-11.5%). The study also demonstrated acceptable intra-rater reliability for all tasks using all calculation methods (SLESS: ICC=0.86-0.94, SEM=1.05-1.08, CV=5.0-8.5%; LESS: ICC=0.74-0.93, SEM=1.04-1.08, CV=4.2-8.5%). In addition, acceptable inter-rater reliability was shown for all tasks using all calculation methods (SLESS: ICC=0.69-0.83, SEM=1.11-1.18, CV=10.5-18.0%; LESS: ICC=0.54-0.82, SEM=1.10-1.20, CV=10.3-20.3%). CONCLUSION: The study indicates the reliability of all seven calculation methods for SLESS and LESS scores. Precise specification of the chosen calculation method is crucial for practitioners and researchers.

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#464

TITLE: PREHABILITATION BEFORE GASTROINTESTINAL CANCER SURGERY (PREHAB-GI): AN IMPLEMENTATION STUDY.

AUTHORS: Jane Turner[1], Kristy-Lee Raso[2,3], Sonia Khatri[1,4], Yanlan Lin[5], Carolyn Wildbore[1,6], Caoimhe Scales[1], Shannon Gerber[1], Dr Michael Suen[3,4], Sam Egger[7], Guillermo Becerril-Martinez[3,6], Phillip Le Page[6], Sim Yee Tan[2,3], Janette Vardy[1,3]

Affiliations: [1]Concord Cancer Centre, Concord Repatriation General Hospital, Sydney, New South Wales, Australia., [2]Department of Nutrition and Dietetics, Concord Repatriation General Hospital, Sydney, New South Wales, Australia, [3]Sydney Medical School, University of Sydney, Sydney, New South Wales, Australia, [4]Department of Colorectal Surgery, Concord Repatriation General Hospital, Sydney, New South Wales, Australia., [5]Department of Colorectal Surgery, Concord Repatriation General Hospital, Sydney, New South Wales, Australia., [6]Department of Upper Gastrointestinal Surgery, Concord Repatriation General Hospital, Sydney, New South Wales, Australia.,

First author's contact: jane.turner1@health.nsw.gov.au

BACKGROUND: Surgery continues to be the primary treatment option for early-stage colorectal and upper gastrointestinal (UGI) cancers. However, up to 30-40% will experience a major complication. Prehabilitation aims to improve preoperative functional reserves through physical, nutritional, and/or psychological interventions. We aimed to evaluate the implementation of a multimodal prehabilitation program in gastrointestinal cancer surgery patients. METHODS: A single-arm implementation study using a pre-post design. Colorectal or UGI cancer patients scheduled for curative intent surgery at Concord Hospital with ≥14 days pre-surgery were recruited. The intervention was face-to-face or by telehealth (COVID adaptations): a 2-4-week program consisting of i) supervised exercise, ii) dietary education and protein supplements, iii) nursing support. The primary outcome was implementation using the RE-AIM (Reach/Effectiveness/Adoption/Implementation/Maintenance) framework. Secondary outcomes included functional, nutritional, and surgical outcomes. RESULTS: Over 16 months, 181 were screened; 95 (52%) were eligible. Reach: 77/95 recruited (64 colorectal, 13 UGI). The median age was 70 years; 46 (60%) were males. Median intervention duration was 16 days. Effectiveness: Functional capacity using the 6-minute walk test and 2-minute step test improved from baseline to pre-surgery; 9.3m (p=0.038) and 6.5 steps (p=<0.001), respectively. Self-reported moderate, vigorous and resistance training statistically increased from baseline to pre-surgery. Hospital length of stay decreased by 1.9 days (p=0.010). There was no difference in total complications and readmissions. Adoption: 91% of referrals were directly from surgeons. Implementation: 72 completed the intervention; 5 withdrew after baseline assessment. 34% of assessments and intervention were delivered by telehealth. Adherence to the intervention was high; 94% exercise, 97% nutrition, 98% nursing. Overall, participant and clinician satisfaction was high. Maintenance: The program has been adopted as standard care with modifications post-study completion. CONCLUSIONS: Our study shows that multimodal prehabilitation can be successfully implemented in a real-world setting, with a trend to improve functional and surgical outcomes.

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#465

TITLE: DOES EXERCISE PRESERVE FAT FREE MASS DURING A VERY LOW ENERGY DIET IN PATIENTS WITH OBSTRUCTIVE SLEEP APNEA?

AUTHORS: Dr Elizabeth Machan (Cayanan)[1,2], Mr Fraser Lowrie[1,3], A/Prof Christopher Gordon[2,4], A/Prof Craig Phillips[2,4], Professor Brendon Yee[1,2,3]

Affiliations: [1]Faculty of Medicine and Health, Susan Wakil Health Building, University of Sydney, Sydney, Australia, [2]CIRUS Centre for Sleep and Chronobiology, Woolcock Institute of Medical Research, Macquarie Park, Australia, [3]Department of Respiratory and Sleep Medicine, Royal Prince Alfred Hospital, Camperdown, Australia, [4]Faculty of Medicine, Health and Human Sciences, Macquarie University, Macquarie Park, Australia

First author's contact: Elizabeth.cayanan@sydney.edu.au

INTRODUCTION AND AIMS: Obesity is a major comorbidity of Obstructive Sleep Apnea (OSA), contributing to 58% of moderate to severe cases in adults. Very low energy diets (VLED) are effective for rapidly reducing weight however are associated with a greater fat free mass reduction compared to other energy restricted diets. Exercise may protect against this and has been shown to improve apnoea hypopnea index (AHI) independently of weight loss. We aimed to assess the feasibility and tolerability of rapid weight loss induced by VLED with or without high-intensity functional exercise in overweight and obese men with OSA. METHODS: This two-arm open-label pilot randomised trial included 20 participants with a BMI of ≥27kg/m² and moderate to severe OSA. Patients were randomised to VLED-only (VO) or VLED plus exercise (VEX) for 12-weeks. Both groups followed a VLED providing <800kcal/day for 8 weeks, followed by a 4-week refeeding period. The VEX group also participated in supervised high-intensity functional exercise training consisting of resistance and aerobic training of up to 5 days per week. RESULTS: A total weight loss of -14.5kg [95%CI -17.5 to -11.5] and -9.3kg FM [95%CI -11.0 to -7.6] was achieved (measured by DEXA). Fat-free mass (FFM) reduction occurred (-3.9kg [95%CI -5.5 to -2.3]), with a trend towards preservation in the VEX group. The VO group reduced AHI by 42.9%, moving from severe to moderate OSA. The VEX group's AHI change (-32.6%) approached but did not reach the moderate category post-intervention. CONCLUSION: The VLED, with or without exercise, proved feasible and well-tolerated and demonstrated positive outcomes in body composition and AHI. The VEX group suggested a potential trend in preserving FFM compared to the VO group. These results are promising, indicating the need for a larger, definitive trial to confirm these findings and explore the impact of exercise on FFM preservation in this population.

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#468

TITLE: CONCURRENT VALIDITY OF CLINICAL EQUATIONS TO PREDICT RESTING ENERGY EXPENDITURE COMPARED TO INDIRECT CALORIMETRY IN NON-SEVERE BURN PATIENTS

AUTHORS: Mr Tyler Osborne[1,2,3], Associate Professor Dale Edgar[3,4], Associate Professor Timothy Fairchild[1,2], Dr Brook Galna[1,2], Winthrop Professor Fiona Wood[3,5], Ms Brodie Allan[1], Mr Thomas Le Huray[1], Associate Professor Bradley Wall[1]

Affiliations: [1]School of Allied Health (Exercise Science), Murdoch University, Western Australia, Australia, [2]Centre for Healthy Ageing, Health Futures Institute, Murdoch University, Western Australia, Australia, [3]Fiona Wood Foundation, Fiona Stanley Hospital, Murdoch, Western Australia, Australia, [4]Burn Injury Research Node, Institute for Health Research, The University of Notre Dame Australia, Western Australia, [5]State Adult Burns Unit, Government of Western Australia South Metropolitan Health Service, Fiona Stanley Hospital, Murdoch, Western Australia

First author's contact: tylerjosborne1997@gmail.com

Underfeeding and overfeeding can inhibit recovery and negatively impact quality of life during and after receiving treatment for a burn injury. Clinicians rely on accurate estimation of resting energy expenditure to avoid overfeeding or underfeeding their patients. The criterion standard for measuring resting energy expenditure is indirect calorimetry. Many burn services use predictive equations to prescribe feeding regimes because they are cheaper, time efficient and logistically more expedient than indirect calorimetry and do not require specialised equipment. However, the validity of these clinical equations has not been established in non-severe burns (<15% total burn surface area, TBSA). In this study, resting energy expenditure was predicted for 35 participants with non-severe burn injuries using seven clinical equations and compared with the criterion-standard (indirect calorimetry). We found that all clinical equations may be inaccurate in predicting resting energy expenditure measured using indirect calorimetry, with the Schofield equation agreeing most closely (95% limits of agreement: -836 to 711 kcal.day-1). Agreement between clinical equations and indirect calorimetry remained poor even after correcting for TBSA. Our findings indicate clinical equations may not accurately predict resting energy expenditure of people who have sustained a non-severe burn. As such, we urge caution against relying solely on the existing predictive equations to guide clinical decisions regarding energy intake after non-severe burns.

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#469

TITLE: THE EFFECT OF WATER DOUSING ON HEAT STRAIN AND PERFORMANCE DURING ENDURANCE RUNNING IN THE HEAT

AUTHORS: Mr Mitchell Anderson[1], Dr Georgia Chaseling[2,3], Dr Clint Bellenger[1], Dr Samuel Chalmers[1]

Affiliations: [1]Alliance for Research in Exercise, Nutrition and Activity (ARENA), Allied Health and Human Performance, University of South Australia, Adelaide, Australia, [2]Engagement and Co-design Research Hub, School of Health Sciences, Faculty of Medicine and Health, The University of Sydney, Sydney, NSW, Australia, [3]SOLVE-CHD NHMRC Synergy Grant, School of Health Sciences, Faculty of Medicine and Health, The University of Sydney, Sydney, NSW, Australia

First author's contact: andmi003@mymail.unisa.edu.au

INTRODUCTION: Water dousing (pouring water on the body) is an easy-to-implement cooling method while running due to the availability of water at race aid stations, and may decrease the risk of heat illness and improve performance. However, dousing has not been investigated in extended duration running (i.e., ≥10 km), a typical distance in both elite and community level events. AIMS: Assess the effect of water dousing on heat strain and performance during self-paced and fixed-intensity exercise in the heat. DESIGN: Crossover, block randomised controlled trial. METHODS: 13 trained runners completed a 10 km time trial (TT) and 60 min fixed pace run (60% velocity of VO2max) in a 30°C, 47 % relative humidity environment using either water dousing (DOUSE) or no dousing (CON). RESULTS: 10 km TT performance was faster in DOUSE compared to CON (44:11±6:14 vs. 44:38±6:03 min:s; p=0.033). Change in core temperature (Tc) was not different between groups during the TT (+0.02±0.33°C in DOUSE; p=0.853) or fixed pace run (+0.02±0.30°C; p=0.848). Change in mean skin temperature (Tsk) was lower in DOUSE during the TT (-1.80±0.63°C; p<0.001) and fixed pace run (-1.38±0.78°C; p<0.001). Heart rate (HR) was lower for DOUSE during the fixed pace run (-3.5±5.5 bpm; p=0.041) but not during the TT (-0.2±4.2 bpm; p=0.853). Thermal sensation was lower for DOUSE during the TT (-49.3±41.9 mm; p<0.001) and fixed pace run (-44.7±27.6 mm; p<0.001). Rating of perceived exertion (RPE) was not different between groups for the TT (-0.2±0.9; p=0.390) or fixed pace run (-0.2±1.0; p=0.480). CONCLUSION: Water dousing improves 10 km TT performance in the heat but does not mitigate a rise in Tc. The positive change in thermal perception (via lower skin temperature) likely drives this ergogenic effect.

#470

TITLE: EARLY POST-OPERATIVE CLINICAL OUTCOMES IN PATIENTS UNDERGOING TOTAL KNEE ARTHROPLASTY COMPARING IN-PERSON CLINIC VERSUS TELEHEALTH-DELIVERED REHABILITATION PROGRAM: A NON-INFERIORITY TRIAL.

AUTHORS: Mr Ray Seaby[1,2], Dr Jay Ebert[1,3], Dr Brendan Joss[1,3], Dr Peter Edwards[2,4], Prof Tim Ackland[1]

Affiliations: [1]University of Western Australia, Perth, Western Australia, Australia, [2]Curtin University, Perth, Western Australia, Australia, [3]HFRC, Perth, Western Australia, Australia, [4]Orthopaedic Research Foundation of Western Australia, Claremont, Western Australia, Australia

First author's contact: rlseabs@gmail.com

INTRODUCTION AND AIMS: Rehabilitation following total knee arthroplasty (TKA) is essential to mitigate delay in physical recovery and facilitate optimum patient outcomes. Telehealth is emerging as a cost-effective and efficacious delivery method. The aim of this study was to investigate the early post-operative outcomes of patients following a telehealth-delivered rehabilitation program (Tele) compared with those following conventional outpatient rehabilitation (Clinic) in patients following TKA. METHODS: A single-blinded, randomized controlled non-inferiority trial was conducted, with 108 participants scheduled for primary TKA randomly allocated to a 6-week, telehealth-delivered rehabilitation program (n=54) or a 6-week supervised, in-person rehabilitation program (n=54). Knee flexion range of motion (KF-ROM) and the Quality of Life subscale of the Knee Injury and Osteoarthritis Outcome Score (KOOS-QOL) were collected pre-surgery and 7-weeks post-surgery. A linear mixed-effect model was used to assess differences between groups over time for both outcome measures. Change in KOOS-QOL of greater than 10 points was used to establish minimally clinically important change (MCIC), with chi square analyses used to assess between-group differences. RESULTS: Baseline KF-ROM measures were 124.1° and 122.2° for telehealth-delivered and in-person groups respectively; and 108.7° and 111.6° at 7-week post-surgery. KOOS-QOL scores were 32.7 and 33.3 at baseline for the respective groups; and 60.9 and 62.9 at week-7. There were no significant differences in between group changes over time for both KF-ROM (mean difference = -2.9°, 95% CI = -7.7 to 1.8; p=0.226) and KOOS-QOL (mean difference = -2.1, 95% CI: -10.0 to 5.9; p=0.611). Chi square analyses revealed no differences between groups meeting the MCIC (Tele = 71%; Clinic = 79%) in KF-ROM ($X^2 = 0.78$, p = 0.377). CONCLUSION: Short term outcomes following TKA are not different between telehealth-delivered and conventional supervised rehabilitation. Telehealth may provide an effective rehabilitation option for patients undergoing TKA.

#474

TITLE: EVALUATION OF THE HEALING MENTAL HEALTH PROGRAM

AUTHORS: Associate Professor Annette Raynor[1], Dr Lauren Fortington[1], Ms Sally Casson[1], Dr Caitlin Fox-Harding[1], Dr Daniel Kadlec[1], Professor Sophia Nimphius[1]

Affiliations: [1]School of Medical and Health Sciences, Edith Cowan University, Perth, Australia

First author's contact: a.raynor@ecu.edu.au

INTRODUCTION & AIMS: The HEALTMing Mental Health (HEALTM-MH) program was a free community-based program offered by Exercise & Sport Science Australia, supported by the Australian Sports Commission, Sport Australia Participation Grants program. HEALTM-MH was targeted at Australians living with mental health conditions in rural or remote areas. Our aim is to present an evaluation of the program effectiveness. METHODS: The standard program included one-hour of supervised group exercise per week and a one-hour lifestyle education session for 8-weeks. All outcome data, including The Stages of Behaviour Change, were collected by the site facilitators and was provided in an anonymised format for analysis and reporting. Participants were included in the analysis if they had completed more than 50% of the sessions. RESULTS: A total of 182 participants were recruited which included 117 who were enrolled in the adult mental health program, 32 in the standard adult program and 33 in a teen mental health program. All programs were delivered between May and October 2022 by trained HEALTM providers, with 18 sites having AEPs leading the program, and one site was led by a registered nurse. Included in analysis were 99 participants (31 males, 68 females) with a mean age of 59.5 years. There was a statistically significant change toward the desired outcome for fourteen of fifteen measures from pre- to post-testing. Twelve of these measures recorded the desired target change at the population (grouped) level. CONCLUSION: The targeted behaviour change was for a one stage shift which was achieved with most participants in the action or maintenance stage by the end of the program. The provision of the HEALTM-MH program was beneficial for those who attended more than 50% of the sessions. The program may increase physical activity and healthy lifestyle choices in individuals who selfreport a mental health disorder.

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#475

TITLE: DETERMINANTS OF ADULT CARDIAC STRUCTURE: DEVELOPMENTAL INFLUENCE OF PHYSICAL ACTIVITY, SYSTOLIC BLOOD PRESSURE AND TV WATCHING

AUTHORS: Mr Andrew Haynes[1], Ms Julie Collis[1], Mrs Jennie Carson[2], Miss Khushie Srivastav[3], Ms Louise H. Naylor[1], Mr Daniel John Green[1]

Affiliations: [1]Cardiovascular Research Group, School of Human Sciences (Exercise and Sport Science), The University of Western Australia, Perth, AUSTRALIA, [2]School of Population and Global Health, The University of Western Australia, Perth, WA, Australia, [3]School of Human Sciences (Exercise and Sport Science), The University of Western, Australia, Perth, WA, Australia

First author's contact: andy.haynes@uwa.edu.au

INTRODUCTION: The impacts of health-related behaviours and risk factor exposures across childhood and adolescence on the adult heart are largely unexplored. We investigated whether early-life trajectories for physical activity (PA), sedentary behaviour and systolic blood pressure (SBP) are associated with cardiac structure in adulthood. METHODS: Data collected throughout childhood and adolescence on PA, TV watching and SBP in a cohort study were used to develop antecedent trajectories. At age ~29yrs, participants were invited to undergo an echocardiogram, to assess left ventricular mass (LVM), LV internal diameter (LVID) and LV wall thickness (LVWT). Analysis was performed between trajectories, separately by sex. RESULTS: 723 participants were included. In males, LVM was greater in the antecedent High-PA trajectory (184.1±35.6g), compared to both Mid-PA (171.7±36.1g, P=0.014) and Low-PA (166.7±38.0g, P=0.021). This was related to greater LVID in High-PA compared to both Mid-PA (Δ1.3±0.5cm, P=0.018) and Low-PA (Δ1.3±0.8cm, P=0.087) groups; there were no differences in LVWT (all P>0.050). No differences were found in heart structure between PA trajectory groups in females (all P>0.050). For antecedent SBP, LVM was lower in both the Low-SBP (155.7±30.5g) and Normal-SBP groups (172.9±36.7g) compared to both High-normal (184.8±32.9g) and High-SBP (206.2±41.3g) in males (all P<0.001). This was primarily driven by larger LVWT in High-normal (Δ1.2±0.2g, P=0.001) and High-SBP groups (1.9±0.5g, P=0.001); no differences were observed for LVID (P=0.398). These findings for SBP were similar in females, with the highest SBP group having the greatest LVM and LVWT (all P<0.001). There were no significant impacts of antecedent TV trajectories on adult cardiac measures (all P>0.050). CONCLUSION: Higher developmental SBP is associated with larger heart size and wall thickness in adulthood. Higher developmental PA levels are associated with larger cardiac chamber dimension in adult males, but not females. These findings suggest adult cardiac structure may be influenced by early-life risk factor exposures.

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#476

TITLE: EXERCISE INTERVENTIONS ON THE ACUTE MEDICAL WARD: A SYSTEMATIC REVIEW AND META-ANALYSIS

AUTHORS: Mrs Jane McCaig[1,2], Associate Professor Brett Gordon[1,2], Dr Carolyn Taylor[1]

Affiliations: [1]La Trobe Rural Health School, La Trobe University, Bendigo, Victoria, Australia, [2]Holsworth Research Initiative, Bendigo, Victoria, Australia

First author's contact: J.McCaig@latrobe.edu.au

INTRODUCTION & AIMS: An acute hospital stay is associated with high proportions of sedentary time, and bed rest, with low physical activity participation for the stay duration. Exercise prescription on the acute inpatient medical ward can prevent decline, or at least maintain, physical outcomes in the adult population. The purpose of this systematic review with meta-analyses was to evaluate the effectiveness of exercise intervention on the acute inpatient medical ward on physical outcomes of muscle strength, aerobic capacity and balance in adults, compared with usual care. METHODS: Medline, CINAHL and EMBASE were searched from inception to 20th April 2023. Randomised controlled trials in English, which reported muscle strength, aerobic capacity or balance outcomes for adults who received an exercise intervention on an acute medical ward were included. Studies were excluded if they did not have a control group receiving usual care. Study quality was assessed using the PEDro and TESTEX scales. The GRADE rating assessed quality of evidence to evaluate certainty of effect. Where studies with continuous data used different measures of assessment, and reported post-test outcomes, standardised mean differences with a random effects model was used. For studies with continuous data that used different measures of assessment, and reported change from baseline scores, a weighted mean difference with a random effects model was used. Significance was set at $p<0.05$. RESULTS: Twelve studies were included, with 1,273 unique participants, which compared exercise intervention with usual care. Low quality evidence demonstrated a significant difference between groups for aerobic capacity ($p=0.02$) and maximum isometric strength ($p=0.001$). A meta-analysis of balance outcomes could not be performed. CONCLUSION: Exercise prescribed during an acute medical ward stay may improve participants' aerobic capacity and maximum isometric strength.

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#477

TITLE: PAINFUL VS NON-PAINFUL EXERCISE ON CREPITUS IN PEOPLE WITH KNEE OSTEOARTHRITIS: A MIXED-METHODS ANALYSIS

AUTHORS: Mr Alexandre Kovats[1], Mr Adrian Ram[1], Matthew D Jones[1,2], A/Prof John Booth[1], Dr Mitchell T. Gibbs[1,2], A/Prof Jeanette Thom[1,3]

Affiliations: [1]School of Health Sciences, University of New South Wales, Sydney, NSW, Australia, [2]Centre for Pain IMPACT, Neuroscience Research Australia, Sydney, Australia, [3]Discipline of Exercise and Sport Science, Sydney School of Health Sciences, Faculty of Medicine and Health, The University of Sydney, Camperdown, NSW, Australia

First author's contact: a.kovats@student.unsw.edu.au

INTRODUCTION & AIMS: Crepitus (or physiological noise) is a key criterion in the diagnosis of knee osteoarthritis (OA). Exercise is foundational to guideline-based care for knee OA, however the effect exercise on knee crepitus is unknown. This study aimed to explore the perceptions of people with knee OA following a 6-week accredited exercise physiologist (AEP) led intervention involving painful vs non-painful exercise, especially in relation to their knee crepitus. METHODS: Participants were randomly assigned to either a painful (higher intensity) or non-painful (lower intensity) exercise program supervised by an AEP twice a week for six weeks with concurrent education. Volunteers partook in a post-intervention semi-structured interview with questions surrounding their experience and perceived outcomes of the program. Thematic qualitative analysis was conducted and compared to the Knee Injury and Osteoarthritis Outcome Score (KOOS) crepitus question (0 - 4 scale). RESULTS: Eleven participants volunteered. Qualitatively, approximately half of the participants self-reported a decrease in their knee crepitus following the program "I haven't had the creaky knees so much", with the rest stating their crepitus did not change. No participants perceived their crepitus increased (n=9 no change, n=2 decreased) or said that their crepitus was worse, "the noise and grinding doesn't become evident (now) until the weights become higher". Quantitatively, KOOS crepitus scores also did not change following the intervention [mean (SD) (2.4(1.0) to 2.1(1.3), p=0.19)]. There were no differences between exercise groups in self-perceived crepitus results, and most said that the exercise program was beneficial "Right after this whole program, I find that I can move much easier." CONCLUSION: Exercise at higher intensities (into painful range) does not change crepitus or may improve it for some. People with OA perceive that exercise at both higher and lower intensity is beneficial and enjoyable.

#478

TITLE: A LITTLE BIT OF EXERCISE GOES A LONG WAY – INCREASING INDEPENDENCE OF AGED CARE RESIDENTS WITH PARKINSON'S DISEASE.

AUTHORS: Associate Professor Annette Raynor[1], Ms Sally Casson[1], Ms Stacey Scott[1], Ms Jennifer Grieve[2], Dr Lauren Fortington[1]

Affiliations: [1]School of Medical and Health Sciences, Edith Cowan University, Perth, Australia, [2]School of Nursing and Midwifery, Edith Cowan University, Perth, Australia

First author's contact: a.raynor@ecu.edu.au

INTRODUCTION & AIMS: Supporting people with Parkinson's Disease to remain active when living in residential aged care (RAC) is assumed to have benefits, such as reducing falls risk, improving ability to transfer independently, and reducing time spent being sedentary. However, many RAC-facilities are under-resourced making it difficult for staff to support residents with exercise. Accredited exercise physiologists (AEP) enable residents to improve or maintain movement through exercise. The aim of this study was to establish feasibility and value of AEP-services for people with Parkinson's Disease in RAC. METHODS: A 12-week AEP-led exercise program was delivered at multiple RAC-sites across Perth. An individualised exercise plan was designed for each participant, comprising 2 x 50-minute supervised group sessions per week, together with a 15-minute unsupervised morning program. Baseline and follow-up testing was undertaken by the AEP, inclusive of balance (mini-Balance-Evaluation-System-Test (miniBESTest)), mobility (2-minute-walk-distance, Actigraph), fatigue (PD fatigue scale) and quality of life. Descriptive analysis will be presented, reflecting the total hours of AEP-training provided, room attendance records from RAC-staff, and changes in pre-post balance, mobility, falls, quality of life, depression, behaviour, and fatigue. RESULTS: To date, five participants have enrolled (3 women; 2 men) (recruitment is ongoing). Individual results for baseline testing showed the range of abilities and challenges for these participants (Mini-BESTest range of 5-16 and 2-minute walk distance of range 0-61). Not all tests could be completed by all participants. Post-test and change scores will be presented. CONCLUSION: Due to the clinical heterogeneity of the disease, the AEP is required to prescribe according to each individual needs whilst maintaining the fidelity of the exercise intervention. Challenges have been presented with conducting research in this environment including recruitment of participants due to level of cognition, conflicts with participant scheduling, operational needs of the facility and facility closures (Covid- and gastro-outbreak).

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#479

TITLE: FEASIBILITY, ACCEPTABILITY, AND EFFICACY OF A PILOT EXERCISE PHYSIOLOGY GROUP SERVICE FOR OLDER ADULTS WITH TYPE 2 DIABETES

AUTHORS: Dr Kelly McLeod[1], A/Prof Jeanette Thom[2], Matthew D Jones[1,3], A/Prof Belinda Parmenter[1]

Affiliations: [1]UNSW Medicine & Health Lifestyle Clinic, School of Health Sciences, Faculty of Medicine & Health, UNSW Sydney, Kensington, NSW, Australia, [2]Discipline of Exercise and Sport Science, Sydney School of Health Sciences, Faculty of Medicine and Health, The University of Sydney, Camperdown, NSW, Australia, [3]Centre for Pain IMPACT, Neuroscience Research Australia, Sydney, Australia

First author's contact: k.mcleod@unsw.edu.au

INTRODUCTION & AIMS: Type 2 diabetes prevalence increases with ageing, affecting over half a million older Australians. Medicare type 2 diabetes group interventions can support older adults' diabetes management. However, Accredited Exercise Physiologist (AEP) delivered service feasibility and acceptability is yet to be assessed. This study aimed to assess feasibility, acceptability and preliminary efficacy of a Medicare type 2 diabetes group exercise and education intervention for older adults. METHODS: This study was a single arm feasibility, acceptability, and preliminary efficacy trial of an AEP delivered type 2 diabetes group service for older adults. Participants attended the Diabetes Clinic once per week for 8 weeks, for a group exercise and education session. Attendance, participation, enjoyment, suitability, usefulness, and pre-post clinical health outcomes were assessed. RESULTS: The intervention was feasible and acceptable, with 40 participants (71.8±4.5 years old, range 65-81 years, 45% female) attending 87% of sessions, with high treatment compliance within sessions (aerobic training: 86%; resistance training: 86%; education: 87%). Almost all participants (97%) strongly agreed that the program was enjoyable. Significant post intervention improvements (mean difference [95% CI]) were observed for right arm systolic blood pressure (SBP) (-7mmHg [-12, -2], p=0.007), left arm diastolic blood pressure (DBP) (-3mmHg [-5, -0], p=0.021), body weight (-0.7kg [-1.3, -0.0], p=0.039), waist circumference (-1.3cm [-2.2, -0.4], p=0.006), 6-minute walk test (22.8m, [9.1. 36.5], p=0.002), 5 times sit to stand (-0.8sec [-1.2, -0.5], p<0.001), short physical performance battery ordinal scale (0.3 [0.1, 0.5], p=0.009), and whole-body muscle strength (32.2kg [22.3, 42.1], p<0.001). CONCLUSION: Older adults attended and enjoyed the AEP led Diabetes Clinic program, while also improving fitness and cardiometabolic health outcomes. Ways to enhance referrals and engage older adults in the programs warrant further investigation. The potential for additional sessions to achieve greater physical activity engagement and diabetes self-management should be further investigated.

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#480

TITLE: SEX DIFFERENCES IN CEREBRAL BLOOD FLOW VELOCITY RESPONSES TO EXERCISE IN THE HEAT

AUTHORS: Mr Joao Carlos Loacatelli[1], Mr Howard H. Carter[1], Ms Julie Collis[1], Mr Andrew Haynes[1], Ms Juliene Goncalves Costa Dechichi[1], Ms Kristanti Wigati[1], Mr Jesse Criddle[1], Ms Louise H. Naylor[1], Mr Daniel John Green[1]

Affiliations: [1]Cardiovascular Research Group, School of Human Sciences (Exercise and Sport Science), The University of Western Australia, Perth, AUSTRALIA

First author's contact: joaocarlos.locatelli@research.uwa.edu.au

INTRODUCTION & AIMS: Global warming poses a risk for the development of heat-related physiological impairment, which can be aggravated when exercising in hot conditions. The aim of the present study was to investigate acute effects of exercising in hot conditions on cerebral blood flow velocity and systolic function in healthy individuals and to explore possible sex differences. METHODS: The experimental condition consisted of walking on a treadmill, at 5km/h and 2% incline, inside a heat chamber at 40°C (50%RH), for 90 minutes. Middle cerebral artery blood flow velocity (MCAv) and left ventricular global longitudinal strain (GLS; a sensitive index of systolic function), were assessed at baseline and every 30 minutes by means of transcranial Doppler and speckle-tracking echocardiography, respectively. Data is expressed in delta (Δ) and standard error. RESULTS: Twenty-six individuals (13♂,13♀ 27.1±1.0yrs, P=0.02) completed the experimental protocol. Both males and females exhibited non-significant increases in MCAv from baseline at 30 minutes (♂Δ=2.55±2.15 P>0.05; ♀Δ=0.54±2.53cm.s-1, P>0.05; interaction P=0.63), followed by significant decreases relative to 30min, at 60min (♂Δ=-4.0±1.23 P=0.04; ♀Δ=-5.41±1.56cm.s-1, P=0.03; interaction P=0.63) and 90 minutes (♂Δ=-6.08±1.37 P<0.01; ♀Δ=-7.39±1.40cm.s-1, P<0.01; interaction P=0.63). In males, there was a significant decrease in GLS from baseline at 30min (Δ=2.44±0.69%, P<0.05), 60 (Δ=2.79±0.73%, P=0.03), and 90 (Δ=3.49±0.89%, P=0.03) minutes; no significant changes were observed in females. CONCLUSION: Males and females presented similar patterns of change in cerebral blood flow velocity, including significant decreases with prolonged heat exertion. These changes occur in both sexes, despite changes in systolic strain only being apparent in males. These data suggest that sex differences may exist in the regulation of cerebrovascular responses to exercise in the heat in humans.

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#481

TITLE: BRACHIAL, FEMORAL, AND SKIN HAEMODYNAMIC RESPONSES TO WALKING IN HOT CONDITIONS: COMPARISON BETWEEN MALES AND FEMALES

AUTHORS: Mrs Juliene Dechichi[1], Mr Howard H. Carter[1], Mr Joao Carlos Loacatelli[1], Ms Kristanti Wigati[1], Mr Jesse Criddle[1], Mr Andrew Haynes[1], Ms Louise H. Naylor[1], Mr Daniel John Green[1]

Affiliations: [1]Cardiovascular Research Group, School of Human Sciences (Exercise and Sport Science), The University of Western Australia, Perth, AUSTRALIA

First author's contact: 23036237@student.uwa.edu.au

INTRODUCTION & AIMS: Heat exposure induces acute changes in arterial function, but sex differences have not been fully addressed. METHODS: Participants walked (5km/h; 2% incline) in a climate chamber (42°C;50%RH) for 120mins. Cutaneous microvascular function (laser doppler flowmetry), conduit artery haemodynamics (Doppler ultrasound) and core temperature were measured at baseline, and every 30min. RESULTS: 14♂ and 15♀ completed 120min. At baseline, differences in core temperature (Tc) between males and females were not significant (37.2±0.1 vs 37.0±0.1°C; P=0.06). Across all 5 timepoints, females exhibited larger Tc than males (P=0.019). At baseline, males had larger brachial (3.89±0.11 vs 3.13±0.09mm, P<0.001) and femoral (6.22±0.16 vs 5.29±0.14mm, P=0.001) diameters than females. A significant interaction (P=0.047) indicated that brachial diameter increased more in response to heat exertion than in males, whereas no sex difference was apparent in femoral diameter change. Males and females had similar baseline brachial flows (♂80.1±11.2 vs ♀57.0±7.09ml/min, P=0.087), but males had larger baseline femoral flows (♂263.0±23.9 vs ♀151.5±18.6 ml/min, P=0.010). No sex differences were apparent in the terms of the increases in brachial or femoral flows. Finally, at baseline males and females had similar skin blood flux (♂22.6±2.7 vs ♀18.3±2.9PU), but males demonstrated larger increases during heat exertion (P=0.029). CONCLUSIONS: Males exhibit larger baseline artery diameters and flows in vessel beds feeding active (femoral) and inactive (brachial) limbs. In response to heat exertion, men and women exhibit similar increases in conduit diameter and flow to active muscle beds (femoral responses). In the inactive forearms, which reflect thermoregulatory responses, females had larger brachial artery diameter changes, but blood flow responses were similar between the sexes and men demonstrated larger increases in skin perfusion. These data indicate that responses to heat exertion differ in the upper and lower limbs, with sex-differences apparent in each of these territories, and at distinct levels of the arterial hierarchy.

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#483

TITLE: REDUCED AEROBIC FITNESS IS ASSOCIATED WITH IMPAIRED CEREBROVASCULAR FUNCTION IN INDIVIDUALS WITH ATRIAL FIBRILLATION

AUTHORS: Dr Hannah Thomas[1,2], Tori Roberts[2], Dr Barbara Brayner[2], Dr Lewan Parker[2,3], Prof Michelle Keske[2,3], A/Prof Kurt Smith[4], Dr Kimberley Way,[2,4]

Affiliations: [1]Institute for Health and Sport (IHES), Victoria University, Melbourne, Victoria, Australia, [2]Institute for Physical Activity and Nutrition (IPAN), School of Exercise and Nutrition Sciences, Deakin University, Geelong, Victoria, Australia, [3]Baker Heart and Diabetes Institute, Melbourne, Victoria, Australia, [4]Exercise Physiology and Cardiovascular Health Lab, University of Ottawa Heart Institute, Ottawa, Ontario, Canada

First author's contact: hannah.thomas@vu.edu.au

INTRODUCTION & AIMS: Lower aerobic fitness (V̇O2peak) is associated with higher risk of cerebrovascular disease. However, the relationship between V̇O2peak and cerebrovascular function and cerebral blood velocity at rest and during exercise has not been investigated in adults with atrial fibrillation (AF). We aimed to compare resting and exercise cerebral blood velocity responses and cerebrovascular function in individuals with AF to healthy controls. METHODS: Eight inactive adults either with AF or healthy age-matched controls (AF: n=4, 64±6 years, 50% female; control: n=4, 66±4 years, 75% female) completed a maximal graded exercise test to measure V̇O2peak. Transcranial Doppler was used to measure bilateral middle cerebral artery velocity (MCAv). Vascular function was assessed by measuring MCAv increases and time to peak following a 30s hypercapnia stimulus (9% CO2, 21% O2, and balanced nitrogen), and MCAv during aerobic exercise (3-minute stages at 40%, 60% and 80% V̇O2peak). Blood pressure, heart rate and end-tidal gases were collected alongside MCAv. RESULTS: Compared to controls, individuals with AF (both $P<0.01$) had higher BMI (AF: 31.8±2.0 kg/m2; control: 27.3±0.6 kg/m2), lower V̇O2peak (AF: 19.9±2.5 mL/kg/min; control: 33.7±5.8 mL/kg/min), and similar blood pressure. Resting right and left MCAv was higher in the AF group (R: 66.6±34.0 cm/s; L: 44.2±10.1 cm/s) compared to the control (R: 36.1±6.7 cm/s; L: 34.9±8.7 cm/s); this was not significant ($P=0.121$ and 0.258). Right MCAv was higher than left MCAv in individuals with AF but this was not significant ($P=0.247$). Hypercapnia and exercise induced MCAv and time to peak were similar between groups ($P>0.05$). CONCLUSION: Lower V̇O2peak may be associated with increased resting MCAv in individuals with AF. Furthermore, there may be regional disparities in MCAv in individuals with AF. Future studies with larger sample sizes investigating potential mechanisms and volumetric cerebrovascular changes (e.g., vessel diameter, arterial stiffness) in AF are warranted.

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#484

TITLE: DOES EXERCISE INFLUENCE CHRONIC INFLAMMATION IN BURNS >1 YEAR AFTER INJURY?

AUTHORS: Mr Tyler Osborne[1,2,3], Dr Grant Rowe[3], Associate Professor Dale Edgar[3,4], Associate Professor Mark Fear[3,4], Winthrop Professor Fiona Wood[3,5], Associate Professor Timothy Fairchild[1,2], Dr Brook Galna[1,2], Associate Professor Bradley Wall[1,2], Pippa Kenworthy[3,5]

Affiliations: [1]School of Allied Health (Exercise Science), Murdoch University, Western Australia, Australia, [2]Centre for Healthy Ageing, Health Futures Institute, Murdoch University, Western Australia, Australia, [3]Fiona Wood Foundation, Fiona Stanley Hospital, Murdoch, Western Australia, Australia, [4]Burn Injury Research Node, Institute for Health Research, The University of Notre Dame Australia, Western Australia, [5]State Adult Burns Unit, Government of Western Australia South Metropolitan Health Service, Fiona Stanley Hospital, Murdoch, Western Australia

First author's contact: tylerjosborne1997@gmail.com

A burn is one of the most traumatic injuries a person can sustain, and along with mental and physical scars, trigger a greater and more persistent inflammatory and metabolic response than other trauma cases, with hypermetabolic and hyperinflammation being reported >3 years post-burn. Exercise has been shown to positively influence inflammatory and metabolic function in both healthy and diseased cohorts, however little is known about the influence of exercise on chronic inflammation and metabolism in burn survivors. The aim of this study was to determine the effects of an exercise intervention on inflammatory and metabolic markers in patients who had sustained a burn injury >1 year ago. In this study 15 participants were randomised in a cross over design into one of two conditions, either exercise-control, or control-exercise. The exercise condition comprised of six weeks of resistance and aerobic exercise, completed remotely or supervised in a hospital gym. A comprehensive battery of clinical and physiological assessments was completed at 0, 3 and 6 weeks of each exercise and control condition. The primary outcome measure for this study was TNF-alpha and how this changed in response to the exercise condition. Secondary measures included indirect calorimetry, metabolomic and lipidomic analysis, strength and aerobic fitness testing, body composition and questionnaires related to functional status and physical activity history. It is hoped that the results from this study will contribute to the future of post-burn rehabilitation and continue to develop the understanding surrounding the chronic post-response physiological response.

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#485

TITLE: PERSPECTIVES OF KIDNEY TRANSPLANT RECIPIENTS REGARDING THE BARRIERS AND ENABLERS TO EXERCISE

AUTHORS: Alexander Bates[1], Yulan Shen[2], Loreen Evans[2], Christine Mantilla[2], Meg Letton[1,3], Assoc Prof Kelly Lambert[1], Assoc Prof Ria Arnold[1,4],

Affiliations: [1]Department of Exercise, Sport Science and Rehabilitation, University of Wollongong, Wollongong, NSW, Australia, [2]Renal Serve, Illawarra Shoalhaven Local Health District, NSW Health, Wollongong, NSW, Australia, [3]Falls, Balance and Injury Research Centre, Neuroscience Research Australia, Randwick, New South Wales, Australia, [4]Department of Renal Medicine, Concord Repatriation General Hospital, Concord, New South Wales, Australia

First author's contact: abates@uow.edu.au

BACKGROUND: Kidney transplant is a second chance at life for people with kidney failure. However, the post-transplant journey is difficult with high rates of complications such as new onset diabetes, steroid induced weight gain and cardiovascular disease. While exercise has the potential to improve quality of life and reduce the susceptibility these complications, kidney transplant recipients (KTRs) report lower levels of exercise and physical activity compared to the general population. Our qualitative study aimed to explore the barriers and enablers to exercise in KTRs. METHODS: People with a stable kidney transplant treated in the Illawarra Shoalhaven Local Health District were invited to participate in the study. Interviews were conducted with n=11 KTRs with an age of 25-74 years, transplant duration of 1-19 years, and comorbidities included hypertension (n=9), cancer (n=4), diabetes (n=3) and dyslipidemia (n=4). Interviews were transcribed then inductively coded and deductively categorised according to the Theoretical Domains Framework and the Capability, Opportunity, and Motivation Model of Behaviour. RESULTS: KTRs expressed a desire to exercise though barriers specific to transplant were identified. Barriers included a lack of knowledge and specific guidance, physical limitations (e.g. fatigue, illness related to medications or comorbidities, injury or pain), and fear of harming the kidney (e.g. herniation, pain/pulling at surgical site, dehydration, immunocompromised state). Enablers to exercise included already living an active lifestyle, perceived mental benefits, exercise preferences and social support. CONCLUSIONS: A key finding of this research was a preference from KTRs specific exercise information and guidance after kidney transplant. The findings of this study can be used to inform the development of exercise resources and interventions for KTRs and their health care professionals within the local community and at a greater level.

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#486

TITLE: OPTIMISING THE LADDER RAISE TASK IN THE PHYSICAL APTITUDE TEST FOR FIRE-FIGHTERS

AUTHORS: Bryany Parker[1], Prof. Mark Watsford[1,2], Hugh Fullagar[1,3]

Affiliations: [1]University of Technology Sydney, Sydney, NSW, Australia, [2]Human Performance Research Centre, University of Technology Sydney (UTS), Sydney, Australia, [3]Reykjavik University, Menntavegur 1, 102 Reykjavík, Iceland

First author's contact: bryany.parker@gmail.com

INTRODUCTION & AIM: Identifying physically capable candidates is a crucial component of recruiting firefighters given the physical demands of the occupation. At the request of a local fire agency, a review of one test item within the physical aptitude testing protocol was undertaken with the aim of this pilot study to compare physical and perceptual performance between the ladder raise task and a suite of surrogate tests to determine suitability for use in recruitment screening. METHODS: 23 participants (unskilled in firefighting) performed the criterion ladder task ('Ladder') and three surrogate tasks: stationary constant-tension overhead press (existing test item; 'Reel'); barbell overhead walk/return ('Barbell'); overhead modular ladder lift (Modular Under-Running Apparatus ('MURA')). The tests were segmented into six components relating to lifting and under-running the device. Task duration, task completion, perceptual and kinetic variables were measured. Pearson's correlation, OLP regressions and paired t-tests assessed relationships between the Ladder and surrogate tasks. RESULTS: The Reel most closely reflected the criterion task in component 1 (lifting) for both peak and average forces (dz =-0.11, p=0.920; dz=-0.11, p=0.532 respectively). The MURA and Barbell were most closely aligned to the Ladder in all other objective values with trivial-small differences evident. The MURA was most closely aligned with the Ladder in subjective measures for components-2/5 and components-3/4 including difficulty (dz= -0.41, p=0.133; dz=-0.32, p=0.250, respectively), fatigue (dz= -0.25, p=0.354; dz=-0.10, p=0.796, respectively) and task representation (7.2[1.6]; 7.4[1.6], respectively). CONCLUSION: The currently used Reel task revealed low construct and content validity. The MURA was shown to be the most appropriate surrogate option for the local fire agency to further investigate for use within recruitment physical testing. Further investigation with a sample of career firefighters should be undertaken to verify face validity at the industry level.

#487

TITLE: PROMOTING PARTICIPATION IN COMMUNITY RUNNING FESTIVALS FOR INDIVIDUALS WITH PARKINSON'S DISEASE - A MODEL FOR MEANINGFUL PARTICIPATION

AUTHORS: Mr Nathan Reeves[1], Dr Kelly Clanchy[1], Mr Toby Atkins[2], Mr Matt Ternes[2]

Affiliations: [1]Griffith University, Gold Coast, QLD, Australia, [2]Atkins Health, Gold Coast, QLD, Australia

First author's contact: n.reeves@griffith.edu.au

INTRODUCTION AND AIMS: Community-based walking and running groups have become popular social phenomena in recent years. Integrating individuals with Parkinson's disease into community-based walking and running events confers multiple socio-biological benefits, but may be problematic for individuals with Parkinson's disease in the later stages of the disease progression. METHODS: This research evaluates the participation of a group of individuals with Parkinson's disease in a long-standing community running festival, the Gold Coast Marathon Festival. Evaluation of participation comprised: 1) description of the activities undertaken by the Exercise Physiologists to ensure the safe and effective participation of the interested parties; and 2) a qualitative evaluation of the participant's experiences with the event. RESULTS: Ten adults with Parkinson's disease (70% male), mean age 69.6 ± 7.8 years (range = 57-79) participated. Time post-diagnosis ranged 1 to 15 years (mean = 6.7 ± 4.4 years). Participants registered to complete one of two distances: 5.7 km (n = 9) or 700 m (n = 1). Activities undertaken by the Exercise Physiologist prior to participating were divided into three themes: participation, safety, and administrative requirements. Participant experiential data was divided into six themes: preparation prior to participating; pre participation planning and organisation; reasons/meaning for choosing to participate; barriers for participating; event recovery; and event suitability. The data collated was triangulated to provide recommendations to facilitate participation in similar events. CONCLUSION: The results of this study demonstrate that with effective planning and coordination, participation in community-based walking and running events confer physical and mental health benefits for individuals with Parkinson's disease. However, significant barriers need to be addressed prior to participation to ensure meaningful participation. This paper provides recommendations for practicing Exercise Physiologists who wish to promote participation of their own clients with Parkinson's disease in similar initiatives.

#488

TITLE: DOES N-ACETYLCYSTEINE SUPPLEMENTATION DURING AN ALTITUDE TRAINING CAMP ENABLE TRAINING QUALITY AND SUCCESSFUL PERFORMANCE OUTCOMES? A COMPARATIVE CASE STUDY

AUTHORS: Dr Katie Slattery[1,2], Dr Avish Sharma[3], Dr Kirstin Morris[4]

Affiliations: [1]University of Technology Sydney, Sydney, NSW, Australia, [2]Human Performance Research Centre, University of Technology Sydney, Sydney, Australia, [3]Victorian Institute of Sport, [4]Queensland Academy of Sport

First author's contact: katie.slattery@uts.edu.au

INTRODUCTION & AIMS: Elite athletes regularly incorporate training at altitude into their programs to enhance performance. However, the additional stress of exposure to a hypoxic environment needs to be carefully managed by coaches and sport scientists. Supplementation with antioxidants, such as N-acetylcysteine (NAC) may support the athlete's immune system to cope with this stress. Preliminary evidence also suggests NAC may further promote haematological adaptations to hypoxia. Combined, the potential health and adaptive benefits of NAC warrant further investigation. Conducting ecologically valid and scientifically robust research in an elite sporting setting can be challenging due to small sample sizes, an inability to experimentally manipulate training, and the inherent complexity of the training environment. To account for these challenges, a comparative case study approach was used. METHODS: Thirteen swimmers completed a three-week 'Live-High, Train-High' camp in Flagstaff, USA (elevation 2,100m). Beginning four days prior to the camp commencing, swimmers where randomly assigned in matched groups to consume NAC (1,200mg per day; n = 6) or a placebo supplement (n = 7) for 14 days. With each athlete defined as a case, fuzzy-set qualitative comparative analysis was used to examine the configurational effects of attributes (i.e., antioxidant support, sufficient ferritin, maintained body mass) previously associated with successful altitude training camps on physiological and performance outcomes. RESULTS: NAC was not a solely sufficient or necessary attribute for increased haemoglobin mass. Higher consistency in haemoglobin mass was observed with high training quality. NAC and high training quality contributed to performance improvements. CONCLUSION: Swimmer responses were highly individual with successful physiological and performance outcomes achieved by some, irrespective of having attributes that can impair adaptation to altitude training. Subjective training quality provided important contextual information. Fuzzy-set qualitative comparative analysis is a novel approach in sports science to evaluate the interrelationship of attributes that can impact performance.

#489

TITLE: THE USE OF OUTCOME MEASURES IN EXERCISE PHYSIOLOGY CLINICAL PRACTICE IN AUSTRALIA

AUTHORS: Mr. Patrick Dwyer[1], Dr. Deborah Pascoe[1]

Affiliations: [1]Federation University, Mount Helen, VIC, Australia

First author's contact: patrickmdwyer@students.federation.edu.au

INTRODUCTION AND AIMS: Outcome measure (OM) implementation in clinical settings has become a standard in allied health evidence-based practice over the last 20 years, with their use being encouraged by governing and funding bodies. This study investigated the application of standardised OMs by accredited exercise physiologists (AEPs) in Australia. This study aimed to identify commonly used OMs and explore the barriers and facilitators to OM implementation in AEP clinical practice in Australia. METHODS: This study utilised a questionnaire-based, cross-sectional, descriptive design to determine the OMs used by AEPs in current clinical practice and investigated trends related to OM use within different AEP demographics and settings. Participants were also asked to identify any barriers and facilitators that affected their use of OMs in clinical practice. The OMs that were most frequently used were identified and the results analysed according to demographic variables, to determine how they influenced OM use in clinical practice. RESULTS: Eighty-seven OMs were assessed, with 41% 'never' used by most participants. A further 48% of the OMs were identified as being underutilised with over 50% of respondents selecting 'never' or 'sometimes'. Only three OMs were used frequently by most respondents. The most common barriers to OM use identified related to a lack of time, knowledge, and limited perceived value from clinicians. These reflect the barriers identified in prior research related to other allied health professions. CONCLUSIONS: AEPs in Australia experience many of the same barriers to OM use as other allied health disciplines. Currently, the standardised OM resource for AEPs is outdated and underutilised in clinical practice. Updated resources for clinicians in the form of educational seminars and a searchable online database with easy access to evidence-based outcome measures are essential to the promotion of OMs to support evidence-based practice for AEPs.

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#490

TITLE: RESULTS OF THE ECHO-R TRIAL – A PRAGMATIC, TELEHEALTH-DELIVERED EXERCISE INTERVENTION FOR WOMEN WITH RECURRENT OVARIAN CANCER

AUTHORS: Dr Rosa Spence[1], Melissa Creed[1], Sheree Rye[1], Prof Sandra Hayes[1]

Affiliations: [1]Menzies Health Institute Queensland, Griffith University

First author's contact: r.spence@griffith.edu.au

INTRODUCTION & AIMS: Wide-spread and equitable uptake of exercise into standard cancer care will require evidence of safety and efficacy across all cancer and treatment types. People with rarer cancers, lower survival prospects, and higher morbidity have been under-represented in exercise oncology trials. The ECHO-R trial for women with recurrent ovarian cancer aimed to address this research gap, evaluating the efficacy of a 6-month telephone-delivered, exercise intervention consistent with ESSA exercise oncology prescription guidelines. METHODS: 50 women scheduled to receive chemotherapy for recurrent ovarian cancer were recruited to the pre-post exercise trial with assessments at baseline and post-intervention (6 months post-baseline). The intervention was delivered via 12 telephone sessions, with the option of five additional study-funded, in-person sessions with a community-based AEP. The intervention had a global target of 150 minutes of moderate-intensity multimodal exercise per week, with actual volume and prescription individualised at each session, dependent on functional capacity, goals, and barriers. Outcomes included feasibility (volume of exercise completed) and harms profile (occurrence of adverse outcomes) of the intervention, changes in patient-reported outcomes (quality of life [QoL; FACT-O], fatigue [FACT-Fatigue] and neurotoxicity [FACT-GOG-NTX]), and objective assessment of aerobic function (6-minute-walk test), muscular endurance (30-second sit-to-stand) and strength (hand grip). RESULTS: The average volume of exercise completed did not meet the target (median 100 min/week, min: 0; max 527). QoL, fatigue, neurotoxicity, aerobic function, muscular endurance, and strength remained stable between the pre and post-intervention assessments. There were no serious adverse events. CONCLUSION: Recurrent ovarian cancer is an incurable disease, characterised by declining QoL and physical capacity. Findings from this study suggest that maintenance of QoL and physical function is possible through participation in an exercise intervention, even if exercise targets are not met. Physical activity guidelines may need to reflect this.

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#491

TITLE: EXERCISE TRAINING IMPROVES GASTROINTESTINAL SYMPTOMS IN PEOPLE WITH A DISORDER OF THE GUT BRAIN INTERACTION (DGBI): SYSTEMIC REVIEW AND META-ANALYSIS

AUTHORS: Miss Katherine Bell[1], Mrs Naomi Ferstera[1], Ms Jacinta Durney[2], Dr. Jennifer Nicol[1], Prof. Gerald Holtmann[3,4], Prof Jeff Coombes[1]

Affiliations: [1]Centre for Research on Exercise, Physical Activity & Health, School of Human Movement and Nutrition Sciences, The University of Queensland, Brisbane, Queensland, Australia, [2]School of Environmental and Life Sciences, University of Newcastle, Newcastle, New South Wales, Australia, [3]Gastroenterology and Hepatology, Princess Alexandra Hospital, Brisbane, Queensland, Australia, [4]Faculty of Medicine, The University of Queensland, Brisbane, Queensland, Australia

First author's contact: katebell82@gmail.com

INTRODUCTION & AIMS: Approximately 40% of the global population has criteria that meets at least one Disorder of the Gut-Brain Interaction (DGBI). DGBIs are characterised by the absence of structural abnormalities, with chronic symptoms, such as pain, altered bowel movements, and nausea. Current therapy options focus on treating the major symptoms, which can involve pharmacological and lifestyle advice (diet, exercise, and stress management). The aim of this study was to conduct a systematic review and meta-analysis investigating the efficacy of exercise for improving gastrointestinal symptoms in people with a DGBI. METHODS: A search of relevant databases was completed in February 2023, for randomised controlled trials that applied an exercise intervention in people with DGBI. Comparator groups included usual care, pharmacological therapy, or diet advice. A pairwise random-effects meta-analysis estimated the standardised mean difference (SMD) (Hedges' g) between exercise and comparator groups for changes in gastrointestinal symptoms. Risk of bias was analysed using the Cochrane Risk of Bias tool. RESULTS: Ten studies published between 2004–2023 were included. Participants (n=653) were mostly female 77.6%. Eight studies included participants with irritable bowel syndrome and two included individuals with functional dyspepsia. Exercise interventions lasted an average duration of 8 weeks. The modes included yoga (n=5), low intensity (n=1) and moderate intensity aerobic exercise (n=4). Studies ranged from low to high-risk bias. Meta-analysis showed exercise interventions improved gastrointestinal symptoms (SMD=1.2, 95% CI 0.5 to 1.8; $p<0.001$). The effect was moderated by the intensity of exercise with moderate intensity aerobic exercise having a significant impact (SMD=1.6, 1.2 to 2.0; $p<0.001$) not evident with yoga and low intensity exercise interventions (SMD=0.9, -0.01 to 1.7; $p=0.053$). CONCLUSION: Exercise interventions in people with DGBIs improve gastrointestinal symptoms. Moderate intensity aerobic exercise is more efficacious than yoga and lower intensity exercise.

#493

TITLE: EFFECTS OF A PRESCRIBED, SUPERVISED EXERCISE PROGRAMME ON HEALTH-RELATED QUALITY OF LIFE IN ONCOLOGY PATIENTS: A RETROSPECTIVE OBSERVATIONAL COHORT STUDY

AUTHORS: Dr Holly Evans[1,2], Mr Jack Sharrad[1], Ms Crystal Diebert[1], Dr Sean Black-Tiong[3], Mrs Lauren Whitting[3]

Affiliations: [1]College of Nursing and Health Sciences, Flinders University, Bedford Park 5042, Australia, [2]Lift Cancer Care, Kurralta Park, SA, Australia, [3]Lift Cancer Care, Kurralta Park, SA, Australia

First author's contact: holly.evans@flinders.edu.au

INTRODUCTION & AIMS: Individuals diagnosed with cancer experience significant physical and psychosocial consequences from oncological treatment. Based on current research, exercise therapy may be a valuable non-pharmacological approach to improve health-related quality of life (HRQoL). However, the effectiveness of individually tailored exercise programs to improve quality of life in real-world settings is understudied. The current study aims to analyse preliminary clinical data regarding the impact of tailored exercise supervised within an Australian private day hospital (LIFT) on HRQoL in individuals diagnosed with cancer. METHODS: A retrospective longitudinal cohort study was conducted on adults diagnosed with cancer who attended the LIFT clinical service for at least 12 months between 2020 and 2023. QoL and symptoms were assessed using the Functional Assessment of Cancer Treatment – General Questionnaire (FACT-G). Data collected included diagnosis (type and stage), medical treatment, session frequency, and demographic data. RESULTS: Overall, 40 patients (age=67.0±16.8 years) met the inclusion criteria. A within-group analysis demonstrated significant findings in the subscales of emotional wellbeing ($p = 0.008$) and functional wellbeing ($p = 0.003$), and significance was also found in the total FACT-G score ($p = 0.0019$). Interestingly, while not statistically significant, a clinically significant difference in HRQoL was found between individuals completing ≤ 1 or ≥ 2 supervised exercise sessions per week at LIFT cancer care centre, favouring those completing ≥ 2 sessions. CONCLUSION: Preliminary analysis indicated that a "real-world" individualised supervised moderate-vigorous exercise within a day hospital has the potential to significantly improve HRQoL outcomes in individuals diagnosed with cancer.

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#494

TITLE: EXERCISE AND CANCER PROGRAM: A PRESCRIPTIVE EXERCISE PROGRAM IN A NON-CLINICAL SETTING

AUTHOR: Miss Jaclyn Quinn[1,2]

Affiliations: [1]Jordan McMillan, Latrobe Community Health Services, Traralgon, VIC, Australia, [2]Mathilda Ohrt, Latrobe Community Health Services, Traralgon, VIC, Australia

First author's contact: jaclynquinn1993@gmail.com

INTRODUCTION & AIMS: This study aimed to establish a low-cost, sustainable exercise program for cancer patients in Gippsland, Australia, where access to such programs was previously limited. By developing and implementing a collaborative program, the program aimed to improve the physical and psycho-social well-being of cancer patients while reducing burden on healthcare services. METHODS: Collaboration between Latrobe Community Health Service, Morwell Leisure Centre, and Gippsland Integrated Cancer Service led to the development of a prescriptive exercise program to provide cancer survivors a sustainable cost-effective exercise and cancer program in a community leisure centre. Exercise physiologists provided initial assessments, in which clients allocated to group-based, one-on-one, or home-based exercise sessions. RESULTS: After 12 weeks in the program, 100% of participants that had a reassessment improved on at least one physical test and all improved on a subjective measure like fatigue, depression, or self-worth. On average, they saw a 14.88% increase in leg strength, a 12.70% increase in grip strength, and a 16.65% increase in aerobic fitness. Additionally, they reported an average decrease in anxiety (10.96%), depression (1.59%), fatigue (6.09%), and reported illness symptoms (5.24%). Overall, participant feedback was overwhelmingly positive, highlighting the benefits of the program's psycho-social support and the opportunity to exercise outside a healthcare setting. CONCLUSION: Collaboration between healthcare and leisure centres can provide sustainable and cost-effective exercise programs for cancer patients, improving physical and psycho-social well-being while reducing healthcare burden. Participants valued the support, social interaction, and sense of belonging provided by the program.

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#495

TITLE: EXERCISE & CANCER PROGRAM: A COLLABORATIVE APPROACH TO PROVIDE PRESCRIPTIVE EXERCISE OUTSIDE OF THE CLINICAL HEALTHCARE SETTING.

AUTHOR: Jordan McMillan[1,2]

Affiliations: [1]Mathilda Ohrt, Latrobe Community Health Service, Traralgon, VIC, Australia, [2]Jaclyn Quinn, Latrobe Community Health Service, Traralgon, VIC, Australia

First author's contact: jordan.mcmillan@lchs.com.au

CASE SETTING: This study implemented a standardized exercise program for oncology patients in the Latrobe Valley region of Gippsland, Australia, aiming to assess its potential transferability to other regions. This was undertaken due to a lack of structured services available in Gippsland, limiting patient access to these programs, in which patients having to travel up to 2 hours for treatment in Melbourne. TREATMENT: Implementation of a standardized exercise program for oncology patients, developed by a multidisciplinary team of exercise physiologists, oncology health professionals, and leisure centre fitness professionals. Exercise Physiologists conducted initial assessments and patients were placed in either individual, group exercise sessions and/or home-based programs. RESULTS: The program demonstrated significant improvements in both physical and psychological well-being. The program has received 73 referrals, of which 48 participants completed initial assessments with an Exercise Physiologist. Of the remaining 25 participants, 2 were discharged to other services due to their location outside the program's jurisdiction, 18 withdrew or did not attend their appointments, and 5 are currently on the waitlist for assessment. At the time of data collection, 17 participants had completed their reassessments.100% of participants improved on at least one physical test, and all participants improved on one of their subjective measures (fatigue, depression, anxiety, self-worth). Additionally, participant feedback was overwhelmingly positive, highlighting the program's psycho-social support and the benefits of exercising outside a healthcare setting. REFLECTIONS/LEARNINGS: This program successfully demonstrated the effectiveness of collaboration between healthcare services and leisure centres in delivering sustainable exercise programs for oncology patients outside of the healthcare setting. It also highlighted the value of providing both physical and psycho-social support, with the inclusion of care coordinators significantly reducing burdens on health services. The program's success suggests strong potential for transferability to other regions.

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#496

TITLE: THE EFFECT OF CONCENTRIC AND ECCENTRIC CYCLING ON SKIN MICROVASCULATURE STRUCTURE AND FUNCTION IN INDIVIDUALS WITH HEART FAILURE: AN OPTICAL COHERENCE TOMOGRAPHY STUDY

AUTHORS: Ms Kristanti Wigati[1,2], Ms Lucy Bolam[1,3], Ms Julie Collis[1], Mr Andrew Haynes[1], Ms Louise H. Naylor[1], Prof Robert McLaughlin[4,5], Mr Daniel John Green[1]

Affiliations: [1]Cardiovascular Research Group, School of Human Sciences (Exercise and Sport Science), The University of Western Australia, Perth, AUSTRALIA, [2]Medical Physiology and Biochemistry Department, Faculty of Medicine, Universitas Airlangga, Surabaya, INDONESIA, [3]Fiona Stanley Hospital, Murdoch, WA, Australia, [4]School of Biomedicine, Faculty of Health and Medical Sciences, The University of Adelaide, Adelaide, AUSTRALIA, [5]Institute for Photonics and Advanced Sensing, The University of Adelaide, Adelaide, AUSTRALIA

First author's contact: 23012094@student.uwa.edu.au

INTRODUCTION: Chronic heart failure (CHF) is associated with systemic vasoconstriction and exercise is an integral management strategy. Beneficial adaptations to exercise training in conduit arteries in CHF are well-established, but training-induced alteration in skin microvessels has not been explored, partly due to measurement limitations. Furthermore, the optimal type of exercise for individuals with CHF is not fully determined. This study utilised optical coherence tomography (OCT) to visualise, quantify and compare skin microvessel adaptations to eccentric (ECC) and concentric (CON) cycling interventions. METHODS: Patients with CHF (EF<50%) were randomly assigned to either CON or ECC, and both groups underwent supervised training twice weekly for 16wks. Skin microvessel reactivity was measured at week 0 and week 16 using OCT responses to a local heating challenge alongside laser Doppler flowmetry (LDF). RESULTS: Nineteen participants (CON n=9; ECC n=10, age 56.7±14.4yrs) completed the intervention. For OCT outcomes, there were no significant within group changes in skin local heating response from Wk0–Wk16 for either CON (Δdiameter: 14.2±3.3 µm vs 13.4±4.5 µm; Δvelocity: 107.6±31.8 µm.s-1 vs 106.4±36.4 µm.s-1; Δflow: 318.8±115.3 pl.s-1 vs 325.0±144.4 pl.s-1; Δdensity: 18.8±4.6% vs 16.5±2.6%) or ECC (Δdiameter: 13.5±4.0 µm vs 11.6±3.3 µm; Δvelocity: 105.9±33.6 µm.s-1 vs 126.3±29.6 µm.s-1; Δflow: 298.4±130.1 pl.s-1 vs 348.1±109.2 pl.s-1; Δdensity: 18.0±5.4% vs 17.5±2.1%), all P>0.050. There were no other differences between groups in response to training (all P>0.05). No significant differences were found in response to local heating by LDF (P>0.05). There were no differences in these variables between groups in response to training (all P>0.050) and no differences in LDF responses (P>0.050). CONCLUSIONS: The 16-week cycle exercise program implemented in this study was insufficient to induce any evidence of microvascular adaptation in patients with CHF. Overcoming cutaneous microvascular vasoconstriction in CHF may require more aggressive exercise approaches than those which have induced adaptation in conduit and resistance arterioles.

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#497

TITLE: EXERCISE PRESCRIPTION TO SUPPORT THE MANAGEMENT OF OSTEOPOROSIS: AN EXPERT STATEMENT FOR EXERCISE PHYSIOLOGISTS

AUTHORS: Prof Belinda Beck[1,2], Prof Stephen Lord[3], Robin M Daly[4], AProf Benjamin Weeks[1], Dr Steven Watson[5], Dr Weiwen Chen[6]

Affiliations: [1]Griffith University, Gold Coast, QLD, Australia, [2]The Bone Clinic, Brisbane, QLD, Australia, [3]Neuroscience Research Australia, Sydney, NSW, Australia, [4]Institute for Physical Activity and Nutrition, Deakin University, Melbourne, VIC, Australia, [5]Gold Coast University Hospital, Gold Coast, QLD, Australia, [6]The Garvan Medical Institute, Sydney, NSW, Australia

First author's contact: b.beck@griffith.edu.au

INTRODUCTION & AIMS: Low bone density, which includes osteopenia and osteoporosis, leads to roughly 183,000 fractures annually in Australia, with associated direct costs of $2.59B. Osteoporosis is underdiagnosed. Exercise is effective therapy but is underutilised due to a lack of knowledge and unfounded concerns about risk of injury. The aim of the newly developed Exercise Prescription for the Prevention of Osteoporosis Fracture National Statement is to provide clear, actionable, evidence-based exercise advice to improve the bone health of people living with osteopenia and osteoporosis. The project was led and supported by Healthy Bones Australia with funding awarded by the Australian Government Department of Health, Public Health and Chronic Disease Program Osteoporosis – Education and Prevention. METHODS: An expert working group (scientists, AEP, physiotherapist, endocrinologist and orthopaedic resident) and advisory committee (practising AEPs and physiotherapists) reviewed current evidence and existing guidelines to formulate recommendations for a national statement in the Australian context. A National Exercise Roundtable was convened, including consumers and stakeholders across multiple disciplines, to adapt the recommendations for clinical practice and consumer acceptability. RESULTS: The final statement is presented as an evidence-based document, and a 2-page user summary. The Statement outlines the general principles of osteogenic loading and falls prevention, then presents a comprehensive exercise prescription based on those principles, along with special considerations for comorbid conditions. Level A consensus was achieved on five summary statements. CONCLUSION: Bone health is an essential part of general health. While exercise prescription for other chronic diseases, such as, heart health and diabetes, is quite well established, there is a care gap for bone which we have addressed. Our National Statement, informed by high level evidence and expert insight, delivers best practice for prescribing exercise for osteoporosis to achieve best patient outcomes. We will present the document to the intended end users – exercise physiologists.

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#499

TITLE: ENHANCING REFLECTIVE CAPACITIES IN EXERCISE PHYSIOLOGY: BRIDGING EDUCATION AND LIFELONG PROFESSIONAL LEARNING

AUTHORS: Dr Luke Del Vecchio[1,2], Associate Professor Pauletta Irwin[2], Associate Professor Rosanne Coutts[1]

Affiliations: [1]Faculty of Health, Southern Cross University, Lismore, [2]Faculty of Science and Health, Charles Sturt University, Port Macquarie, Australia

First author's contact: luke.delvecchio@scu.edu.au

INTRODUCTION & OBJECTIVES: Essential to both students and experienced exercise physiology practitioners, reflective practice is a cornerstone of lifelong learning and improved client care. In clinical settings reflection, characterised by awareness, is the critical analysis of experience and requires integration into higher education curriculum. METHODOLOGY: Final-year exercise physiology students (N = 21) and 5 clinical exercise physiology supervisors completed a reflective practice learning activity. The stepped process of SPROUT was utilised, via classroom teaching and 14 weeks of clinical practicum. SPROUT represents the Situation, Past experiences, Read and refer, Other influences, Understanding, and Taking it forward. Teaching modes included group discussion, clinical situations, and student-led practice along with the completion of written reflections. Each student responded to the Reflection in Learning Scale (RLS) and further questions about their confidence. Written scripts were analysed for meaning and each ranked. Supervisors responded to open-ended questions during a focus group. FINDINGS: Student scores for the RLS revealed higher scores for planning, knowledge integration and mental processing and lower for interactions with knowledge, mindful summarising and coping with negative emotions. 75% of students indicated that they were confident with reflective practice and that SPROUT, however time-consuming, had been helpful. Written scripts showed a range of developing abilities, from novice requiring more depth to those more advanced who demonstrated meaningful engagement and solution-orientated reflective ability. Clinical supervisors supported the importance of reflective practice and were positive about the application of the stepped approach of SPROUT. CONCLUSIONS: The SPROUT framework supported reflective practice learning, benefiting both students and qualified practitioners, facilitating not only increased confidence but also a more profound understanding of clinical encounters. The structured approach of SPROUT proved beneficial in guiding reflective thinking. This research underscores the importance of reflective practice in exercise physiology, endorsing its role in ongoing professional development.

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#501

TITLE: CONSUMER EXPERIENCE OF AN AUSTRALIAN MULTIDISCIPLINARY LONG COVID CLINIC THAT INCORPORATES PERSONALISED EXERCISE PRESCRIPTION: A QUALITATIVE ANALYSIS

AUTHORS: Ms Tanya Buettikofer[1,2], Ms Allison Maher[1], Ms Veronica Rainbird[3], Ms Michelle Bennett[2], Associate Professor Nicole Freene[1,4], Professor Imogen Mitchell[1,4], Dr Hsin-Chia Carol Huang[1,4], Dr Phil Gaughwin[1], Mary Johnson[1], Jenny Paratz[5,6], Bernie Bissett[1,2]

Affiliations: [1]Canberra Health Services, Canberra, ACT, Australia, [2]University of Canberra, Canberra, ACT, Australia, [3]Consumer representative, NSW, Australia, [4]Australian National Univerisity, Canberra, ACT, Australia, [5]Royal Brisbane and Women's Hospital, Brisbane, QLD, Australia, [6]Griffith University, Brisbane, QLD, Australia

First author's contact: tanya.buettikofer@act.gov.au

INTRODUCTION & AIMS: Little is known about the Australian experience of Long COVID recovery, particularly with respect to exercise prescription. The aim of this study was to understand the consumer experience and acceptability of a novel Australian Long COVID Recovery Clinic that incorporates personalised exercise prescription, including respiratory and peripheral strengthening and carefully monitored cardiovascular training. METHODS: Qualitative study; semi-structured interviews with a convenience sample of participants who have completed a multidisciplinary, individually-tailored and supervised programme at our Long COVID Recovery Clinic. Interviews were conducted by a researcher external to the clinic delivery. Major themes were identified by inductive thematic analysis. RESULTS: 15 participants were interviewed. 14/15 (93%) participants described the clinic model as acceptable or highly acceptable. Five core themes were identified, including (1) encouraging staff and light-filled facilities are key to support recovery; (2) individually tailored, supervised exercise and pacing helped to improve confidence in building exercise capacity; (3) peer support and group therapy augments recovery; (4) recovery from Long COVID is incomplete, and other services augment the Long COVID Recovery Clinic model; and (5) importance of GP involvement in connection with clinic participation. Suggestions for improvement included extending the duration of the clinic programme beyond 2 months, reducing wait times by increasing staffing levels and adjusting the clinic schedule to broaden access options. CONCLUSION: The majority of participants found the Long COVID Recovery Clinic, which incorporates both supervised exercise and pacing, acceptable and would recommend it to others. From the consumer perspective, the Long COVID Recovery Clinic aids recovery alongside GP management through a combination of peer support and an individually tailored program.

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#502

TITLE: MEANINGFUL MULTIDISCIPLINARY REHABILITATION FOR HEART AND LUNG CONDITIONS: A COLLABORATION BETWEEN ORGANISATIONS AND SECTORS TOWARDS SELF-MANAGEMENT.

AUTHOR: Mrs Katrina Ghidella[1]

Affiliation: [1]Institute for Urban Indigenous Health, Brisbane, Queensland, Australia

Author's contact: katrina.ghidella@iuih.org.au

It is well documented that mainstream services are not always well attended by Aboriginal and Torres Strait Islander people due to a range of issues including transport and culturally safe practice. Establishing these services within the community-controlled sector is one way to increase access and culturally responsive care.

This initiative involved a new model of service delivery, whereby a partnership between Hospital Health Services and community-controlled Aboriginal and Torres Strait Islander primary healthcare organisations enabled the establishment of new Cardiac and Pulmonary Rehabilitation Programs within the Institute for Urban Indigenous Health (IUIH) Network for First Nations people. This Network is comprised of the five Aboriginal and Torres Strait Islander Community Controlled Health Organisations (ATSICCHO's) who operate as a regional collective with IUIH providing leading strategic direction and coordination.

Through a multidisciplinary team, specialised cardiac and pulmonary rehabilitation is provided to First Nations people as a culturally capable alternative to hospital cardiac and pulmonary rehabilitation, particularly for those not currently accessing treatment.

The specialised rehabilitation programs are supported by the IUIH System of Care that supports clients to access a wide array of holistic health services and programs designed to meet community needs and strengthen pathways for clients to self-manage their health needs in a self-led manner.

The Rehabilitation Programs are a multidisciplinary exercise and education program delivered by a range of health professionals including Accredited Exercise Physiologist's, Physiotherapists, Nurses and Aboriginal and Torres Strait Islander Allied Health Assistants. Clients also have access to a range of other Allied Health Professionals, including Dieticians Occupational Therapists, Pharmacists, Social Health, Podiatrists, Optometrists, Speech Therapists and Audiologists.

Referrals are received from ATSICCHOS, Queensland Health and Primary Health General Practitioners and Specialists. The client journeys through a multidisciplinary assessment to then determine their goals and health needs. This presentation will provide insights into the First Nations-led partnership, challenges and solutions to working across the whole health sector and outcomes for clients.

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#503

TITLE: ESSA ADVOCACY NETWORK

AUTHORS: Elyse Hocking[1], Judy Powell[1]

Affiliations: [1]*ESSA, Brisbane, Queensland, Australia*

First author's contact: e.hocking@live.com

INTRODUCTION AND AIMS: Advocacy is an important and effective way to influence policy changes to improve outcomes. Best practice advocacy is when efforts are coordinated, multifaceted, structured, and collective. The ESSA Advocacy Network was piloted in 2021, to improve engagement with members, and strengthen ESSA advocacy efforts, whilst simultaneously building members capacity and confidence, to engage in activities for positive change. METHOD: ESSA advocacy priorities are broad and diverse, aiming to enhance workforce opportunities to benefit all member groups. These areas include chronic conditions, mental health, rural and remote health, disability, aged care, physical activity, primary healthcare, public health, sport, and, workplace and personal injury. These priorities are affected by enablers including technology and innovation, data and evidence and funding mechanisms such as GST and fee schedules in compensable scheme. All advocacy efforts aim to reduce barriers, enhance enablers and increase access to the exercise and sports science workforce. The advocacy network self-identify interest in priorities and are engaged when opportunities arise to share knowledge, experience and their expertise to inform and shape advocacy. RESULTS: In 2023, members were engaged in the development of over 300 submissions and letters. Advocacy efforts resulted in member engagement in meetings with Members of Parliament, Senators, Parliamentary advisors, and senior government officials plus representation on advisory groups for the development of clinical guidelines, strategic plans and resources for allied health. CONCLUSION: As the advocacy network emerges from its infancy into the next stage of maturity as an integral part of advocacy for exercise physiology, exercise science, and sport science, a professional and streamlined approach is required. ESSA will grow the network in terms of members engaged and the output.

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#504

TITLE: THE IMPACT OF FORCED-RATE EXERCISE AND/OR PHOTOBIOMODULATION COMPARED TO USUAL CARE ON METABOLIC SYNDROME SEVERITY IN PEOPLE WITH PARKINSON'S DISEASE

AUTHORS: Mr Michael Kirton[1], Dr Ranjay Chakraborty[1], Joanne Dalton[1], Dr Alline Beleigoli[1], Dr Lemlem Gebremichael[1], Prof Lance Dalleck[2,3], Olivia Nassaris[1], Dr Joyce Ramos[3,4]

Affiliations: [1]Flinders University, Caring Futures Institute, College of Nursing and Health Sciences, Adelaide, South Australia, Australia, [2]Western Colorado University, Gunnison, Colorado, USA, [3]Recreation, Exercise, and Sports Science Department, Western Colorado University, Gunnison, CO 81231, USA., [4]Caring Futures Institute - Flinders University, Adelaide, South Australia, Australia

First author's contact: kirt0007@flinders.edu.au

INTRODUCTION/AIMS: Metabolic syndrome (MetS) has been postulated to play a role in the progression of Parkinson's disease (PD). Several lines of evidence also suggest that forced-rate exercise (FRE) is a potent therapy to alleviate motor and non-motor symptoms of PD, and perhaps MetS severity (MSS). However, long-term exercise adherence in people with PD (PWP) is poor. Alternative/adjunct therapies are therefore warranted. Photobiomodulation (PBM) is an emerging non-pharmaceutical/non-exercise therapy that may improve PD symptoms. Thus, this study aimed to determine the impact of FRE and/or PBM relative to usual care on MSS in PWP. METHODS: Twenty participants diagnosed with PD (aged 40-80yrs) were randomised into one of four groups assigned to a different sequence of the study interventions or SHAM treatment across four 8-week study periods, each separated by a 4-week wash-out period: (1) Group A-B-C-D (n=5); (2) Group B-D- A-C (n=5); (3) Group C-A-B-D (n=5); (4) Group D-C-B-A (n=5). A-B-C-D represents PBM, FRE, FRE+PBM, and SHAM, respectively. Z-scores were derived from levels of MetS risk factors to determine the MSS (MetS z-score). Responders to a clinically significant change in MetS z-score was classified as those demonstrating a reduction of at least 0.48. RESULTS: Our preliminary analysis included 17 participants with 30 complete pre- and post-MetS z-score data sets (FRE, n=5; FRE+PBM, n=7; PBM, n=9; SHAM, n=9). There was no statistically significant difference between groups in MSS change from pre-to-post intervention (p=0.82). However, the FRE group showed the greatest proportion of MSS responders: 60% (3/5) compared to FRE+PBM (43%, 3/7), PBM (44%, 4/9), and SHAM (33%, 3/9). CONCLUSION: FRE may be the most efficacious method of clinically improving MSS. However, our study also suggests that a combined FRE+PBM or PBM alone could be used as an initial or supplementary treatment in ameliorating MSS and thus potentially PD progression.

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#507

TITLE: EXERCISE PRESCRIPTION IN A MULTIDISCIPLINARY LONG COVID CLINIC: METHODOLOGY FROM AN AUSTRALIAN EXPERIENCE.

AUTHORS: Ms Mary Johnson[1], Ms Allison Maher[1], Ms Michelle Bennett[1], Ms Tanya Buettikofer[1,2], Dr Hsin-Chia Carol Huang[1,3], Associate Professor Phil Gaughwin[1,2], Ms Veronica Rainbird[4], Professor Imogen Mitchell[1,3], Professor Bernie Bissett[1,2]

Affiliations: [1]Canberra Health Services, Canberra, ACT, Australia, [2]University of Canberra, Canberra, ACT, Australia, [3]Australian National University, Canberra, ACT, Australia, [4]Consumer representative, NSW, Australia

First author's contact: mary.johnson@act.gov.au

INTRODUCTION & AIMS: The University of Canberra Hospital Post-COVID Recovery Clinic is one of Australia's few multidisciplinary outpatient clinics. Our model includes personally-prescribed exercise of both inspiratory and peripheral muscles. We have treated > 200 people with Long COVID with no serious adverse events, and our model is highly acceptable to consumers. This paper offers a detailed description of our methodology capturing how we achieve safe, tailored personal exercise, and carefully manage post-exertional symptom exacerbation (PESE). METHODOLOGY: Initial screening appointments last 2 hours, and clients are referred for medical review if they have signs or symptoms of an acute or life-threatening complication (e.g. unexplained chest pain). Individualised exercise programs are prescribed, progressed, and monitored by an Exercise Physiologist or Physiotherapist initially on an individual basis, then in a supervised group setting. The group program consists of twice weekly sessions of 60 minutes duration. Clients attending group therapies are provided with a home exercise program to enable self-management. Clients are screened at baseline assessment for PESE triggered by participation in activities of daily living. All clients receive education about activity modification and pacing strategies. For clients experiencing PESE, activity is not progressed until they can tolerate 2 weeks of activity without PESE. For peripheral muscles, progressive resistance exercises are prescribed at a submaximal intensity (RPE 4-6/10), with 4-6 exercises completed 3 days /week. Once able to tolerate ADLs, low intensity cardiovascular exercise is gradually introduced with increased monitoring from a clinician. For patients with dyspnoea, high-intensity inspiratory muscle training is prescribed as 5 sets of 6 breaths at least 50% of their maximal inspiratory pressure (30 breaths total) 5 days per week. CONCLUSION: Our experience indicates that it is possible to safely prescribe exercise in people with Long COVID, incorporating both peripheral and inspiratory muscle training, while carefully monitoring and managing PESE.

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#509

TITLE: YOUNG STRONG AND DEADLY PROGRAM EVALUATION

AUTHORS: Mr Andrew Fraser[1], Mr Tano D'Urso[1], Dr Brett Biles[2], Dr Rona Macniven[2], Dr Stephanie Fletcher-Lartety[1]

Affiliations: [1]Western Sydney Local Health District, NSW, Australia, [2]University of New South Wales, NSW, Australia

First author's contact: andrew.fraser1@health.nsw.gov.au

INTRODUCTION & AIMS: For Aboriginal young people, physical activity declines through puberty, adolescence, and early adulthood. Western Sydney Local Health District (WSLHD) departments, Aboriginal Health Hub and Youth Health, together with western Sydney Aboriginal communities co-designed the Young, Strong, and Deadly program. The program is an assertive intervention which aims to increase healthy behaviours and improve social and emotional wellbeing among young Aboriginal adolescents aged 12-16 years. The program is an Aboriginal researcher led, 14-week health education and physical exercise program that includes paid PCYC gym memberships, guided gym sessions, transport provision and nutrition education. METHODS: The study used a mixed method pre-post design with a process evaluation. Participants were recruited through convenience and snowball sampling including engagement with schools and Aboriginal community-controlled organisations. Data were collected on participation and attendance, performance, satisfaction and intention to continue with activities. RESULTS: For the first of three cohorts, 31 participants were recruited, of which 24 completed the 14week program. All participants demonstrated significant improvements in strength & conditioning. Five focus groups were conducted with 20 adolescents and seven parents, individually or in pairs. Adolescents enjoyed the program, particularly achieving gains in strength and fitness, learning and practicing new recipes and having an Aboriginal specific program. Parents spoke favourably of the program including improvements in their children's health behaviours, focus on school and confidence, and appreciated the staff input and program operations. CONCLUSION: Young Strong and Deadly has been implemented in community settings and has demonstrated feasibility and acceptability among Aboriginal adolescents and their families. Initial findings show that a culturally appropriate assertive intervention program can impact on social and emotional wellbeing as well as improving the health of young Aboriginal people.

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#510

TITLE: EVIDENCE FOR THE EFFECT OF EXERCISE ON PHYSICAL CAPACITY, FUNCTIONAL PERFORMANCE, AND FATIGUE IN BRAIN CANCER SURVIVORS: A SYSTEMATIC REVIEW

AUTHORS: Dr Jack Cannon[1], Mr Tim Miller[1], Dr Gavin Buzza[2], Mr Jeremy Cowin[2]

Affiliations: [1]School of Allied Health, Exercise and Sports Sciences, Charles Sturt University, Bathurst NSW, Australia., [2]School of Allied Health, Exercise and Sports Sciences, Charles Sturt University, Port Macquarie NSW, Australia

First author's contact: jcannon@csu.edu.au

INTRODUCTION & AIMS: Physical capacity, functional performance, and fatigue status have prognostic value and protective benefits against all-cause mortality and future adverse health events in prostate, breast, and colon cancer survivors. However, the effects of exercise on these parameters in cancers with disproportionately high rates of mortality and morbidity remain unclear. Therefore, this systematic review aims to evaluate the effects of exercise on aerobic fitness, muscle strength, balance, gait, and fatigue symptoms among adult brain cancer survivors. METHODS: Following PRIMSA guidelines, databases were searched using subject MESH headings for papers published before June 2023. Studies involving adults with a primary brain cancer diagnosis where exercise interventions were applied with the intent to treat and where pre- and post-intervention outcome measures were available. The risk of bias tool for non-randomised trials was used and the overall strength of evidence was assessed using the GRADE approach. RESULTS: Ten studies from 367 retrieved papers were eligible for inclusion. A total of 293 participants aged 18-82 years, all diagnosed with gliomas, who were on-treatment or <62 months post-treatment were involved. Interventions varied substantially across studies regarding duration (4-26 weeks), assessments, prescriptions (frequencies, intensities, modalities, and durations), and delivery. Findings were consistent, reporting significant positive effects of exercise on submaximal aerobic capacity, upper and lower limb strength, balance, fatigue scores, 30s sit-to-stand, and gait speed. However, all studies had a serious risk of bias with numerous methodological problems. Overall certainty of the evidence was rated as very low for each outcome. CONCLUSION: Results from these preliminary studies are encouraging and suggest that exercise may improve health and functional outcomes and potentially reduce the risk of all-cause mortality in adult brain cancer survivors. However, these findings should be interpreted with caution due to the small body of literature, high risk of bias, and weak evidence available.

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#511

TITLE: PREHABILITATION AND SUPPORTIVE CARE IN ONCOLOGY TREATMENT OF BREAST CANCER: PROACTIVE-B

AUTHORS: Dr Shelley Kay[1], Dr Suzanne Grant[1,2], A/Prof Judith Lacey[1,2], Dr Sanjeev Kumar[3], Ms Kim Kerin-Ayres[1], Dr Justine Stehn[1], Dr Maria Gonzalez[1,2], Sandra Templeton[1], Gillian Heller[4], Sara Wahlroos[3], Ashanya Malalasekera[1,5], Cindy Mak[6], Catherine Seet-Lee[1], Ainsley Bell[1], Susannah Graham[6]

Affiliations: [1]Supportive Care and Integrative Oncology Department, Chris O'Brien Lifehouse Comprehensive Cancer Centre, Sydney, NSW, Australia, [2]NICM Health Research Institute, Western Sydney University, Sydney, NSW, Australia, [3]Medical Oncology Department, Chris O'Brien Lifehouse, [4]NHMRC Clinical Trials Centre, University of Sydney, NSW, Australia, [5]University of Sydney, School of Medicine, NSW, Australia, [6]Surgical Oncology Department, Chris O'Brien Lifehouse

First author's contact: shelley.kay@lh.org.au

INTRODUCTION & AIMS: Neoadjuvant therapy has become standard treatment for patients with Stage II/III HER2 positive and triple negative breast cancer and in selected patients with locally advanced and borderline resectable high risk, luminal B breast cancer (1). Side effects such as fatigue, cardiotoxicity, neurotoxicity, anxiety, insomnia, vasomotor symptoms, gastrointestinal disturbance as well as a raft of immune-related adverse events, impact treatment tolerance, long term outcomes and quality of life. Post-treatment, many women increase body fat and decrease lean mass and develop metabolic syndrome (2) and accelerated cardiac aging (3). All of these are modifiable targets of exercise. The aim of this study was to determine if an early multi-modal supportive care program, designed through a qualitative study from consumers and healthcare professionals, can mitigate these side effects and improve chemotherapy completion, cardiometabolic, residual cancer burden (pCR) and surgical outcomes. METHODS: This was a prospective, mixed-method, feasibility study that recruited 23 women receiving neoadjuvant therapy for breast cancer, combining qualitative and quantitative data collection and analysis. The supervised exercise intervention was designed to include aerobic interval, resistance and balance training twice/week, adapted for symptom burden in each session with relative training dose intensity calculated. An optional home program as also provided with therabands. Body composition, upper and lower body strength and cardiometabolic outcome measures were collected at baseline, end of first and second line of treatment and then 6 months post-surgery. RESULTS: Full data will be completed in March 2024 to be presented. There was a high rate of complete pathological response (18/22). Currently, 13 participants have completed 6 month post-surgery assessments and preliminary analyses indicate increases in strength and maintenance of muscle mass during and after treatment. The program was found to be acceptable and feasible with high attendance and satisfaction ratings. The additional home program had poor uptake. Of interest to exercise physiologists was participant responses to cluster set training, how poorly rate of perceived exertion reflected training and strength testing loads, heart rate and blood pressure responses and treatment toxicities including cases of immunotherapy induced hepatitis. Many participants were stronger at the end of chemotherapy than before and reported that exercise gave them a sense of control. CONCLUSION: Adapting exercise during neoadjuvant chemotherapy with additional supportive therapies for symptom management, improved physical and psychosocial functioning. The program was feasible and acceptable, with high satisfaction reported. Muscle mass can be maintained with supervised exercise training and maintained and 6 months after surgery.

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#512

TITLE: BENEFICIAL EFFECTS OF A COMBINED AEROBIC AND STRENGTH TRAINING PROGRAM IN PATIENTS WITH MOTOR NEURON DISEASE

AUTHORS: Dr Alessandra Ferri[1], Francesca Lanfranconi[2]

Affiliations: [1]Victoria University, [2]Centro Maria Letizia Verga - Fondazione Monza e Brianza per il bambino e la sua mamma

First author's contact: alessandra.ferri@vu.edu.au

INTRODUCTION & AIMS: Motor Neuron Disease (MND) is a neurodegenerative disease characterised by the progressive degeneration and death of motor neurons, which leads to a reduction in muscle strength and physical function. Although "Exercise as Medicine" is accepted for many diseases, the role of exercise in individuals with MND is still debated. The aim of this study was to evaluate the effect of a combined, moderate-intensity, aerobic and strength training program on aerobic capacities, strength and physical function in individuals with MND. METHODS: Fifteen individuals with MND were randomly assigned to either a training (3 times/week for 12 weeks; TRAIN, n=8) or a control (continued their usual standard of care; CTRL, n=7) group. The peak aerobic capacity (VO2peak) and the maximal capacity of oxygen extraction (via Near-Infrared Spectroscopy) were evaluated during an incremental test to exhaustion on a cycle ergometer. The strength of both the lower- and upper-limb muscles was evaluated with a 1-Repetition Maximum (1RM) test on the leg press, leg extension, biceps curl, and vertical chest press. Participants also performed the "Timed Up and Go" test (TUG) and the 6-min walking test (6MWT). RESULTS: The adherence to training was 86 ± 6%, and the satisfaction with the exercise program was 9.6 out of 10. VO2peak did not change significantly in both groups, but the maximal capacity of O2 extraction improved significantly in TRAIN (from 44 ± 3 to 67 ± 4 %). In TRAIN, the 1RM for the leg press and leg extension increased significantly by 47 ± 8% and 50 ± 13%, respectively, while this parameter did not change in CTRL. While the 6MWT increased by 5% in TRAIN and decreased by 3% in CTRL, the change was not significant. CONCLUSION: These preliminary results support the beneficial role of a combined aerobic and strength training program in individuals with MND.

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#514

TITLE: DEVELOPMENT OF THE SUBJECTIVE TRAINING QUALITY SCALE FOR TEAM SPORTS SCALE

AUTHORS: Jed McGrath[1], Distinguished Professor Aaron Coutts[1], Dr Katie Slattery[1,2], Steph Davies[1]

Affiliations: [1]University of Technology Sydney, Sydney, NSW, Australia, [2]Human Performance Research Centre, University of Technology Sydney, Sydney, Australia

First author's contact: jed.j.mcgrath@student.uts.edu.au

INTRODUCTION & AIMS: In team sports, training is strategically designed to incorporate all training factors (i.e., physical, technical, tactical, mental) to improve an athlete's performance during competition. The ultimate goal is for individual athletes to work together as a cohesive unit to complete training objectives and train at high quality. Although anecdotal, training quality is considered a key component in the training process. However, there is currently no team sport literature that has defined this construct. Nor a validated measurement instrument available to assess the quality of team sport training. Therefore, the present study developed the Subjective Training Quality for Team Sports (STQ-TS) scale. Furthermore, this study investigated the application of this scale within the context of a professional National Rugby League (NRL) team. METHODS: Eleven rugby league players (24 ± 2 y; 62 ± 47 NRL games) were interviewed to explore how they define and assess training quality. Thematic analysis was used to analyse interview transcripts. The identified themes were used to develop a preliminary STQ-TS scale. The STQ-TS scale was completed by forty-two NRL players across two seasons. RESULTS: Four themes were identified for the STQ-TS scale. These themes included physical, technical, mental, and teamwork (i.e., communication; connectedness). Players perceived pre-season training to be lower quality compared to in-season. In-season training quality showed a gradual improvement throughout both seasons, reaching its peak late in the season. CONCLUSION: Professional rugby league players perceive training quality as their ability to complete physical, technical, mental, and teamwork objectives. The STQ-TS scale serves as a valuable tool for practitioners to assess training quality in team sports. The integration of the STQ-TS scale with external load, internal load, and athlete response measures can provide practitioners with a more nuanced and holistic understanding of the training process.

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#515

TITLE: EXPLORING THE EFFECTS OF VIGOROUS INTERVAL TRAINING, MODERATE RESISTANCE TRAINING AND PILATES ON ARTERIAL STIFFNESS AND BLOOD PRESSURE DURING PREGNANCY: A RANDOMISED CROSS-OVER TRIAL

AUTHORS: Courtney Giles[1], Dr Kassia Beetham[1,2], Dr Jemima Spathis[1], Dr Rich Johnston[1,2], Associate Professor Michael Baker[3]

Affiliations: [1]School of Behavioural and Health Sciences, Australian Catholic University, Brisbane, QLD, Australia, [2]Sports Performance, Recovery, Injury and New Technologies Research Centre, Australian Catholic University, Brisbane, QLD, Australia, [3]Graduate Research School, Western Sydney University, Sydney, NSW, Australia

First author's contact: courtney.giles@acu.edu.au

INTRODUCTION: Regular moderate intensity exercise throughout pregnancy provides significant benefits to both maternal and foetal cardiovascular health outcomes. Current exercise guidelines recommend a combination of moderate intensity aerobic and resistance training (RT). However, there is limited research exploring the cardiovascular effects of higher intensities (vigorous/high) in comparison to common pregnancy exercise modalities such as RT and Pilates (PIL). AIM: To investigate the acute effects of three modes of exercise (resistance, vigorous aerobic intervals and Pilates) during trimester two (T2) and three (T3) of pregnancy on measures of arterial stiffness (pulse wave velocity [PWV]) and blood pressure (BP). METHODS: Eleven women with uncomplicated pregnancies (age 32 ± 3 years, pre-pregnancy BMI 23.9 ± 3.5 kg/m2) completed testing in T2 (average 20 ± 1.6 weeks gestation) and T3 (average 29 ± 2.5 weeks gestation). Participants performed one each of vigorous intensity interval training (VIIT) (~33 min), resistance training (RT) (~35 min) and Pilates (PIL) (~35 min) in T2 and T3 in randomised order approximately 1 week apart each trimester. Resting outcome measures of PWV, BP and foetal heart rate (FHR) were obtained following 5 minutes of rest and again immediately and 10 minutes post exercise session. BP, maternal heart rate (MHR), and rating of perceived exertion (RPE) were monitored throughout. RESULTS: There was no difference in the acute PWV response to each type of exercise across the trimesters (1 min VIIT: T2 = 5.53 ± 0.85m/s, T3 = 5.26 ± 0.67m/s, 95%CI[-1.36-0.67]; RT: T2 = 5.4 ± 0.80m/s, T3 = 5.48 ± 0.56m/s, 95%CI[-0.88-1.10]; PIL: T2 = 5.44 ± 0.68m/s, T3 = 5.44 ± 0.68m/s, 95%CI[-0.93-1.01]). There was no significant difference in the acute response in SBP to VIIT (T2 = 116 ± 12.1mmHg, T3 = 122 ± 7.2mmHg, 95%CI[-0.42 - 1.65]. SBP was significantly higher in T3 than T2 1 minute following PIL (T2 = 110 ± 5.8mmHg, T3 = 121 ± 11.7mmHg, 95%CI[0.04-2.1]) and 10 minutes following RT (T2 = 105 ± 10.1mmHg, T3 = 116 ± 5.0mmHg, 95%CI[0.27 - 2.46]. CONCLUSION: VIIT, RT and PIL appear to elicit similar post-exercise haemodynamic and arterial stiffness responses in both the mother and foetus. As such, VIIT may be a suitable addition to standard moderate intensity and RT prescription during an uncomplicated pregnancy.

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#517

TITLE: COMPARING THE EFFECTS OF AROMATASE INHIBITORS AND SELECTIVE OESTROGEN RECEPTOR MODULATORS ON BODY COMPOSITION, EXERCISE TOLERANCE AND MARKERS OF CARDIOVASCULAR RISK IN FEMALES WITH BREAST CANCER

AUTHORS: Dr Sarah Alexander[1], Stephen J Foulkes[2,3,4], Mark J Haykowsky[3], Yoland Antill[5,6,7], Sophie Nightingale[8], Lauren Burnham[9], Robin M Daly[10], Steve F Fraser[10], Andre La Gerche[4,11,12], Erin Howden[4,9]

Affiliations: [1]Baker Heart and Diabetes Institute, Melbourne, VIC, Australia, [2]Sports Cardiology, Baker Heart and Diabetes Institute, Melbourne, VIC, Australia, [3]Faculty of Nursing, College of Health Sciences, University of Alberta, Edmonton, Canada, [4]Baker Department of Cardiometabolic Health, University of Melbourne, Parkville, VIC, Australia, [5]University of Melbourne, Parkville, VIC, Australia, [6]Cabrini Health, Melbourne, VIC, Australia, [7]Faculty of Medicine, Dentistry and Health Sciences, Monash University, Melbourne, VIC, Australia, [8]Peter MacCallum Cancer Centre, Melbourne, VIC, Australia, [9]Cardiometabolic health and exercise physiology, Baker Heart and Diabetes Institute, Melbourne, VIC, Australia, [10]Institute for Physical Activity and Nutrition, Deakin University, Melbourne, VIC, Australia, [11]Sports Cardiology, Baker Heart and Diabetes Institute, Melbourne, VIC, Australia, [12]Cardiology Department, St. Vincent's Hospital Melbourne, Fitzroy, VIC, Australia

First author's contact: sarah.alexander@baker.edu.au

INTRODUCTION: Adjuvant endocrine therapy (AET) blocks the action of estrogens and is commonly prescribed in hormone receptor-positive breast cancer. Given the putative cardioprotective role of estrogens in females, AET may exacerbate the negative metabolic side-effects of anthracycline chemotherapy. This study examined the early effects of combined anthracycline chemotherapy and AET on body composition, exercise tolerance and markers of cardiovascular risk in a cohort of females with breast cancer. METHODS: This was a secondary analysis of the BReast cancer EXercise InTervention (BREXIT) Trial. Females with breast cancer (n=105, aged 51 ± 8 years, BMI 27.4 ± 5.1, mean ± SD) scheduled for anthracycline chemotherapy participated in this study. Aerobic exercise capacity, body composition, physical function, and blood pressure were measured before anthracycline treatment and after 4- and 12-months follow-up. Linear mixed models assessed whether aromatase inhibitors (AI) or selective estrogen receptor modulators (SERMS) affected exercise tolerance, body composition and markers of cardiovascular risk compared to non-endocrine breast cancer treatments. RESULTS: Twelve months of anthracycline treatment combined with AI or SERMs decreased total body lean mass by 1.4 kg (2%; interaction p=0.01) and 1kg (1%; interaction p=0.16) respectively, when compared to non-endocrine therapies. There were trends for AET to decrease total fat (-1.5%, interaction p=0.05) and android fat (-2.3%, interaction p=0.07) mass compared to non-endocrine therapy after 12 months. AIs significantly increased both systolic (5.8mmHg, interaction p=0.05) and diastolic (4.0mmHg, interaction p=0.05) blood pressure after 12 months of treatment compared to SERMs or non-endocrine therapies. There was no effect of either AET or SERMS on VO2peak, leg press or seated row 1RM, 30 second sit to stand or handgrip strength. DISCUSSION AND CONCLUSION: Short-term treatment with adjuvant endocrine therapies may accelerate muscle loss and increase blood pressure compared to non-endocrine therapies. However, these changes were not associated with worsening of physical function.

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#520

TITLE: FREQUENCY OF POST-EXERTIONAL MALAISE AMONG INDIVIDUALS WITH POST ACUTE SEQUELAE OF SARS-COV-2 INFECTION

AUTHORSS: Lauren Burnham[1], Erin Howden[1,2], Hayley Dillon[3], Joel Smith[3], Professor Tom Marwick[3], Dr Sarah Alexander[3], Kristyn Whitmore[4], Catalina Silvaruiz[4], Martin Shultz[4]

Affiliations: [1]Cardiometabolic health and exercise physiology, Baker Heart and Diabetes Institute, Melbourne, VIC, Australia, [2]Baker Department of Cardiometabolic Health, University of Melbourne, Parkville, VIC, Australia, [3]Baker Heart and Diabetes Institute, Melbourne, VIC, Australia, [4]University Of Tasmania, Hobart, Tasmania, Australia

First author's contact: lauren.burnham@baker.edu.au

INTRODUCTION AND AIM: Post acute sequelae of SARS-CoV-2 infection (PASC) is a multifaceted disorder with varying symptoms. Fatigue is commonly reported; however, it is unclear if similarities exist between PASC and myalgic encephalomyelitis/chronic fatigue syndrome (ME/CFS). We sought to determine the frequency of post-exertional malaise in individuals with PASC; a hallmark symptom of ME/CFS. METHODS: 116 participants (Age: 53.4±8.4, 36% Male) were identified to have PASC through medical screening. The Duke Activity Status Index (DASI) subjectively evaluated functional capacity, and participants achieving <100% of age and sex defined norms were eligible for the study. Participants attended one of three sites across Victoria and Tasmania to complete Cardiopulmonary Exercise Testing (CPET). Two days post CPET they were asked to complete the DePaul Symptom Questionnaire (DSQ) post-exertional malaise (PEM). PEM was defined as a score ≥ 2 for frequency and severity on DSQ-PEM items 1-5. A personalised exercise rehabilitation program is currently underway for participants, with results on responses to training to be available at the time of the conference. RESULTS: 106 (91%) of the participants who completed a CPET achieved less than 85% of predicted relative VO2peak (21.79±5.72ml.min-1.kg-1). The DSQ-PEM questionnaire was completed in 75% (n=79) of participants. Among these individuals 78% (n=62) met the threshold for PEM. The PEM group were older (53±8 vs 48±8 years, p=0.04), had higher BMI (30.5±7.6 vs 26.7±3.9kg.m2, p=0.02), lower VO2peak (21.6±5.7 vs 25.6±5.4ml.min-1.kg-1, p=0.01) and six-minute walk distance (491±131 vs 583±112m, p=0.02). There was a similar proportion of men and women between both groups. CONCLUSION: Like with ME/CFS, PEM is a common symptom in PASC. Additionally, these individuals are more deconditioned than PASC sufferers without PEM. Thus, practitioners should carefully consider the impact of PEM and deconditioning when developing rehabilitation programs.

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#523

TITLE: DEVELOPMENT OF THE NEXT ESSA RESEARCH STRATEGY

AUTHORS: Ali Curtis[1], Judy Powell[1], Jess Muir[1]

Affiliations: [1]*ESSA, Brisbane, Queesnland, Australia*

First author's contact: Alison.Curtis@essa.org.au

INTRODUCTION: The generation and use of research is a function within ESSA and the first research strategy was developed for the period 2018 - 2021. Research program activities are diverse. ESSA has hosted the Research Committee and the Publications Committee for 5 years. ESSA has facilitated the development of member-driven Guidelines, Consensus and Position Statements for use by professionals in practice. ESSA has hosted an annual Research Grant Program and a biannual scientific conference. This paper outlines the research strategy development project. METHODS: The previous strategy delivered research grants and ESSA publications. Investments were made into administration and research governance including release of the ESSA Research Publications Development Guideline. Consultation on the development of the next Research Strategy included presentations and surveys to engage members, key stakeholders and staff about: the program; the key strategy pillars; principles; and actions. Actions were assessed for feasibility and priority. RESULTS: The outcomes of the consultation on the ESSA Research Strategy 2023-2026 identified four pillars of capacity building, engagement, translation and data, and research for policy and practice priorities. The use of research publications by ESSA accredited professionals and industry will be guided by a translation framework, aligning with the objectives of the National Health and Medical Research Council (NHMRC) Translation Strategy 2022-2025, the resources of the National Centre of Implementation Science and the ESSA Strategic Plan. This will support members to leverage research findings, to encourage researchers to develop translation collateral and to implement new research results. The strategy will have actions, references and tools to help accredited professionals to engage in research translation. CONCLUSIONS: The Research Strategy and translation framework will be outlined. The paper will include examples relating to physical activity. ESSA's next Research Strategy is to further support research generation and use by ESSA accredited professionals, staff and the industry.

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#524

TITLE: THE EFFECTS OF ACUTE AND CHRONIC HYPOXIC PLYOMETRIC EXERCISE ON POST ACTIVATION POTENTIATION

AUTHORS: Dr Betul Coskun[1,2], Prof Michael J. Hamlin[1]

Affiliations: [1]Department of Tourism, Sport and Society, Lincoln University, Christchurch, New Zealand, [2]Faculty of Sport Sciences, Erciyes University, Kayseri, Turkey

First author's contact: betulcoskun_19@hotmail.com

INTRODUCTION: In the literature, only acute effects of exercise, mostly combined with plyometrics or blood flow restriction (BFR), have been examined on post-activation-potentiation (PAP). Although systemic and local hypoxia have some similar effects, we found only one study (Ramos-Campo et al., 2020) reporting a PAP effect with systemic hypoxia. There is no study investigating chronic effects, and there is also no study examining acute and chronic effects of exercise together, not only in hypoxia but also in normoxia. The aim of this study is to examine the acute and chronic effects of plyometric exercise in hypoxia on PAP, and to test differences between high and low hypoxia. METHOD: Nineteen team-sports athletes undertook 8-week drop-jump (DJ) training in Low-Hypoxia (LH, n=8), Normoxia (N, n=6), and High-Hypoxia (HH, n=5) using a hypoxicator set using a biofeedback system to sustain a SpO2 of 90%, 97-100%, and 80%, respectively. PAP assessments were applied under both normoxia and hypoxia on different days. Two DJ trials from 40-cm height were obtained as baseline measurements, and then 7.5 min passive rest was given under each group's hypoxia level. Following 1x5 DJs for pre-test, and 1x8 DJs for post-test as PAP protocol, DJ tests were applied at 2nd and 4th min. RESULTS: RM-ANOVA, to assess acute effect, showed a significant conditionxtest interaction ($F=3.40$, $p=0.044$), and only under normoxia condition DJ-height was significantly higher at 2nd (31.7cm) and 4th min (31.6cm) than baseline (30.1cm)($p<0.05$). For chronic effect, mixed-ANOVA represented a significant groupxtest interaction ($F=2.70$, $p=0.048$). Only HH significantly increased DJ-height from baseline (30.0cm) to 2nd (31.9cm) and 4th min (32.9cm) ($p<0.05$). CONCLUSION: We conclude that while acute hypoxia drop jump exercise may damage net balance between potentiation and fatigue which occurred after conditioning activity, high hypoxia drop jump training may affect this balance in favour of potentiation without any condition difference.

#525

TITLE: KNOWLEDGE PRODUCTS TO HELP EXERCISE PROFESSIONALS IMPLEMENT EXERCISE RECOMMENDATIONS FOR PEOPLE WITH BONE METASTASES: CO-DESIGN OF A HEALTH INFORMATION FORM

AUTHORS: Kirstin N. Lane[1], Kelcey A. Bland[2], Sarah E. Neil-Sztramko[3], Michelle B. Nadler[4], David M. Langelier[5], Alana Chalmers[6], Rhoda Dinardo[6], Nicole Prestley[7], Sarah Weller[8], Shabbir M.H. Alibhai[4], Lauren Capozzi[5], Janet Papadakos[9], Karen McDonald[10], Jane Copp[11], Margaret McNeely[12], Christine Simmons[13], Leah Lambert[14], Alan Bates[13], Kirstin L Campbell[2]

Affiliations: [1]University of Victoria, Victoria, British Columbia, Canada; [2]University of British Columbia, Vancouver, British Columbia, Canada; [3]McMaster University, Hamilton, Ontario, Canada; [4]Princess Margaret Cancer Centre, University Health Network, Toronto, Ontario, Canada; [5]University of Calgary, Calgary, Alberta, Canada; [6]Canadian Cancer Society, Toronto, Ontario, Canada; [7]Women's Hospital, Vancouver, British Columbia, Canada; [8]Movember, Melbourne, Victoria, Australia; [9]University Health Network, Toronto, Ontario, Canada; [10]Patient Partner, Vancouver, British Columbia, Canada; [11]Patient Partner, Toronto, Ontario, Canada; [12]University of Alberta, Edmonton, Alberta, Canada; [13]BC Cancer, Vancouver, British Columbia, Canada; [14]Cancer, University of British Columbia, Vancouver, British Columbia, Canada;

First author's contact: lanek@uvic.ca

INTRODUCTION: People with bone metastases have historically been advised to limit exercise due to risk of skeletal adverse events, such as bone fracture. Published recommendations by the International Bone Metastases Exercise Working Group (IBMEWG) emphasize regular exercise may benefit people with bone metastases; however, there are barriers to adopting these guidelines into clinical practice. For example, exercise professionals (EPs) report challenges obtaining necessary medical information about bone metastases to develop/design safe exercise programs. To address this, a Health Information Form (HIF) was developed using an experience-based co-design approach with three knowledge user (KU) groups: patient/family partners (PFPs), oncology healthcare providers (HCPs), and EPs. The aim of this study was to gather feedback from an international audience on the usability of the HIF. METHODS: An online survey was advertised widely to KU groups using a social media toolkit and targeted email invitations to professional organizations. Questions included demographic information, usability of the HIF, and suggestions for dissemination. Analysis of survey responses was descriptive.

RESULTS: 69 respondents from North America (71%), Europe (20%), and Australasia (9%) provided feedback on the HIF. Most were EPs (54%) or PFPs (36%), and half (54%) had some awareness of the IBMEWG exercise recommendations. 81% of respondents found the purpose of the HIF easy to understand and 77% rated the content as excellent or very good. The design was rated as excellent or very good by 62% with feedback such as "… *covers a lot of areas in a way that is brief and effective*". 14 respondents suggested information that could be added to the HIF (e.g., fracture risk factors, recent surgeries). CONCLUSION: Overall, the HIF was well received by an international audience. The feedback provided by respondents will be utilized to enhance both the design and content of the form.

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#526

TITLE: A QUALITATIVE EXPLORATION OF THE EFFECT OF A METASTATIC BREAST CANCER DIAGNOSIS ON PHYSICAL ACTIVITY AND QUALITY OF LIFE

AUTHORS: Dr Andrew Scott[1], Miss Natasha Walter[1], Mr Monday Uwadiae[1], Mr Abdulmalik Agboola Ayodeji Alaga[1]

Affiliations: [1] School of Sport, Health and Exercise Science, University of Portsmouth, Portsmouth, Hampshire, UK

First author's contact: andrew.scott@port.ac.uk

BACKGROUND: Physical activity is beneficial for people living with metastatic breast cancer, a cancer that has spread to other body parts such as liver, lungs and lymph nodes, but less is known about patient views on supporting them in an active lifestyle. Through a qualitative scope this study aimed to investigate the effect of a metastatic breast cancer diagnosis on physical activity and quality of life aiming to capture exercise motivators, barriers, and preferences to inform and introduce feasible and effective physical activity in treatment plans. METHODS: This study involved semi-structured interviews with eight female participants from the local Metastatic Breast Cancer Support Group in Portsmouth. RESULTS: Reflexive thematic analysis was conducted on the data, and five higher order themes were developed: (i) Life is affected by diagnosis and treatment, (ii) Limitations to being more physically active, (iii) Physical activity's impact on quality of life, (iv) Factors supporting/enhancing physical activity and quality of life, and (v) Actions to support physical activity and quality of life. Generally, participants reported that living with metastatic breast cancer had negatively altered their quality of life, including their ability to be physically active. Perceptions of the introduction or continuation of physical activity were welcomed. Despite the benefits and factors found to support physical activity engagement several barriers were identified, such as treatment focus and exercise misconceptions. CONCLUSION: Metastatic breast cancer impacts quality of life and the ability to be physically active, being active is generally perceived to be beneficial, and social and environmental support is important to being physically active.