UTS UNIVERSITY OF TECHNOLOGY SYDNEY

# Novel strategies for improving men's mental health through physical activity programs

**by Paul Gregory Sharp**

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**Doctor of Philosophy**

under the supervision of
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CERTIFICATION OF ORIGINAL AUTHORSHIP

I, Paul Sharp, declare that this thesis is submitted in fulfilment of the requirements for the award of Doctor of Philosophy, in the Faculty of Health at the University of Technology Sydney.

This thesis is wholly my own work unless otherwise reference or acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

This document has not been submitted for qualifications at any other academic institution.

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ABSTRACT

Men's mental health promotion presents unique challenges and opportunities that demand novel approaches to prevention, treatment, and management. Generic health promotion programs have failed to engage and retain men in healthy behaviour change. Tailored approaches are needed that consider and account for gender as an important social determinant of health. The aim of this thesis was to explore strategies to engage men in mental health promotion through physical activity and inform the development of behaviour change interventions that support men's health and well-being. This exploration began with a systematic review and meta-analysis of intervention effects on men's physical activity. Findings highlighted the effectiveness of gender-tailored approaches in men's health promotion and revealed opportunities to use physical activity as a gateway to target other health behaviours, including mental health promotion. The focus then narrowed toa purposeful examination of the barriers and facilitators of men's mental health promotion, with consideration to gender roles and relations that influence constructs of masculinities and men's health. Findings support the dynamic nature of masculinities as well as opportunities for community-based mental health promotion. The thesis concludes with an in-depth participatory design process undertaken to develop gender-tailored intervention strategies for men's mental health promotion in the context of physical activity programs for men. Future research directions are identified and a prospective pragmatic randomised control trial is outlined to test the effectiveness of this intervention approach for improving men's mental health.

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**Outcomes arising from this thesis**

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- **Sharp, P.**, Bottorff, J. L., Hunt, K., Oliffe, J. L., Johnson, S. T., Dudley, L., & Caperchione, C. M. (2018). Men's perspectives of a gender-sensitized health promotion program targeting healthy eating, active living, and social connectedness. *American Journal of Men's Health*, *12*(6), 2157-2166
    - Findings from this manuscript have been incorporated into Chapter 1.
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- **Sharp, P.**, Spence, J. C., Bottorff, J. L., Oliffe, J. L., Hunt, K., Vis-Dunbar, M., & Caperchione, C. M. (2020). One small step for man, one giant leap for men's health: a meta-analysis of behaviour change interventions to increase men's physical activity. *British Journal of Sports Medicine*, *54*(20), 1208-1216.
    - This manuscript is presented in its entirety in Chapter 2.

Related publications not included in this thesis

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- Caperchione, C. M., Bottorff, J. L., Stolp, S., **Sharp, P.**, Johnson, J., Oliffe, J. O., & Hunt, K. (2020). Positive lifestyle behavior changes among men: Findings from the HAT TRICK program. *American Journal of Health Promotion, 5*(2), 193-201.

Conference proceedings

- **Sharp, P.**, Bottorff, J. L., Oliffe, J. L., Rice, S., Schulenkorf, N., Impellizzeri, F., Caperchione, C. M. (October 2021). Leveraging physical activity to engage men in mental health promotion: Informing future directions for lifestyle interventions. *ASICS Sports Medicine Australia Conference*, Melbourne, Australia.
- **Sharp, P.** (November 2020). Gender-tailored approaches to improving men's mental health: A participatory design process. *Health Research Student Conference (Award category)*, Sydney, Australia.
- **Sharp, P.** & Caperchione C.M. (October 2020). Australian men's perspectives of mental health and well-being: influences, practices, and opportunities for prevention. *Australian Men's Health Gathering (Cancelled – COVID-19)*
- **Sharp, P.** (November 2019). Understanding the socio-cultural needs and interests of me living in Australia to inform the development of a gender-sensitised health program. *Health Research Student Conference (Award category)*, Sydney, Australia.
- Caperchione, C.M., **Sharp, P.**, Bottorff, J.L., Hunt, K., Oliffe, J.L. & Johnson, S.T. (October 2019). "It was kind of my guys' night out": impact of a gender-sensitised lifestyle program on men's physical activity and mental health. *ASICS Sports Medicine Australia Conference*, Sunshine Coast, Australia.
- **Sharp, P.**, Spence, J.C., Bottorff, J.L., Oliffe, J.L., Hunt, K., Vis Dunbar, M. & Caperchione, C.M. (October 2019). Meta-analysis of behaviour change interventions to increase physical activity among men. *ASICS Sports Medicine Australia Conference*, Sunshine Coast, Australia.

- **Sharp, P.**, Bottorff, J.L., Oliffe, J.L., Hunt, K., Johnson, S.T., Caperchione, C.M. (June 2019). Recruitment, retention, and acceptability of HAT TRICK: Strategies for engaging men in a gender-sensitised lifestyle intervention. *Annual Meeting of the International Society for Behavioral Nutrition and Physical Activity*, Prague, Czech Republic.
- Caperchione, C.M., **Sharp, P.**, Bottorff, J.L., Oliffe, J.L., Hunt, K., Johnson, S.T. (June 2019). The HAT TRICK for promoting men's health: Physical activity, health eating and social connectedness. *Annual Meeting of the International Society for Behavioral Nutrition and Physical Activity*, Prague, Czech Republic.
- **Sharp, P.** (November 2018). Effectiveness of controlled physical activity trials in adult men: A systematic review and meta-analysis. *Health Research Student Conference (Award category)*, Sydney, Australia.

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**Author contributions to published papers**

The supervisors of this thesis were Associate Professor Cristina Caperchione, Professor Joan Bottorff, Associate Professor Nico Schulenkorf, and Professor Franco Impellizzeri.

*Chapter One (Section 1.13): Findings from the HAT TRICK program.*

This section consists of excerpts from three published manuscripts (listed in section 1.2) related to the implementation and evaluation of the HAT TRICK program. CMC was the primary investigator of this research with support from JLB, KH, JLO, STJ, and myself. I contributed to the development and implementation of the intervention and facilitated program delivery and data collection. Quantitative mental health outcomes were analysed by SS. I conducted the qualitative data analysis and process evaluation, in consultation with JLB. As first author, I drafted the manuscripts and all authors provided feedback and approval for respectively authored publications.

*Chapter Two: One small step for man, one giant leap for men's health: a meta-analysis of behaviour change interventions to increase men's physical activity.*

All content of this manuscript was my original work. I determined the search strategy with MVD and CMC and oversaw the screening of articles. In consultation with JCS, I was responsible for data extraction, analysis, and interpretation. I drafted the manuscript and JLB, JLO, KH, and CMC contributed to the discussion. All authors reviewed the final manuscript.

*Chapter Three: "People say men don't talk, well that's bullshit": A focus group study exploring challenges and opportunities for men's mental health promotion.*

All content of this manuscript was my original work. I developed the interview guide and facilitated the focus groups, with support from CMC. In consultation with JLO, I conducted

the thematic analysis and interpretation of findings. Themes and interpretations were reviewed for consensus by all authors. I drafted the manuscript and JLB, SR, and JLO contributed to the discussion. All authors provided feedback and approval of the final manuscript.

*Chapter Four: Australian masculinities and culture in men's mental health.*

All content of this manuscript was my original work. I developed the interview guide and facilitated the focus groups, with support from CMC. I conducted the thematic analysis and JLO contributed to the interpretation of the findings. I wrote the manuscript and all authors provided feedback and contributed to the discussion. All authors reviewed the final manuscript.

*Chapter Five: Gender-tailored intervention strategies for men's mental health promotion: A participatory design process.*

All content of this manuscript was my original work. I developed the facilitation guides and workshop activities and led the focus groups, workshop, and telephone interviews. CMC and I independently examined the data and developed a coding framework to ensure cross-comparison rigor. I analysed the data for overarching themes and chose representative quotes. I drafted the manuscript and all authors provided feedback and approval of the final draft.

**Abbreviations**

| | |
|---|---|
| **AFL** | Australian Football League |
| **CI** | Confidence Interval |
| **CMA** | Comprehensive Meta-analysis |
| **EPHPP** | Effective Public Health Practice Project |
| **GRADE** | Grading of Recommendations, Assessment, Development and Evaluations |
| **ICC** | Intracluster Correlation Coefficient |
| **LGBTIQ+** | Lesbian, Gay, Bisexual, Transgender/Transsexual, Intersex, Queer/Questioning |
| **MDRS** | Male Depression Risk Scale |
| **MetS** | Metabolic Syndrome |
| **MH** | Mental Health |
| **PA** | Physical Activity |
| **PH** | Physical Health |
| **PRISMA** | Preferred Reporting Items for Systematic Reviews and Meta-analysis |
| **RCT** | Randomised Controlled Trial |
| **SE** | Standard Error |
| **UK** | United Kingdom |
| **USA** | United States of America |

# CHAPTER 1. Introduction

## 1.1 Chapter overview

This chapter begins by identifying the need to focus on men's health and describes the overarching approach taken within this thesis. There is a brief review of the key issues relating to men's health, which will be subsequently explored in greater detail within Chapters 2-6 as they relate to men's physical activity and mental health promotion. Presented is an overview of mental health, the role of masculinities, and current evidence regarding men's mental health promotion. Evidence from our recent pragmatic behaviour change intervention targeted at overweight men's physical activity, healthy eating, and social connectedness is used to highlight opportunities for engaging men in mental health promotion within these settings. Finally, an overview of the thesis is provided, concluding with a statement of significance of the research.

## 1.2 Publication details

**Sharp, P.**, Bottorff, J. L., Hunt, K., Oliffe, J. L., Johnson, S. T., Dudley, L., & Caperchione, C. M. (2018). Men's perspectives of a gender-sensitized health promotion program targeting healthy eating, active living, and social connectedness. *American Journal of Men's Health*, *12*(6), 2157-2166

- Excerpts from this publication have been incorporated into section 1.14

**Sharp, P.**, Bottorff, J. L., Oliffe, J. L., Hunt, K., & Caperchione, C. M., (2020). Process evaluation of HAT TRICK: Feasibility, acceptability, and opportunities for program refinement. *Health Education Research, 35*(6), 605-617.

- Excerpts from this publication have been incorporated into section 1.14

**Sharp, P.**, Stolp, S., Bottorff, J. L., Oliffe, J. L., Hunt, K., & Caperchione, C. M. (2020). Can lifestyle interventions improve Canadian men's mental health? Outcomes from the HAT TRICK program. *Health Promotion International,* daaa120

- Excerpts from this publication have been incorporated into section 1.14

## 1.3 Men as a priority population

Although men in Australia enjoy one of the highest life expectancies in the world (80.4 years in 2014–16), they have a significantly lower life expectancy than Australian women (84.6 years in 2014-16) (Australian Bureau of Statistics, 2017). In fact, men's mortality rates are higher than women across all age groups and they experience higher rates of premature death. Despite the leading causes of death by sex being quite similar, men have a higher incidence of many chronic conditions and experience 54% of the total disease burden (Australian Institute of Health and Welfare, 2017). The major contributors to potential years of life lost for Australian men are preventable diseases, with nearly half (47%) of the burden of disease in men coming from cancer, cardiovascular disease, and mental and substance use disorders (Australian Institute of Health and Welfare, 2017). In general, these concerning health trends persist across diversities in age, social and economic circumstances, culture, language, education, beliefs and a range of other factors that influence health behaviours and outcomes (Australian Bureau of Statistics, 2017; Australian Institute of Health and Welfare, 2017). However, that is not to say that these sociocultural factors should be ignored. Rather, men's lives and health are influenced by the intersectionality of these factors, which interact to create structures that shape men's opportunities and experiences (Griffith, 2012). As such there is a need to examine the social and health effects of several key aspects of identity and context and recognise how diverse expressions of masculinity may impact men's health and health-related behaviours (Connell, 2005; Griffith, Bruce, & Thorpe Jr, 2019). Rovito and colleagues (2017) call caution to the prevalent assumption that men simply live sicker and die younger, stating that the gap in life expectancy and mortality between men and women is not a "normal" phenomenon. Unfortunately, men's health is not frequently considered in existing policies and programs, resulting in a need for gender-inclusive global health strategies (Rovito et al., 2017).

## 1.4 Masculinity as a determinant of health

To begin to address men's health outcomes, a greater recognition must be made for the social contexts and norms influencing men's health and well-being and the specific health-related barriers and challenges men face. While sex refers to a set of biological attributes, gender is the socially constructed roles, behaviours, expressions and identities of men, women, and gender diverse people. Gender influences how people perceive themselves and each other, how they act and interact, and the distribution of power and resources in society (CIHR, 2020). The role of gender as a determinant of health has gained particular interest in recent years. While socio-economic status, ethnicity, and access to care may explain disparities in health outcomes between certain populations, they cannot explain sex differences in health and longevity (Mauvais-Jarvis et al., 2020). For instance, irrespective of other social determinants of health (e.g., income), population level statistics suggest that males live on average 4 years less than their female counterparts and have higher rates of all-cause mortality (Australian Bureau of Statistics, 2017). It is posited that these differences in health outcomes stem from gender-related influences such as the masculine identities, values, and attitudes traditionally associated with being a man. Complicating matters is that these masculinities can have conflicting influences on men's health promoting practices, with evidence suggesting that these values and norms can be both detrimental and supportive for certain health promoting practices (Mauvais-Jarvis et al., 2020). Herein, evidence will be presented to demonstrate that men face certain circumstances and norms that complicate their decisions to make healthy choices and/or access the health services and information necessary to achieve optimal health.

Connell (2013) defines masculinity as a social construction dependent on a specific historical time, culture and locale. This definition highlights the fluidity of gender and the complexity of men's lives which, like all lives, are individual, variable, and changing (Frank, 1993). Collectively in society, multiple masculinities may exist that reflect the social diversity

of men associated with age, race, ethnicity, culture, class, sexuality, or ability. However, a hierarchy of masculinities can exist where a dominant or hegemonic masculinity represents the idealised, and often unrealistic, standard for which men are expected to uphold (Connell, 1995). Men who do not exhibit these qualities may be subject to ridicule and marginalization from their peers and society. As in other western cultures, the dominant masculinities in Australia are associated with exhibiting traits of assertiveness, dominance, control, physical strength, and emotional resilience (Evans, Frank, Oliffe, & Gregory, 2011; Mahalik, Levi-Minzi, & Walker, 2007). In relational terms, hegemonic masculinities have also been viewed as that which is not feminine, where femininity is associated with emotion, caring, and nurturing (Connell, 1995; De Visser, Smith, & McDonnell, 2009). These values and expectations permeate throughout society and impact how men interact with health services. For example, work-related time constraints, lack of male care providers, or requirements to disclose health issues to employers or health professional to initiate treatment may serve as barriers to access for men (Smith, Braunack-Mayer, & Wittert, 2006).

Exceptions to the strict adherence to these masculine norms exist for some men, which often requires an understanding of specific contexts and cultures where liberties may be taken (Gough, 2013). For example, masculine capital (i.e., "man points") may be accrued to accommodate some non-masculine or feminine behaviour (De Visser et al., 2009; Gough, 2013). Culturally, masculine traits are embodied through several historical and current influences on masculine identity and are held up for Australian men to emulate. Mahalik and colleagues (2007) explain how male figures attuned to Australia's sport culture, rugged outback, and distinct history exemplify traditional masculine values and attributes including self-sufficiency, independence, strict gender-roles, and aggression. These social pressures begin from a young age, prescribing what it means to be a "real man", and have considerable impact on the choices boys and men make (Evans et al., 2011). In a survey of young Australian

men, two thirds of participants reported that, since they were a boy they have been told a "real man" behaves in a certain way (Flood, 2018). Evidence from the US, UK, Mexico, and Australia suggest that, although young men do not necessarily endorse these messages they feel considerable social pressures to act in a certain way (Heilman, Barker, & Harrison, 2017). Through this lens, it becomes clear why men may avoid seeking help or taking part in healthful behaviours for fear of ridicule from their peers or society.

Evans and colleagues (2011) explain that gender is one of the most important socio-cultural factors influencing health and health-related behaviour. A central challenge associated with engaging men in their health are perceptions that attention to one's health runs counter to masculine ideals. There is evidence to suggest that the more a man prescribes to these values and attitudes, the greater the risk they are at for participating in unhealthy lifestyle behaviours (Griffith, Gilbert, Bruce, & Thorpe, 2016; Mahalik et al., 2007). For example, Australian men that reported conforming more to masculine norms of being sexually promiscuous, self-reliant, and violent, were less likely to engage in health-promoting behaviour (e.g., regular physical activity) and more likely to engage in health risk behaviour (e.g., alcohol/substance misuse) (Mahalik et al., 2007). Whereas, those who are able to be more flexible in their adoption of traditional masculinities may be more open to health promotion initiatives (Proudfoot et al., 2015). Congruent with these findings, men have been reported to be less likely to seek advice from professionals, less interested in information concerning illness and disease prevention, and less willing to attend health education sessions compared to women (Galdas, Cheater, & Marshall, 2005; Levant & Wimer, 2014; Yousaf, Grunfeld, & Hunter, 2015). Beyond men's alignment with masculine norms, men face barriers to accessing care such as social and self-stigma as well as an inability of programs and services to accommodate men's needs (Seidler, Dawes, Rice, Oliffe, & Dhillon, 2016; Seidler, Rice, Oliffe, Fogarty, & Dhillon, 2018; Smith et al., 2006). Accordingly, men are regularly underrepresented in health promotion

interventions and have proportionally low adherence and retention rates (Conn, Hafdahl, & Mehr, 2011; Pagoto et al., 2012; Waters, Galichet, Owen, & Eakin, 2011). For example, a meta-analysis of the effects of physical activity interventions on physical activity in adults reported that, of the over 99,000 participants, 74% of participants within the included studies were women (Conn et al., 2011). Similarly, Pagoto and colleagues (2012) systematically examined male inclusion in lifestyle interventions that tested a dietary, physical activity, or other behaviour intervention for weight loss. In the 244 interventions identified, samples were on average 27% men and 73% women. Interestingly, interventions targeted at chronic disease management had a significantly larger portion of men than preventive healthy lifestyle interventions (35% vs. 21%), supporting the notion that men are less likely to take preventive action (Pagoto et al., 2012). Finally, in a descriptive review of physical activity interventions, researchers reported that the majority of study participants were women, Caucasian, tertiary-educated, and middle class, noting a dearth of research targeting men, socioeconomically disadvantaged, and ethnic minorities (Waters et al., 2011). As a result of poor health outcomes and low participation rates, men have been widely recognised as an important target population for illness prevention and health promotion initiatives (Department of Health and Ageing, 2010; Rovito et al., 2017).

### 1.5 The case for primary prevention

An individual's health and well-being is determined by a complex interaction between biological, genetic, behavioural, social, cultural, and environmental influences (World Health Organization, 2016b). Behavioural risk factors are the most common risk factors for many chronic conditions and are often a major focus for prevention strategies and interventions. It is estimated that 70% of chronic health conditions can be prevented through lifestyle modification (World Health Organization, 2016a). However, a large portion of men do not accumulate sufficient levels of physical activity (Australian Institute of Health and Welfare, 2018) and

struggle with mental health (Australian Bureau of Statistics, 2008). Empowering and supporting men to live happier and healthier lives helps to reduce the burden of disease and allows them to better fulfil the important roles that they have in families and the wider community.

The argument for focusing on a preventive approach is clear and has been outlined in Australia's National Strategic Framework for Chronic Conditions and National Male Health Policy (Australian Health Ministers' Advisory Council, 2017; Department of Health and Ageing, 2010). These documents identify strategies and objectives to help Australians live healthier lives through effective prevention and management of chronic conditions. The National Strategic Framework calls for high quality health research, using an evidence-based person-centred approach, to be translated into practice. The first priority outlines a need to focus on prevention as it generates long-term health and economic benefits, delivers the greatest improvement in health outcomes, and improves the health of future generations (Australian Health Ministers' Advisory Council, 2017; World Health Organization, 2016a). The National Male Health Policy echoes these sentiments and encourages men to take action to improve their own health, recognising the need for cross-sectoral activity and initiatives to provide information, assistance, and support (Department of Health and Ageing, 2010).

Most recently, the Department of Health released a National Men's Health Strategy 2020-2030 (the Strategy), which provides a framework for action to work towards the goal that every man and boy in Australia is supported to live a long, fulfilling and healthy life (Department of Health, 2020). As they relate to the present thesis, priority actions identified within the Strategy include:

- Recognise and value the diversity of men and boys living in Australia (1.1)
- Reduce stigma associated with the health system or ill-health (1.2)

- Increase health literacy, including understanding of risk and opportunities for improving health (1.3)
- Address structural and systemic barriers to good health (1.4)
- Engage with men and boys to identify and reduce barriers to health system access (2.2)
- Proactively engage men and boys in prevention and early detection activities (2.3)

The Strategy notes that men experience poor health outcomes across a variety of measures and identify physical activity and mental health promotion as key target areas to improve the health and well-being of men and boys (Department of Health, 2020). Despite the benefits, men remain greatly underrepresented in healthy lifestyle interventions (Caperchione et al., 2012; Courtenay, 2000; Young, Morgan, Plotnikoff, Callister, & Collins, 2012), making health promotion difficult. Through a growing body of literature, there is mounting evidence to support effective strategies for engaging men in their health in which men's preferences and masculine values are considered (Morgan, Collins, et al., 2011a; Morgan, Warren, Lubans, Collins, & Callister, 2011; Wyke et al., 2015).

### 1.6 A pragmatic community-based approach to health promotion

Several decades of health promotion campaigns and programs have done little to counteract population health trends of unhealthy lifestyles and poor mental health (Paluska & Schwenk, 2000; Shilton & Barry, 2021). There are many factors that affect the reach and effectiveness of a health promotion intervention, however, these results may stem from a failure to acknowledge the socio-cultural influences on health (Baum & Fisher, 2014). Much of the early work done in the field of public health utilised a positivist perspective, which emphasises a static, objective knowledge (Israel et al., 1995). A positivist perspective posits that the researcher can remain distant and value-free from what is being studied, utilising methods that aim to control for context (i.e., confounding variables) and allow for predicting phenomenon. Particularly in the area of chronic disease prevention and management, contemporary health

research has focused on evaluating specific treatments or training protocols in well-controlled clinical trials. A major shortcoming of this approach is that it does not acknowledge the socio-cultural and contextual factors that influence an individual's ability to change their behaviour (Baum & Fisher, 2014). Furthermore, national consultations with men revealed that they view health holistically including all aspects of health and well-being (Australian Health Ministers' Advisory Council, 2017; Proudfoot et al., 2015). This suggests that men understand the interrelationship between their health behaviours and acknowledge both the physical and mental components of their health. As a result, researchers have called for a greater emphasis on developing effective real-world approaches to prevention and management of chronic disease (Department of Health and Ageing, 2010; Nickel & von dem Knesebeck, 2020).

The overarching approach to this research is one rooted in community-based research (Israel et al., 1995; Wallerstein & Duran, 2010). Community-based research focuses on social, structural, physical, and environmental inequities through active involvement of community members, organizational representatives, and researchers, throughout all aspects of the research process (Israel, Schulz, Parker, & Becker, 1998). Partners contribute their expertise to enhance the understanding of a given phenomenon, and to integrate the knowledge gained with actions that will benefit the community involved. A central principle in a community-based approach is to build on strengths and resources within the community, including networks of relationships characterised by trust, cooperation and mutual commitment, as well as mediating structures within the community, such as organisations where community members come together (Israel et al., 1998; Wallerstein & Duran, 2010). By utilising a community-based approach, it is expected that this may enhance the relevance and usefulness of the research and data. Beyond the immediate participants involved, it is believed that this research may improve the health and well-being of the broader community, both directly through examining and addressing identified needs, and indirectly through increasing power and control over the

research process (Wallerstein & Duran, 2010). For example, it is believed that increased involvement in the process may result in an increased sense of ownership and responsibility, particularly from key stakeholders that may have the capacity to support the dissemination and implementation of research findings. Further, the process of raising awareness of socially constructed gender norms may be a preliminary step towards addressing destructive masculinities in society. Community-based research also provides an opportunity to build community capacity between the university, local community organisations (e.g., non-profits focused on men's health) and community members themselves (i.e., men within the local community) which may support the implementation, sustainability, and ongoing evaluation of programs and initiatives.

### 1.7 Engaging men with their health

The term 'hard-to-reach', or perhaps more appropriately 'hard-to-engage', is often used with reference to individuals who do not access or are difficult to involve in the services that are available to them (Sinclair & Alexander, 2012). In light of the aforementioned challenges with engaging men in health promotion initiatives, some researchers have labelled men as a hard-to-reach population (Pringle et al., 2011). However, as the understanding of male specific engagement strategies develops, it has become clear that through appropriate approaches, men are indeed willing and able to make healthy lifestyle changes. Pringle et al. (2011) suggests that men's detachment from healthy behaviours should not be viewed as disinterest, but rather they find typical approaches to health unappealing and/or irrelevant to their masculine values and virtues. Just as gender has been theorised to negatively affect men's health, so too can it be leveraged to positively address health behaviours and improve the health status of men (Evans et al., 2011; Griffith et al., 2016; Sharp et al., 2018). For example, it may be possible to 'repackage' masculinities into a healthier model of success. If traditional values of hardiness and independence dictate that one must always be strong and in control, health may be re-

framed as a commitment rather than a burden, something to be in control of rather than powerless over, and a challenge rather than a threat (Evans et al., 2011). Evans et al. (2011) explain that, in such instances, the powerful, cool-headed, and successful man takes control of his health with masculine stoicism and strength. This strategy to engaging men in their health has been described as a strength-based approach (Australian Institute of Health and Welfare, 2018).

The goal of a strength-based approach is to identify the factors that help and support men to lead happy and productive lives. Rather than being problem-orientated and risk-focused, a strengths-based approach works at promoting the factors that protect men's health. For example, strength-based messaging may focus on the immediate, tangible and relatable benefits a man may experience from making healthy choices, rather than the long-term negative outcomes of unhealthy choices. Additional examples of male specific engagement strategies include utilising social support through male-only programs, allowing for friendly competition and banter. Health information should be flexible and autonomous, delivered using frank and realistic communication, utilising humour where possible (Caperchione et al., 2012; Morgan, Warren, et al., 2011; Robertson, Douglas, Ludbrook, Reid, & van Teijlingen, 2008; Sharp et al., 2018). Robertson and colleagues (2008) believe that interventions targeting men should have five components that include 1) a setting that facilitates men's engagement, 2) a gender-sensitive style or approach, 3) listening to and incorporating feedback from men, 4) providing adequate training and ongoing support, and 5) partnering with trusted community groups.

### 1.8 Operationalising mental health

Mental health is an important component of men's overall health and well-being that has only begun to receive more attention within the past two decades. Mental health is complex and can be conceptualised, measured and interpreted in various ways. The World Health Organisation defines mental health as a state of wellbeing in which every individual realises

their own potential, can cope with the normal stresses of life, can work productively and fruitfully and is able to make a contribution to their community (World Health Organization, 2014). In this sense, mental health is the foundation for well-being and effective functioning for an individual and for a community. Mental health can also be conceptualised as a syndrome that is distinct from the presence or absence of a mental illness (e.g., depression) and incorporates aspects of emotional, psychological, and social well-being (Keyes, 2002). A state of complete mental health, described as *flourishing* (i.e., high well-being), has been used to refer to an individual who is filled with positive emotion and functioning well psychologically and socially; whereas an individual with incomplete mental health, described as *languishing* (i.e., low well-being), has been conceived as a life of emptiness, stagnation, and quiet despair (Keyes, 2002). Mental health can be further conceptualised and measured as multifaceted clusters of symptoms relating to emotional, psychological, and social well-being. Major depressive disorder, for example, is characterised by at least five symptoms including depressed mood or anhedonia (e.g., loss of pleasure derived from activities), fatigue, low self-esteem, poor concentration, etc. (Guha, 2014). However, as mental health is distinct from mental illness, it is possible that an individual may have a high sense of subjective well-being despite suffering from a mental illness. Additionally, an individual in the mid-range of the continuum between *flourishing* and *languishing* may experience some distress and in-ability to cope, while still performing daily life functions. As such, recognising mental health is a state of balance including the self, others and the environment helps communities and individuals understand how to seek its improvement (World Health Organization, 2005). Accordingly, some researchers have adopted a salutogenic approach (Antonovsky, 1996) to men's mental health by asking "*what helps men to live happy and healthy lives?*". This nuanced focus has allowed opportunities to consider underinvestigated connections between masculinities and

positive health practices used to maintain well-being and avoid mental health problems (MacDonald, 2016).

### 1.9 The personal impacts of mental health

In 2017-18, one in eight adults in Australia experienced high or very high levels of psychological distress and poor mental health was reported as the number one chronic health condition affecting 4.8 million people (20% of the population) (Australian Bureau of Statistics, 2018). It is reported that nearly half of the population will suffer from a mental health disorder at some point in their life, with the most common mental disorders including depression, anxiety, and substance use disorders (Australian Government, 2009). While rates of formally diagnosed mental health disorders among men are significantly lower than population averages, men make up three-quarters of all suicides (Australian Bureau of Statistics, 2020). This discordant relationship reflects in part barriers to men's mental health help-seeking including societal and self-stigma (Addis & Mahalik, 2003; Cole & Ingram, 2019; Seidler et al., 2016). Diverse social and circumstantial factors also heighten men's mental health challenges including lower education, relationship breakdown and divorce, job loss, and social isolation (Hald et al., 2020; Prime, Wade, & Browne, 2020; Wilson et al., 2020). Furthermore, men from certain ethnic and cultural backgrounds (e.g., Aboriginal and Torres Strait Islander men) remain underserved and experience considerable health inequity (Smith, Watkins, & Griffith, 2020).

Poor mental health may adversely affect any or all aspect of an individual's life and is inextricably linked to an individual's health-related behaviours. Irrespective of gender, persistent stress is related to the pathogenesis of coronary heart disease (Rozanski, Blumenthal, & Kaplan, 1999), a suppressed immune system (Segerstrom & Miller, 2004), cognitive dysfunction, and fatigue (Sandi, 2004). Among men, poor mental health may be masked and expressed as risk-taking, anti-social behaviour, excessive alcohol or drug use, and overworking

to distract from problems (Brownhill, Wilhelm, Barclay, & Schmied, 2005). Positive mental health strategies commonly used by Australian men were reported as exercising, eating healthy, keeping busy, humour, and helping others (Proudfoot et al., 2015). Importantly, there is evidence that suggest a bidirectional relationship between mental health and physical activity as well as mental health and obesity in men (Chauvet-Gelinier et al., 2019; Proudfoot et al., 2015). For example, there has been considerable research conducted regarding the positive effects of physical activity on stress, anxiety, and depression (Lutz, Lochbaum, Lanning, Stinson, & Brewer, 2007; Salmon, 2001). In a meta-analysis of prospective studies including over 600,000 adults, results indicated a protective causal relationship between regular physical activity and a reduced risk of depression (Choi et al., 2019).

### 1.10 Conceptualising the relationship between physical activity and mental health

Although the association between physical activity and mental health has been clearly established, there is no consensus on the exact mechanisms of action. Lubans et al. (2016) provide a conceptual model for explaining the effects of physical activity on cognitive and mental health outcomes (Figure 1). It has been hypothesised that these mechanisms include a combination of neurobiological, psychosocial, and behavioural factors (Crone, Smith, & Gough, 2006; Lubans et al., 2016). Although originally designed to understand the relationship between physical activity and mental health in young people, the model remains valuable in the context of the general adult population.

The model first acknowledges the influence that individual characteristics (e.g., sex, age, history of physical activity) have on an individual's ability to engage in physical activity as well as variations in the type and duration of physical activity that is undertaken. Although specific physical activity guidelines do not exist for accruing mental health outcomes, evidence suggests that even low doses of physical activity are associated with positive mental health outcomes and that leisure and transport physical activity may confer the greatest benefits to

one's mental health and well-being (Teychenne et al., 2020). Mental health outcomes (cognitive function, well-being, and ill-being) and proposed mechanisms of action (neurobiological, psychosocial, behavioural) are categorised under three broad headings within the model, which are explored further below.

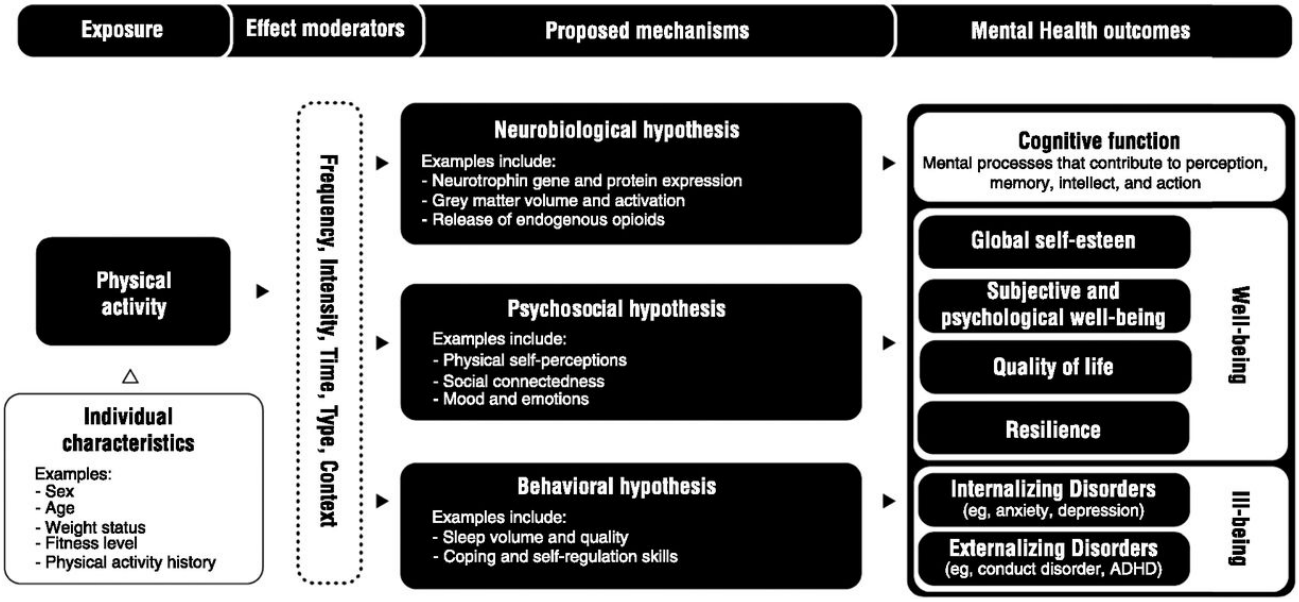



*Figure 1. Conceptual model for the effects of physical activity on mental health outcomes (Lubans et al., 2016)*

Although challenging to study in humans, it is likely that structural and functional neurobiological changes resulting from physical activity support an individual's mental health and well-being. For example, neurochemicals such as brain-derived neurotrophic factor, insulin-like growth factor 1, and vascular endothelial growth factor released during physical activity have been associated with changes in brain structure, function, and cognition (Cotman, Berchtold, & Christie, 2007). Additionally, the effect of endorphins or changes in one or more monoamines (e.g., dopamine, noradrenaline, serotonin), associated with the acute 'feel good' effects of physical activity, have been hypothesised to impact mental health and well-being (Crone et al., 2006; Dishman & O'Connor, 2009).

Second, psychosocial hypotheses recognise that physical activity provides an opportunity for social interaction (relatedness), mastery in the physical domain (self-efficacy and perceived competence), improvements in appearance self-perceptions (body image), and independence (autonomy) (Ryff & Keyes, 1995). These constructs, grounded in theories of behaviour change (e.g., Self-efficacy Theory), are believed to result in improvements to overall mental health and well-being. Notably, the opposite may also be true and negative experiences with physical activity may result in decreased levels of perceived competence and self-esteem.

Finally, behavioural mechanisms from engaging in physical activity may also contribute to an individual's positive and negative affect as well as their belief that they are achieving their potential and living a purposeful and meaningful life (Lubans et al., 2016). Associated behaviours (e.g., sleep) that are positively impacted by physical activity may, in turn, improve mental health and well-being. Additionally, participation in physical activity provides an opportunity for the development of self-regulation and coping skills that may influence mental health (Lubans et al., 2016). For example, developing awareness and mindfulness practices through physical activity may serve as coping mechanisms for managing stress and anxiety.

In addition to the neurobiological, psychosocial, and behavioural factors, the relationship between physical activity and mental health is likely complicated by other mediating variables including socio-economic status (e.g., occupation), social capital (e.g., loneliness), other lifestyle behaviours (e.g., smoking status)(Ohrnberger, Fichera, & Sutton, 2017). However, what is not captured in Lubans et al.'s (2016) conceptual model is the bidirectional relationship between physical activity and mental health, whereby one's mental well-being may impact on their ability to be physically activity. For example, there is some evidence to suggest that poor mental health may be an impediment for achieving physical activity guidelines, particularly during stressful life events and periods of transition (Proudfoot et al., 2015; Stults-Kolehmainen & Sinha, 2014). Furthermore, the indirect effects of poor

mental health may also impact on an individual's ability to prioritise or initiate physical activity. Poor mental health may affect individuals' decision-making process and motivations, impairing their ability to access information, services, or program, impeding engagement in physical activity (Chapman, Fraser, Brown, & Burton, 2016; Glowacki, Duncan, Gainforth, & Faulkner, 2017). For example, a review of barriers to physical activity among adults with depression found that emotions were the most commonly reported barrier and that targeting this domain (e.g., emotional support, reducing negative affect) may facilitate increased engagement in physical activity (Glowacki et al., 2017).

### 1.11 A closer look at masculinities and men's mental health

As discussed in section 1.3, gender is distinct from sex and operationalised as a societal construct including the roles, behaviours, activities, attributes considered appropriate for men and women. Targeting men's mental health poses unique challenges that can be explained in part by the role of gender and the established stereotypes and structures that influence how men think and act in relation to views of what it means to 'be a man'. Gender is shaped by both environment and experience including family and peer interactions, education and the media (Addis & Mahalik, 2003). These masculine norms may influence the way that men experience mental health as well as how they respond to psychological distress and healthcare support (Johnson, Oliffe, Kelly, Galdas, & Ogrodniczuk, 2012). For example, if a man is taught to value restrictive emotionality from a young age by being told that 'boys don't cry', he may be less likely to seek formal or informal psychological support and more likely to seek maladaptive coping mechanisms, such as alcohol/substance use, as an adult. Further, a sense of failure due to perceived inability to solve one's own problems, fear of losing autonomy, or fear of being perceived as weak may influence men's willingness to seek out and engage in mental health prevention and management (Cole & Davidson, 2019; Seidler et al., 2016).

A systematic review of the role of masculinity in men's help-seeking for depression revealed that conformity to gender norms affected symptom type and expression, men's attitudes intentions and behaviours related to help-seeking, and the type of treatment and coping strategies men are willing to engage with and commit to (Seidler et al., 2016). This evidence is consistent with others that have found gender-related differences in how men experience stress, anxiety, and depression (Rochlen et al., 2010). For example, men more frequently report feelings of fatigue, restlessness and irritability, and express externalising symptoms of anger or substance misuse, which are less commonly interpreted as a sign of mental illness. Men may also use less emotion-based communication and have difficult expressing their symptoms by using terms like 'stressed' or 'overwhelmed' instead of 'depressed'. As such, health professionals, family, and friends may misinterpret symptoms in men which may result in incorrect assessment and/or delayed treatment (Seidler, Rice, Ogrodniczuk, Oliffe, & Dhillon, 2018; Seidler, Rice, Oliffe, et al., 2018). Additionally, challenges with understanding and expressing symptoms are confounded by the contrast between these symptoms and traditional masculine ideals including control, stoicism, strength, and success. Challenges to men's masculine identity may result in feelings of shame, weakness, and fear of "otherness", further increasing the severity of issues as men attempt to maintain an illusion of normality (Rochlen et al., 2010).

Help-seeking includes any action of energetically seeking help from the health care services or from trusted people in the community and includes understanding, guidance, treatment and general support when feeling in trouble or encountering stressful circumstances (Rickwood & Thomas, 2012). Accordingly, the process of help-seeking includes the initial act of seeking help as well as an individual's experiences with subsequent communication and treatment. As men are more likely to internalise their feelings and attempt to solve problems on their own (Rice et al., 2015), structural barriers to help-seeking and treatment may lead to

maladaptive coping mechanisms (e.g., alcohol consumption), subsequently resulting in further negative physical and psychological manifestations (Seidler et al., 2016). Alternatively, offering action-oriented treatment, that emphasises establishing trust, skill attainment, and sharing of decisional control may better serve men and increase engagement with professional services (Seidler, Rice, Oliffe, et al., 2018).

### 1.12 Mental health promotion

Research and clinical attention into the area of men's mental health is rapidly growing; however, the majority of efforts have focused on identifying and treating men's mental health disorders, destigmatising mental illness, and norming men's help-seeking behaviours (Griffith et al., 2019; Whitley, 2018). Mental health promotion has received far less attention and aims to promote positive mental health and well-being among those who are not at risk, those who are at increased risk, and those who are suffering or recovering from mental health problems (World Health Organization, 2004). The Ottawa Charter for Health Promotion outlines five strategies that include building healthy public policy, creating supportive environments, strengthening community action, reorienting health services and developing personal skills (World Health Organization, 1986). An important outcome of these approaches must be aimed at reducing social inequality and building social capital and it is recognised that strategies must maximize active ownership and participation to contribute to the sustainability of programs (Wilkinson & Marmot, 2003). As such, mental health promotion is an enabling process that considers mental health a resource and focuses on the building of competences, resources and strengths (World Health Organization, 2005). In this sense, mental health promotion may align well with a strength-based approach to men's health as it focuses on supporting and enhancing healthy skills and abilities that an individual can access. Mental health promotion is not primarily about the prevention of mental disorders, although prevention may be one of the outcomes of a broader mental health promotion strategy as reducing symptoms may ultimately

reduce the prevalence of mental disorders. For example, by enhancing the protective factors (e.g., emotional resilience, exercise, problem solving) that underpin many men's mental health disorders, effective mental health promotion efforts offer opportunities to prevent onset, delay recurrence, and decrease the impact of a range of mental health disorders. Health promotion interventions may vary in scope and include strategies that increase psychological well-being, competence and resilience, and create supportive living conditions and environments. However, compared to physical health promotion (e.g., approaches for reducing the risk of cardiovascular disease, strategies to reduce and quit smoking), much less is known about mental health promotion, particularly for men.

## 1.13 Opportunities for engaging men

Emerging literature surrounding men's mental health practices has resulted in a growing awareness and advocacy for mental health resources specifically targeted at men (Arango et al., 2018). For example, BeyondBlue, a mental health organization supported by the Commonwealth of Australia, offers a number of programs aimed at encouraging men to take action against depression, anxiety, and suicide (Beyond Blue, 2018). Similarly, greater recognition for the challenges faced by adolescent and young adult males has led to the development of policy and programs targeted at young men who experience mental ill-health (e.g., Orygen) (Baker & Rice, 2017; Orygen, 2015). The promotion of positive mental health is important for men; however, researchers, practitioners, and policy makers alike continue to be challenged with engaging and retaining men, and more evidence is needed regarding effective gendered strategies.

### *1.13.1 Behaviour change interventions to improve men's mental health*

A growing number of behaviour change interventions have been developed that specifically target men. However, most of this work has focused on physical health and behavioural outcomes, demonstrating improvements in weight-related outcomes, physical

activity, diet, and smoking status (Bottorff et al., 2016; Caperchione et al., 2020; Gray, Hunt, Mutrie, Anderson, Leishman, et al., 2013; Petrella et al., 2017; Wyke et al., 2015). Less is known about how these programs impact men's mental health. Two recent reviews have examined behaviour change interventions targeted at improving men's mental health.

First, a scoping review by Seaton et al. (2017) examined men's mental health promotion program and evaluated the integration of gender-specific influences in the content and delivery of men's mental health promotion programs. Authors noted that the majority of studies included multiple outcomes in addition to mental health (e.g., physical activity, diet, social support) and mental health outcomes varied (e.g., psychological well-being, self-stigma, plasma cortisol levels). Intervention delivery and content varied across interventions and only six studies (24%) were determined to be gender-sensitised. They also highlighted the limited research focused on mental health promotion interventions for men and as well as some promising directions for future research including workplace and sport-based interventions that utilise content and language that is acceptable to men (e.g., stress management, resilience building, mental fitness).

Second, a recent systematic review and meta-analysis examining the impact of lifestyle interventions on men's mental health reported a small effect and found significant intervention effects for only 26% of the assessed mental health outcomes, despite positive intervention effects for weight and other lifestyle behaviours (Drew, Morgan, Pollock, & Young, 2020). Among the limited number of eligible studies, the authors noted that none of the studies included mental health as a primary outcome, mental health support was rarely included as a component of the intervention, and very few studies included a longitudinal follow-up for mental health outcomes. These findings suggest that behaviour change interventions may provide unique opportunities to target men's mental health and that research is needed to determine how to better support men's mental health in these settings.

## 1.14 Findings from the HAT TRICK program

There is mounting evidence to support the effectiveness of programs in which men's preferences and masculine values are considered. A particularly promising approach for engaging men in health behaviour change has been through targeting physical activity (Kidd, 2013). When considered in the context of other health outcomes, such as mental health or weight loss, men may be more open to increasing their physical activity (Lee & Owens, 2002; Sharp et al., 2018). The reason for this is because physical activity often aligns well with masculine preferences and interests and provides opportunities to garner masculine capital (Gough, 2013). As Connell suggested, 'masculinity' is associated with action and doing, and in this regard physical activity clearly qualifies as an acceptable outlet and performance opportunity for many men (Connell, 2005). Discourse with men reveals that their interest in physical activity may stem from it being a tangible behaviour that can be self-monitored through the use of tracking tools, such as pedometers (Oliffe et al., 2017). Physical activity may also work as an effective point of engagement or catalyst for addressing other health behaviours.

To further explore the potential for behaviour change interventions to promote men's mental health, evidence from a recent gender-sensitised lifestyle intervention is presented within this section. Although mental health was not a primary outcome, evidence demonstrates positive changes in men's mental health as a result of participation in a lifestyle intervention.

### *1.14.1 Program overview*

Building on the success of gender-sensitised lifestyle interventions, HAT TRICK was developed to engage overweight, inactive men in physical activity, healthy eating and social connectedness. HAT TRICK was a 12-week face-to-face intervention focused on three specific components including physical activity, diet, and social connectedness. HAT TRICK was delivered in collaboration with a major junior ice hockey team in the Canadian Hockey League.

Content was gender-sensitised, drawing on constructs of Social Cognitive Theory (Bandura, 1986) and Self-Determination Theory (Teixeira, Carraça, Markland, Silva, & Ryan, 2012), and incorporated gender-based approaches such as humour, positive banter, and strength-based messaging (Bottorff et al., 2015). Throughout the program there was an emphasis on promoting social connectedness by fostering a sense of teamwork and camaraderie among the men during group-based activities and friendly competition. Small group activities were designed to encourage participants to share their experiences and challenges with making healthy changes as well as provide feedback and support to their peers. While greater social connectedness may indirectly result in improvements in mental health, the rationale for promoting social connectedness stemmed from a desire to foster accountability and a team mentality that would support participants to meet their physical activity and healthy eating goals. As such, men were encouraged to share contact information, meet outside of the program, share resources, and engage in friendly banter. Components of the HAT TRICK intervention have been detailed elsewhere (Caperchione et al., 2017) and are summarised here:

- Weekly 90-minute, group-based sessions including targeted health education regarding physical activity, healthy eating, and behaviour change techniques (i.e., goal setting, self-monitoring).
- Progressive physical activity (i.e., increasing in duration and intensity on a weekly basis) inclusive of a variety of 'men-friendly' activities (e.g., walking, resistance training, ball hockey).
- Weekly challenges, including physical activity (e.g., increase weekly steps by 500/day) and healthy eating goals (e.g., choose water instead of sugary drinks on at least 3 days of the week).
- HAT TRICK Playbook, a print-based informational resource booklet with tailored messaging concerning physical activity, healthy eating and behaviour change as

techniques (e.g., goal setting, social support, self-monitoring) well as weekly physical activity and dietary tracking logs.

- FitBit Charge HR™, used to self-monitor daily steps, heart rate, and minutes of moderate-to-vigorous physical activity.

*1.14.2 Improvements in mental health outcomes*

This exploratory study utilised a pre-post, quasi-experimental design. Participant mental health was assessed using the Male Depression Risk Scale (MDRS) (Rice, Fallon, Aucote, & Möller-Leimkühler, 2013) and the SF-12 (Ware Jr, Kosinski, & Keller, 1996), which contains two overarching components including physical health (PH12) and mental health (MH12). Participants (N=62) completed these questionnaires at baseline, post-intervention (12 week) and 9-month follow-up. Full details of the rationale, methods, analyses, and results of this study are available elsewhere (Sharp, Stolp, et al., 2020). In short, linear and quadratic trends were analysed across baseline, post-program and 9-month follow-up using multi-level modelling (Casals, Girabent-Farres, & Carrasco, 2014). Results indicated that participants' depression risk decreased and mental health improved immediately post-intervention and that improvements were sustained at 9-month follow-up. There were no significant changes in the PH12 over time. These findings contribute to emergent evidence that lifestyle interventions can help to improve mental health in men (Drew et al., 2020; Kelly et al., 2019). Despite HAT TRICK not directly targeting mental health through education or intervention, these results are notable given the longstanding challenges for targeting men's mental health promotion. In particular, among a sample of overweight men, where mental health is challenged, efforts targeted at improving and maintaining mental health are highly relevant. In light of these findings, we provide suggestions and considerations for future work in this important and developing area.

*1.14.3 Considerations and implications for men's mental health*

A benefit of HAT TRICK and similar men-only, lifestyle group-based programs, is that the emphasis on physical activity was familiar and congruent with many men's masculine values. Moreover, leading with the 'doing' of physical activity appealed to men and resonated with their experiences of team-based endeavours. These familiar 'masculine' milieus afforded the space and comradery to bolster mental health and reduce depression risk. We suggest that *not* fore fronting mental health as a program goal was important to HAT TRICK's recruitment efforts; rather, building group rapport within the program may (eventually) afford opportunities to engage men in content and conversations about men's stresses and their strategies for addressing such challenges. In line with Oliffe et al. (2019), the language of HAT TRICK should work with participants' own literacy ('stress') rather than invoking medical constructs (mental health and illness). Of course, the timing for addressing men's mental health is important, and based on our process evaluation data (Sharp et al., 2018) men's openness to discussing such matters was more evident in the latter half of the program (weeks 6-12). These findings respond, in part, to Drew et al.'s (2020) call for research to better understand connections between lifestyle interventions and men's mental health and align with others who have begun to include mental health components (e.g., stress management workshops) within the later portion of intervention delivery (Carroll et al., 2018). Future work might usefully explore the utility of these mental health literacy and timing insights as well as the acceptability of other program components, including sportsmen testimonials and vignettes (e.g., well-known hockey figures sharing personal experiences concerning their own mental health and wellbeing) to engage men with avenues for reaching out to other men who might be experiencing mental health challenges.

While mean scores for mental health indicators were not at elevated risk at baseline, observed improvements in men's mental health over the course of the program and were

maintained at 9-month follow-up, are noteworthy. Importantly, these results were obtained with a group of overweight men whose weight status, based on current evidence, places them at high risk for mental health issues. In addition, these findings suggest that tailored lifestyle programs like HAT TRICK provide a promising avenue for the promotion of men's mental wellbeing that may prevent or mitigate depression and other mental health issues following program completion.

It is difficult to speculate on the causal mechanisms underpinning participants' improvements in depression risk and mental health outcomes post-program. Despite robust evidence of the positive effects of lifestyle interventions focusing on physical activity and diet on psychological health in both healthy populations and those experiencing mental health problems (Dale, Brassington, & King, 2014), the causal mechanisms have not been clearly established. Nevertheless, there are several possible factors that may explain improvements in men's mental health observed in this study. While physical activity is associated with several physiological mechanisms (e.g., neurotransmitter release, inflammation reduction) that may affect mental health (Kandola, Ashdown-Franks, Hendrikse, Sabiston, & Stubbs, 2019; Teychenne et al., 2020), it is also clear that other aspects of the physical activity experience may influence mental health outcomes (e.g., sense of belonging, social interactions) (Biddle & Mutrie, 2007). The therapeutic value of peer support enabled through this gender-sensitised intervention has been observed in other community-based men's health promotion programs (Oliffe, Rossnagel, Bottorff, et al., 2019). It is also possible that increases in self-efficacy associated with simultaneous improvements in physical activity and diet may have extended to other life changes as well as the ability to use physical activity as a coping mechanism post intervention (Schultchen et al., 2019). As well, the use of a variety of behaviour change techniques (e.g., action planning, goal setting, self-monitoring) to promote maintenance of lifestyle changes may have contributed longer-term mental health benefits. In doing so,

providing men with the skills and autonomy to implement strategies that suit their specific needs and interests aligns well with emerging therapeutic approaches for engaging men in psychological treatment (Seidler, Rice, Ogrodniczuk, et al., 2018). Since HAT TRICK offers an important alternative that is acceptable to men who may be at risk for mental health issues, there is value in identifying essential intervention components associated with observed improvements in mental health in future research.

*1.14.4 Participant experience and interest in mental health and well-being*

We conducted a process evaluation of HAT TRICK utilising a mixed-methods approach to examine the effectiveness of recruitment and selection processes, facilitators' experiences and challenges, and participant experiences with the program (Sharp, Bottorff, Oliffe, Hunt, & Caperchione, 2020). Evaluation measures included participant flow data and baseline assessments, facilitator debriefs, a post-intervention process evaluation questionnaire, and telephone interviews with a subsample of participants. Although mental health was not directly targeted within the intervention, some participants expressed a desire to have more information and discussion regarding mental health and well-being. These participants identified the influence of mental health and emotions on their eating behaviours, alcohol consumption and physical activity, and the challenges they faced in dealing with stress, whether at work or in their personal lives. Participants who recognised the role of mental health in relation to establishing a healthy lifestyle recommended that this information be given a more prominent place in the program with some suggesting it could be incorporated as an additional HAT TRICK goal alongside physical activity and healthy eating.

Participants' interest in mental health and well-being runs counter to what others have found regarding men's reluctance to discuss vulnerabilities associated with mental illness (O'Brien, Hunt, & Hart, 2005; Oliffe & Phillips, 2008). By way of explanation, a number of possibilities arise. First, the focus on mental health as distinct from illness can afford men

legitimate interest and the expenditure of energy to learn and integrate strategies to promote clear, rational, and decisive thought. In the context of HAT TRICK – the idea of being 'game ready' demands mental and physical preparation. Second, the de-stigmatising testimonials about mental health challenges and the work of wellness made available through elite male athletes might have generated the interest in mental health issues that we observed among HAT TRICK participants. That these candid accounts are strength-based along with links to effective self-management norm the interests and actions of other men, especially those who identify with sporting and physical prowess as an idealised masculinity. It may also be that these data show that, when men come together in a male-friendly context with a willingness to make changes to their health and health behaviours, a level of trust develops which allow more sensitive or potentially taboo topics to be discussed. Given this, there may be opportunities to integrate stress management and strategies to improve well-being into men's programs focused around physical activity. Programs like HAT TRICK could be used as a gateway to approach mental health and well-being from a health promotion perspective, directly as a program component (e.g., mindfulness, psychoeducation) and/or indirectly through program processes and normative cultures (e.g., teamwork, camaraderie, loyalty).

### 1.15 Thesis overview (aims, structure, and research questions)

There are two overarching aims of this thesis;

1) To explore strategies that engage men in mental health promotion that support men to live happier and healthier lives.
2) To inform the development of holistic behaviour change interventions that support men's mental health and well-being.

The epistemological standpoint of this dissertation is one grounded in a relational theory of gender from a social constructionist perspective. Gender is understood to be produced and reproduced through everyday social practices, arising from the complex interactions of

agency and socio-cultural factors (Connell, 2005). As such, gender is assumed to be dynamic and constantly shifting, depending on the time and place (Kimmel, 2017). While there is very high agreement among society on what is believed to be typically feminine or masculine characteristics (Courtenay, 2000; Williams & Best, 1990), men are not victims of their socially prescribed roles (Connell, 2005). Rather, they are social agents who are actively involved in constructing and reconstructing dominant masculine norms (Connell, 2005).

Provided the recent success of physical activity interventions and the potential for addressing other health behaviour (e.g., mental health), this thesis begins with a systematic review and meta-analysis of the effects of behaviour change interventions on men's physical activity (Chapter 2). This provides a quantitative exploration of the effects of these interventions on men's physical activity and examines potential moderators that influence intervention success. Through the process of conducting this review, opportunities were revealed that suggested men's engagement in these interventions may be leveraged to target mental health. This newly narrowed focus on men's mental health promotion was subsequently explored through a series of focus groups with Australian men and stakeholders working in men's health. Chapter 3 present the findings from the focus groups as they relate to community-based mental health promotion and Chapter 4 reports on the influence of Australian culture and masculinities on men's mental health. Incorporating findings from the focus groups, a package of gender-tailored intervention content was developed, including group-based activities, discussions, and informational resources, and pilot-tested using telephone interviews with a sample of men. The participatory design process untaken to develop these resources is detailed in Chapter 5. Finally, this thesis concludes with a summary of evidence, recommendations, and plan to build on this PhD through a randomised control trial of a holistic lifestyle intervention for men (Chapter 6). A figure which visually depicts the sequence of work included in this

thesis is presented in Figure 2, where a solid line depicts the progression of research undertaken by chapter and a dashed lined represents conceptual contributions to the research question.

At the core of this thesis are four key research questions focused on the development of behaviour change interventions that support men to live happier and healthier lives. Each of these research questions are directly addressed in one or multiple chapters:

1) How effective are health promotion interventions at increasing men's physical activity?
    - This research question will be address in Chapter 2.
2) How can physical activity be used as a gateway to engage men in mental health promotion?
    - This research question will be address in Chapter 3.
3) What factors influence men's mental health perspectives and practices and how can they be used to promote mental health?
    - This research question will be address in Chapter 3 and 4.
4) How can health promotion interventions be tailored to better support men's mental health?
    - This research question will be address in Chapter 5.

As this thesis is constructed based on published manuscripts, there is some degree of repetition and overlap throughout each chapter, particularly in the background and discussion sections of these chapters. Due to the breadth of the overarching scope of this research, research questions may be explored across multiple chapters as they relate to identifying the problem (e.g., men's low engagement in behaviour change interventions), examining the underlying reasons for this low engagement (e.g., cultural identity, masculinities), and proposing potential solutions moving forward (e.g., community-based mental health promotion). Taken together, the manuscripts appropriately address all the overarching aims and research questions of this thesis.

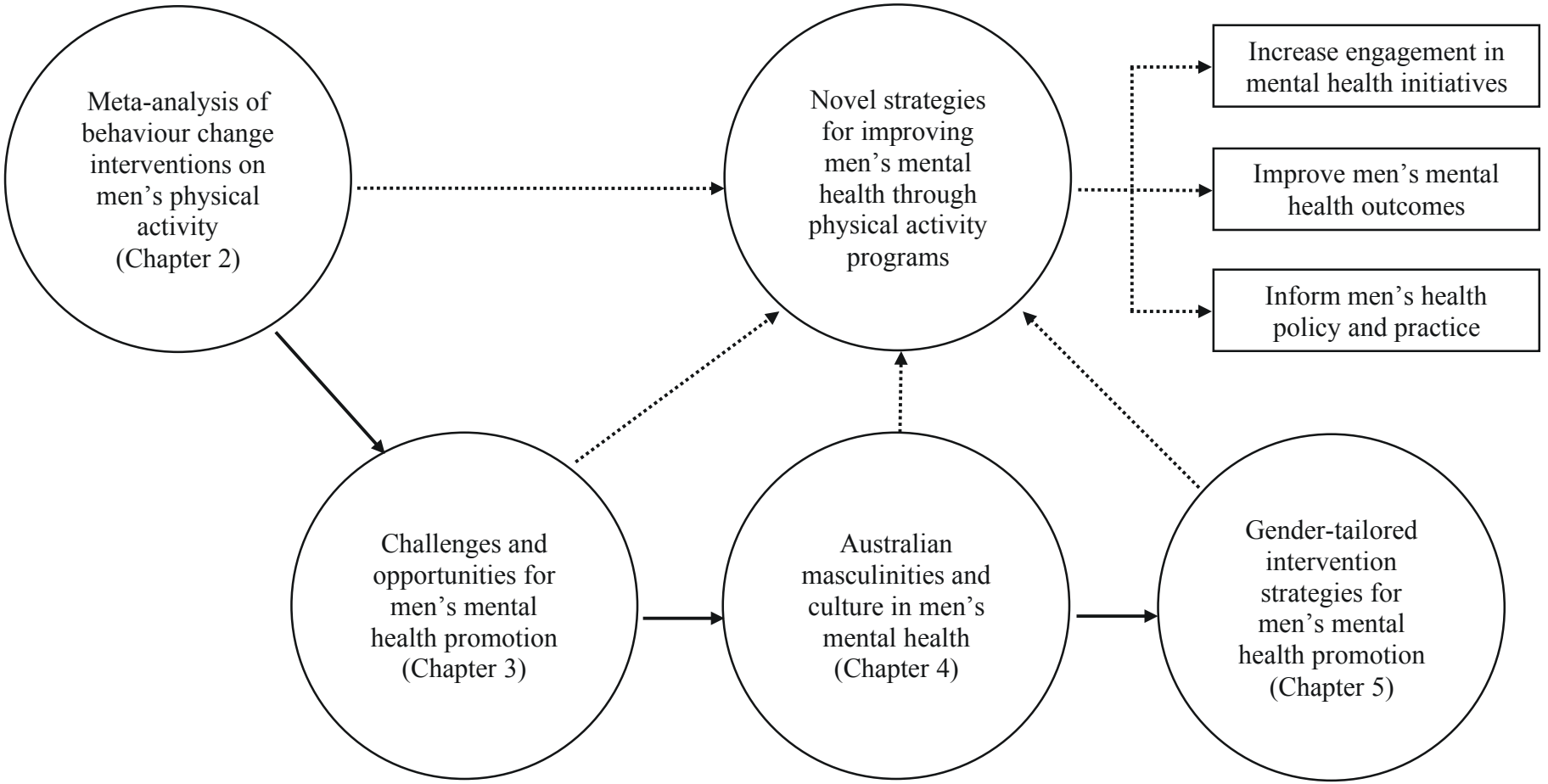



*Figure 2. Sequence of studies within the thesis*

## 1.16 Significance of this research

The following section highlights the significance of the research reported in this thesis.

Chapter 2 reports on the first systematic review and meta-analysis of behaviour change interventions on men's physical activity. The review examines intervention effects on physical activity immediately post-intervention and at long-term (≥12 month) follow-up. It is significant, as it is the first study of its kind to explore study and intervention characteristics associated with greater intervention effectiveness.

Chapter 3 is a qualitative study including data from focus groups conducted with men and stakeholders working in men's health, offering recommendations for how to better engage men in mental health promotion. This study is significant as it demonstrates men's interest in mental health promotion, if delivered appropriately, and offers direction for engaging men in community-based mental health promotion.

Chapter 4 builds on the findings from the previous chapter and explores the influences of Australian culture and masculinities on men's mental health. Traditional and contemporary influences on men's masculinities are explored and examples are provided demonstrating how some men have navigated their masculinities to support and align with mental health-related practices. This study is significant as it highlights the important influences of culture and identity on masculine practices and men's mental health, including specific considerations for engaging Australian men in mental health promotion.

Chapter 5 details the community-based participatory design process undertaken to develop content and resources targeted at engaging men in mental health promotion. Notably, the findings from the included studies, including the developed resources discussed in chapter 6,

have been used to inform the development of a 12-week health promotion program for men targeted at improving mental health outcomes.

Chapter 6 summarises the main findings presented in Chapters 1 to 5 as they relate to the overarching aims and research questions and details future directions for the field, focused on the development of interventions, programs, and policies. This chapter also sets out a plan for future research to develop and trial a health promotion program targeted at improving men's mental health.

### 1.17 A note on the impact of COVID-19

The novel coronavirus (COVID-19) pandemic has had a profound impact on people's lives worldwide and innovative approaches to health promotion are needed now more than ever. Beginning in mid-March 2020, the Australian government progressively introduced measures to slow the spread of COVID-19, leading to social distancing measures and the eventual lockdown and closure of non-essential services across the country, including universities. As for many, the pandemic had a major influence on the planned research activities and overall direction of this thesis that is worth noting.

By the end of 2019, I had prospectively registered an intervention trial and received ethical approval to conduct a pragmatic randomised control trial of a lifestyle intervention with men (N=90) living in Sydney, Australia. At the time of lockdown, I had recruited and collect baseline measurements on 41 participants including anthropometric (i.e., DEXA, waist circumference, height, weight), fitness (i.e., aerobic capacity, strength), and behavioural (i.e., physical activity, diet, mental health) measures. In consultation with my supervisory committee and the discipline lead, it was determined that the project could not continue and an alternative research plan would need to be developed. A narrowed focus on men's mental health was chosen as emergent evidence pointed to a need for strategies that engage men in mental health promotion as well as opportunities to engage men through physical activity programs.

Additionally, with evidence of the considerable psychosocial impacts COVID-19 was having on men (Ogrodniczuk et al., 2021), a focus on mental health promotion was determined to be timely. A revised research plan was adopted, including the addition of telephone interviews to evaluate the newly developed mental health resources and strategies. In doing so, we were able to utilise and provide some benefit to participants that had been recruit to the initial lifestyle intervention but were unable to receive the intervention due to cancellation.

# CHAPTER 2. One small step for man, one giant leap for men's health: a meta-analysis of behaviour change interventions to increase men's physical activity

## 2.1 Publication details

**Sharp, P.,** Spence, J. C., Bottorff, J. L., Oliffe, J. L., Hunt, K., Vis-Dunbar, M., & Caperchione, C. M. (2020). One small step for man, one giant leap for men's health: a meta-analysis of behaviour change interventions to increase men's physical activity. *British Journal of Sports Medicine*, *54*(20), 1208-1216.

## 2.2 Abstract

**Objective:** To determine the effects of behaviour change interventions on men's physical activity (post-intervention), sustained change in physical activity behaviour (≥12 months post-intervention), and to identify variations in effects due to potential moderating variables (e.g., theoretical underpinning, gender-tailored, contact frequency).

**Design:** Systematic review with meta-analysis. Pooled effect size (Cohen's *d*) was calculated assuming a random-effects model. Homogeneity and subsequent exploratory moderator analyses were assessed using Q, $T^2$, and $I^2$.

**Data sources:** Medline, EMBASE, CINAHL, SportDiscus, and Web of Science to April 2019.

**Eligibility criteria for selected studies:** Randomised control trials of behaviour change interventions in men (≥18 years) where physical activity was an outcome and data were from men-only studies or disaggregated by sex.

**Results:** Twenty-six articles described 24 eligible studies. The overall mean intervention effect on men's physical activity was 0.35 (SE=0.05; 95% CI=0.26 to 0.45; $p<0.001$). This effect size is consistent with an increase of approximately 97 minutes of total physical activity per week or 980 steps per day. Intervention moderators associated with greater increases in physical activity included: objective physical activity outcome measures, a gender-tailored design, use of a theoretical framework, shorter length programs (≤12 weeks), using four or more types of behaviour change techniques, and frequent contact with participants (≥1 contact per week). 12 studies included additional follow-up assessments (≥12 months post-intervention) and the

overall mean effect was 0.32 (SE=0.09; 95% CI=0.15 to 0.48; p<0.001) for that sustained increase in physical activity.

**Summary:** Behaviour change interventions targeting men's physical activity can be effective. Moderator analyses are preliminary and suggest research directions.

## 2.3 Introduction

Physical activity is important in disease prevention and illness management and there has been considerable research into effective physical activity interventions (Conn, Hafdahl, Brown, & Brown, 2008; Conn et al., 2011). Although gender is recognised as an important socio-cultural factor influencing health and health-related behaviours (Evans et al., 2011), its influence on the uptake of behavioural interventions is not well understood.

Worldwide, women live for almost 6 years longer than men and men have higher rates of all-cause mortality for many conditions (Wang et al., 2016). Factors associated with these sex differences are men's alignments to health compromising, masculine roles, identities and relations (Courtenay, 2000). These expressions of masculinities intersect with other social determinants of health (e.g., socio-economic status, race) to marginalise some sub-groups of men, creating significant health inequities. Consequently, some men lack the knowledge and/or resources to promote their health and/or access health services, and may be less willing to attend health education sessions than women (Galdas et al., 2005; Levant & Wimer, 2014; Waters et al., 2011; Yousaf et al., 2015). It is often assumed that men cannot or will not access health promotion programs, and that programs designed for the general public will suffice for those men who are willing to attend.

Evaluations of health promotion programs often fall short in providing information about effective strategies to promote men's health because of the under representation of men. For example, in a meta-analysis demonstrating a small effect for adult physical activity interventions ($d$=0.19), only 26% of participants within the included studies were men (Conn

et al., 2011), making generalisability challenging. As approximately 31% of the population worldwide is insufficiently active (Hallal et al., 2012), and clinically relevant health benefits may be accrued through relatively small increases in physical activity (Warburton & Bredin, 2017), millions of men stand to benefit from effective health promotion interventions.

To yield the full health benefits of being physically active, behaviour must be sustained over time. A limited number of studies include additional follow-up measures post-intervention and the evidence for long-term behaviour change is mixed (Foster, Hillsdon, Thorogood, Kaur, & Wedatilake, 2005; Foster, Richards, Thorogood, & Hillsdon, 2013; Richards, Hillsdon, Thorogood, & Foster, 2013). A Cochrane review investigating the effectiveness of interventions for promoting self-reported physical activity found that intervention effects post-intervention ($d$=0.28) were not maintained in 6 of the 19 studies reporting outcomes after 6 months (Foster et al., 2005). Two more recent reviews examining the effects of web-based and face-to-face interventions reported small effects at 12-months post-intervention ($d$=0.20, 0.19, respectively), and either no or small effects at 24 months. However, most studies failed to measure the long-term (i.e., ≥12 months) effects on physical activity (Foster et al., 2013; Richards et al., 2013).

Developments in men's health promotion have resulted in an increased number of physical activity interventions targeted at engaging and retaining men (Bottorff et al., 2015; George et al., 2012). Several strategies and approaches (e.g., men-only programs, 'masculine' setting) have been identified that show promise for improving men's participation, retention, and overall success rates (Bottorff et al., 2015; George et al., 2012; Hunt, Gray, et al., 2014; Morgan, Warren, et al., 2011; Robertson et al., 2008; Sharp et al., 2018). Interventions tailored specifically to the values, preferences, and interests of men (e.g., gender-tailored) may increase program effectiveness (Bottorff et al., 2015). Despite the growing interest in men's health promotion, the overall effectiveness of physical activity interventions for men remains unclear.

The aim of our meta-analysis was to determine the effects of behaviour change interventions to increase men's physical activity, sustained physical activity change (≥12 months post-intervention), and to identify how potential moderating variables were associated with key outcomes (e.g. theoretical underpinning, gender-tailored, contact frequency).

## 2.4 Methods

This review adhered to the Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) Statement (Appendix A: Supplementary Table S1)(Moher, Liberati, Tetzlaff, & Altman, 2009) and was prospectively registered in the PROSPERO registry of systematic reviews (#CRD42018079448).

**Inclusion criteria**

Eligible studies for inclusion were randomised controlled trials (RCT) identified using the following framework.

1. *Population.* Studies included adult men age 18+ years. Mixed sex studies were included provided relevant data (see outcomes) for men were reported separately. Consistent with previous research (Bottorff et al., 2015; George et al., 2012), studies that exclusively included older adults (≥65 years) were excluded as they are likely to have different intervention requirements.
2. *Intervention.* Interventions with clear and deliberate intent to increase the physical activity levels of participants. Physical activity was defined as any bodily movement that increased energy expenditure beyond basal levels (Conn et al., 2011). Diverse physical activity behaviour change interventions were eligible (e.g., education sessions, supervised physical activity practice sessions). Articles that included both physical activity and other health behaviours (e.g., diet) were included, provided that physical activity change was an intended and explicitly reported outcome.
3. *Comparison.* Studies were randomised controlled trials.

4. *Outcomes*. An outcome measure of physical activity (e.g., steps per day, total activity minutes per week), disaggregated by sex (if applicable), available for both intervention and control groups, representing physical activity change from pre- to post- or multi-point test.

**Search method**

A comprehensive search strategy was undertaken to identify all possible studies for inclusion. The search was applied to MEDLINE and adapted for EMBASE, CINAHL, SportDiscus, and Web of Science. All searches were completed by a specialised research librarian (MVD) to April 2019. Search terms included MeSH and keywords relevant to the aims and in accordance with the eligibility criteria: (a) population (e.g., Male/ or (men or male?)); (b) intervention (e.g., Exercise/ or ("physical activit*" or exercis*)); and (d) outcomes (e.g., Fitness Trackers/ or Self Report/). Additional filters were used to limit results to RCTs (e.g., Randomized Controlled Trial/ or (randomi#ed or experimental) adj3 trial). Searches were limited to English language, original research, and academic journals. No editorials, reviews, commentaries, conference abstracts or other grey literature were included. The decision to not include grey literature was based on concerns relating to the absence of peer-review and the potential for identifying an unrepresentative sample of all unpublished studies. The reference lists of included articles were manually searched for potential studies not yet identified. See Supplementary Table S2 (Appendix A) for the complete search syntax. Prior to manuscript submission, identified articles were reviewed to ensure that no trial had been retracted between inclusion and publication (Bozzo, Bali, Evaniew, & Ghert, 2017).

**Screening of articles**

All identified references were imported into EndNote X8 (Clarivate Analytics, Philadelphia, Pennsylvania, USA). Duplicates were automatically identified by matches in authorship, year, and title, and manually reviewed prior to deletion. Overseen by the lead author

(PGS), two trained research assistants performed a title and abstract review to screen remaining records for relevance. Full text articles were retrieved for all remaining records and further screened to identify the final set of articles for inclusion. Any uncertainty was discussed amongst the research team.

**Data extraction, study quality, and quality of evidence**

A coding framework was developed, pilot tested, and refined by two researchers (PGS and JCS). Study characteristics were coded by two reviewers (PGS and JCS) under four general categories relating to the study design (e.g., sample size, physical activity measurement), participants (e.g., mean age, health status), intervention (e.g., mode of delivery, behaviour change techniques, theoretical underpinning) and results (e.g., mean change, standard deviation). Outcome data for use in the meta-analysis were recorded for baseline, immediately post-intervention, and 12-months or greater post-intervention. If more than one variable was available for physical activity, the variable that best reflected an overall measure of physical activity was selected (e.g., total MET-minutes, self-reported total physical activity). Interventions were coded using Michie and colleagues' definitions for characterising behaviour change interventions including education, persuasion, incentivisation, coercion, training, restriction, environmental restructuring, modelling, and enablement (Michie, Van Stralen, & West, 2011). Relevant detail was sought from additional publications (e.g., protocol papers), when available. Interventions were deemed to be gender-tailored if there was evidence to suggest that they were designed specifically to the values, preferences, and interests of men. Intervention engagement was assessed as high (>80%), moderate (60-80%), or low (<60%) based on participants' average reported uptake of the intervention content (e.g., attendance, website visits) or the extent to which participants met reported engagement goals (e.g., % attending 10 of 12 sessions). The coding framework is not exhaustive of all intervention aspects

and only common comparable characteristics reported in sufficient detail across studies are subsequently reported on.

Study quality was independently assessed by two members of the research team (PGS and CMC) using The Effective Public Health Practice Project (EPHPP) tool (Effective Public Health Practice Project, 1998). This tool has been reported to have content and construct validity, excellent inter-rater reliability, and is recommended by the Cochrane Pubic Health Review Group for assessing the quality of public health and health promotion studies (Armijo-Olivo, Stiles, Hagen, Biondo, & Cummings, 2012; Jackson & Waters, 2005; Thomas, Ciliska, Dobbins, & Micucci, 2004). This six-domain (14 question) rating scale for interventions assesses selection bias, study design, assessment of confounders, data collection methods (reliability and validity) and reporting of blinding, withdrawals and dropouts. In accordance with the tool's guidelines, a score for each domain of weak (1 point), moderate (2 points) or strong (3 points) was awarded and averaged to provide a total score for each study. Based on their total score, studies are assigned a quality rating of weak (1.00–1.50), moderate (1.51–2.50) or strong (2.51–3.00). Where discrepancies existed between reviewers, deliberation occurred until consensus was reached.

Additionally, the overall quality of evidence was assessed by three members of the research team (PGS, CMC, and JLB) using GRADE (Balshem et al., 2011; GRADE Working Group, 2004). The quality of evidence was performed for each study outcome (i.e., physical activity change and long-term physical activity change) and reflects the extent to which we are confident that an estimate of the effect is correct. The quality of evidence can be assessed as high, moderate, low, or very low. As all studies were randomised trials, study quality is initially assumed to be high but can be rated down based on risk of bias, inconsistency of results, indirectness of evidence, imprecision, or publication bias.

**Statistical methods**

Standardised mean differences (i.e., effect size) with 95% confidence intervals were computed to represent the effect of the interventions on men's physical activity. A positive effect size indicates a more favourable change in physical activity for the intervention condition. Cohen's criteria were used for interpretation of effect sizes as small (<0.50), moderate (0.50-0.79), and large (>0.79) (Cohen, 1988). In addition, estimates of mean physical activity effect sizes were converted to the original metrics of ambulatory steps per day and minutes per week. Effect sizes were calculated using change from baseline scores, as this method removes a component of between-person variability from the analysis by controlling for pre-intervention differences (Green & Higgins, 2005). In some cases, the required statistics were not reported. If available, and if possible, change scores were calculated from pre-test and post-test means and standard deviations, means and standard errors, confidence interval, or other statistics (e.g., p-values), using conventional methods detailed by Borenstein, Hedges, Higgins, and Rothstein (2011). In studies that included multiple intervention groups, a pooled mean and standard deviation was calculated to create a single pair-wise comparison before entering the meta-analysis. Cluster-randomised trials were adjusted for using an estimation of the sample size (Rao & Scott, 1992). In such instances, a design effect was calculated for each study using an intracluster correlation coefficient (ICC) of 0.05, which has been previously used in meta-analyses of physical activity trials (Elley, Kerse, Arroll, & Robinson, 2003; Heck, Tabata, & Thomas, 2013; Kianoush & Masoomehni, 2015; Orrow, Kinmonth, Sanderson, & Sutton, 2012).

Comprehensive meta-analysis (CMA) version-3 software was used for all analyses. A random effects model with inverse variance weighting was applied to estimate the pooled effect for physical activity. Two overall effect size calculations were conducted to investigate the effect of interventions on men's physical activity (baseline to post-intervention) and long-term

physical activity change (baseline to 12-month or greater post-intervention). Each study contributed one effect size calculation to the overall analysis and twelve studies reported an additional follow-up measure 12 months or greater post-intervention. Sensitivity analysis was conducted using the "one-study remove" procedure. Publication bias was analysed using Egger's regression test (Egger, Smith, Schneider, & Minder, 1997), Duval and Tweedie's Trim and Fill Procedure (Duval & Tweedie, 2000), and Rosenthal's Fail-Safe N calculation (Rosenthal, 1991). Homogeneity of effects was assessed through the Q-statistic. A significant Q-within ($Q_w$) value indicates a heterogeneous distribution and suggests a need to conduct follow-up moderator analyses. To interpret heterogeneity, Tau-squared ($T^2$), an estimate of total variance between studies, and I-squared ($I^2$), a ratio of excess dispersion to total dispersion, were calculated. Larger $T^2$ values reflect the proportion of variance that can be attributed to real differences between studies. $I^2$ can be understood as the overlap of CIs explaining the total variance attributed to the covariates, interpreted as low (25%), moderate (50%), and high (75%) relative variance. Larger $I^2$ values require techniques (i.e., moderator analysis or meta-regression) to provide explanations.

Moderator analyses were conducted to explore potential variations in effectiveness due to differences in study, participant, or interventions characteristics, using mixed effects analysis. Subgroup analyses were used to explore heterogeneity and make comparisons between characteristics. Categories were determined based on previous literature as well as the cut points that may be relevant for future intervention design (Davies, Spence, Vandelanotte, Caperchione, & Mummery, 2012). A common among-study variance was assumed across subgroups and a pooled within-group estimate of $T^2$ was used. In light of previous research exploring the effects of physical activity interventions (Greaves et al., 2011), as well as work done in the field of men's health (Bottorff et al., 2015; George et al., 2012; Robertson et al., 2008), it can be reasonably argued that more intensive interventions (e.g., greater contact

frequency, utilising more types of behaviour change techniques) and interventions designed specifically for the target population (e.g., gender-tailored) will be more effective. However, because previous research has provided a limited foundation for confirmatory hypothesis testing, the moderator analyses were considered exploratory and intended to be hypothesis-generating. Moderator analyses were not conducted for long-term physical activity change as only 12 studies included an additional follow-up 12 months or greater post-intervention.

## 2.5 Results

### Description of included studies

The initial search strategy (excluding duplicates) identified 13,131 potentially relevant articles. Following title/abstract screening, 284 references remained from which an additional 258 articles were further removed following a full text review. Ultimately, 26 peer reviewed journal articles (Figure 3), representing 24 studies and independent samples (Aguiar et al., 2016; Andersen, Burton, & Anderssen, 2012; Andersen, Hostmark, Holme, & Anderssen, 2013; Ashton, Morgan, Hutchesson, Rollo, & Collins, 2017; Galvao et al., 2017; Gaskin, Craike, Mohebbi, Courneya, & Livingston, 2017; Gong, Chen, & Li, 2015; Gray, Hunt, Mutrie, Anderson, Treweek, et al., 2013; Groeneveld, Proper, van der Beek, Hildebrandt, & van Mechelen, 2011; Hunt, Wyke, et al., 2014; Livingston et al., 2015; Maruyama, Kimura, Okumura, Hayashi, & Arao, 2010; McGowan, North, & Courneya, 2013; Morgan et al., 2013; Morgan et al., 2014; Morgan, Collins, et al., 2011b; Morgan, Lubans, et al., 2011; Morgan, Lubans, Collins, Warren, & Callister, 2009; Patrick et al., 2011; Petrella et al., 2017; Pritchard, Nowson, & Wark, 1997; Schroder et al., 2018; Shin et al., 2017; Viester, Verhagen, Bongers, & van der Beek, 2018; Werkman et al., 2010; Wyke et al., 2019), were included in the review.

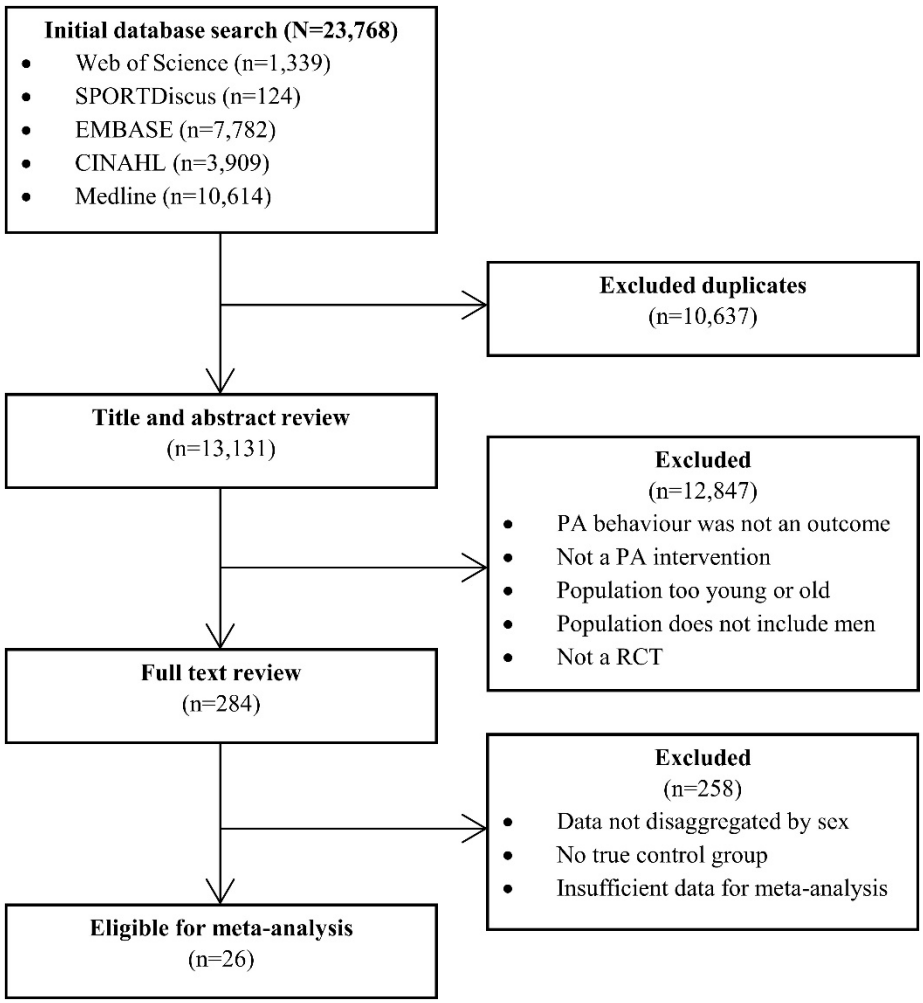



*Figure 3. Pathway of articles identified and excluded*

Tables 1 and 2 outline study design and intervention characteristics, respectively. Supplementary Table S3 (Appendix A) provides an overview of the included interventions and additional details about the included studies. Articles were published between 1997 and 2019 including a total sample size of 12,040 men. Ethnicity of participants were reported in only 7 studies, of which 5 were predominantly white (>70%). Interventions primarily targeted overweight individuals (number of effect sizes (*k*)=11) and lasted on average 20 weeks (range 4-52 weeks). Intervention design varied between studies and often included multiple components with the majority including an aspect of face-to-face contact (*k*=18), education

(*k*=24; i.e., increasing knowledge or understanding), training (*k*=20; i.e., imparting skills), and enablement (*k*=20; i.e., increasing means/reducing barriers to increase capability or opportunity). Overall study attrition was 15% (range 5-30%).

Supplementary S4 (Appendix A) displays the study quality assessment for all studies. Overall study quality was mostly moderate (*k*=20; 83%), primarily due to participant self-referral (selection bias) and an inability to blind participants due to the nature of behavioural interventions. Studies rated as strong (*k*=4; 17%) were able to account for these issues by recruiting participants through a comprehensive list of the population (e.g., clinical registry), which may not be feasible in community-based research, and making efforts to blind assessors to participants' group allocation. The overall quality of evidence, assessed using GRADE (Balshem et al., 2011; GRADE Working Group, 2004), was determined to be high for physical activity change and moderate for long-term physical activity change suggesting that we are very confident and moderately confident, respectively, that the true effect lies close to that of the estimate of the effect. Although there were concerns relating to self-referral and an inability to blind participants in some studies, we did not downgrade the quality because we deemed the overall risk of bias to be very low. Long-term physical activity change was downgraded by one level for inconsistency based on considerable heterogeneity ($I^2$=80) and relatively wide variance of point estimates across studies.

*Table 1. Study design and participant characteristics*

| Primary source | Study | | | | Participant | | |
|---|---|---|---|---|---|---|---|
| | Location | Design | PA Measure | PA Outcome[a] | N[b] | Mean Age[b] (Years) | Health Status |
| Aguiar *et al*, 2016 | Australia | RCT | Obj | Secondary | 101 | 52 | Overweight |
| Andersen *et al*, 2012 | Norway | RCT | Obj | Primary | 150 | 37 | Inactive |
| Ashton *et al*, 2017 | Australia | RCT | Obj | Primary | 50 | 22 | Inactive |
| Galvao *et al*, 2017 | Australia | RCT | Sub | Primary | 463 | 64 | Cancer |
| Gong *et al*, 2015 | China | Cluster | Sub | Secondary | 450 | 64 | Hypertension |
| Gray *et al*, 2013 | Scotland | RCT | Sub | Secondary | 103 | 47 | Overweight |
| Groeneveld *et al*, 2011 | Netherlands | RCT | Sub | Not clear | 816 | 47 | General |
| Hunt *et al*, 2014 | Scotland | RCT | Sub | Secondary | 747 | 47 | Overweight |
| Livingston *et al*, 2015 | Australia | Cluster | Sub | Primary | 147 | 66 | Cancer |
| Maruyama *et al*, 2010 | Japan | RCT | Obj | Primary | 110 | 40 | MetS |
| McGowan *et al*, 2013 | Canada | RCT | Sub | Primary | 423 | 68 | Cancer |
| Morgan *et al*, 2013 | Australia | RCT | Obj | Secondary | 159 | 48 | Overweight |
| Morgan *et al*, 2014 | Australia | RCT | Obj | Secondary | 93 | 40 | Overweight |
| Morgan *et al*, 2011a | Australia | RCT | Obj | Secondary | 53 | 41 | Overweight |
| Morgan *et al*, 2011b | Australia | RCT | Sub | Secondary | 110 | 44 | Overweight |
| Morgan *et al*, 2009 | Australia | RCT | Obj | Secondary | 65 | 36 | Overweight |
| Patrick *et al*, 2011 | USA | RCT | Sub | Secondary | 441 | 44 | Overweight |
| Petrella *et al*, 2017 | Canada | RCT | Obj | Secondary | 80 | 49 | Overweight |
| Pritchard *et al*, 1997 | Australia | RCT | Sub | Secondary | 66 | 43 | Overweight |
| Schröder *et al*, 2018 | Spain | RCT | Sub | Secondary | 6059 | 65 | Overweight, MetS |
| Shin *et al*, 2017 | Korea | RCT | Sub | Secondary | 105 | 28 | Overweight |
| Viester *et al*, 2018 | Netherlands | RCT | Sub | Secondary | 314 | 47 | General |
| Werkman *et al*, 2010 | Netherlands | Cluster | Sub | Secondary | 413 | 60 | General |
| Wyke *et al,* 2019 | Europe[c] | RCT | Obj | Primary | 1113 | 46 | Overweight |

PA = physical activity; RCT = randomised controlled trial; Cluster = cluster randomised trial; Obj = objective; Sub = subjective; MetS = Metabolic Syndrome

[a]Primary Outcome indicates whether authors identified change in physical activity as a primary or secondary outcome of the study

[b]Value for total sample; includes women in mixed-sex studies (i.e., Gong et al., 2015 [42% men], Werkman et al., 2010 [85% men])

[c]England, Norway, Netherlands, and Portugal

*Table 2. Intervention characteristics*

| Primary source | Intervention | | | | | |
|---|---|---|---|---|---|---|
| | **Delivery** | **Focus** | **Contact** | **Gender Tailored** | **Duration (weeks)** | **Types of Behaviour Change Techniques (num; type)** |
| Aguiar *et al*, 2016 | F2F, On | Com | Once | Yes | 24 | 3 (Ed,T,En) |
| Andersen *et al*, 2012 | F2F, Tel | PA | 2-3/week | No | 20 | 3 (Ed,T,En) |
| Ashton *et al*, 2017 | F2F, On | Com | Weekly | Yes | 12 | 3 (Ed,T,En) |
| Galvao *et al*, 2017 | Tel | Com | Monthly | No | 24 | 3 (Ed,Ev,En) |
| Gong *et al*, 2015 | F2F, Tel | PA | Weekly | No | 6 | 3 (Ed,T,Ev) |
| Gray *et al*, 2013 | F2F | Com | Weekly | Yes | 12 | 6 (Ed,I,T,Ev,M,En) |
| Groeneveld *et al*, 2011 | F2F, Tel | Com | Monthly | No | 24 | 3 (Ed,T, En) |
| Hunt *et al*, 2014 | F2F | Com | Weekly | Yes | 12 | 6 (Ed,I,T,Ev,M,En) |
| Livingston *et al*, 2015 | F2F | PA | Bi-weekly | No | 12 | 2 (Ed,T) |
| Maruyama *et al*, 2010 | F2F, On, Tel | Com | Monthly | No | 16 | 3 (Ed,T,En) |
| McGowan *et al*, 2013 | Tel, Mail | PA | Once | No | 4 | 2 (Ed,T) |
| Morgan *et al*, 2013 | On, Mail | Com | Bi-weekly | Yes | 12 | 3 (Ed,M,En) |
| Morgan *et al*, 2014 | F2F | Com | Bi-weekly | Yes | 7 | 4 (Ed,T,Ev,En) |
| Morgan *et al*, 2011a | F2F | Com | 2-3/month | Yes | 12 | 4 (Ed,T,Ev,En) |
| Morgan *et al*, 2011b | F2F, On | Com | 2-3/month | Yes | 12 | 5 (Ed,I,T,Ev,En) |
| Morgan *et al*, 2009 | F2F, On | Com | 2-3/month | Yes | 12 | 3 (Ed,T,En) |
| Patrick *et al*, 2011 | On | Com | Other | Yes | 48 | 4 (Ed,T,Ev,En) |
| Petrella *et al*, 2017 | F2F, On | Com | Weekly | Yes | 12 | 5 (Ed,I,T,Ev,En) |
| Pritchard *et al*, 1997 | F2F | PA | Bi-monthly | No | 48 | 2 (Ed,T) |
| Schröder *et al*, 2018 | F2F, Tel | Com | 3/month | No | 52 | 3 (Ed,T,En) |
| Shin *et al*, 2017 | F2F, On | Com | Monthly | No | 12 | 3 (Ed,I,En) |
| Viester *et al*, 2018 | F2F, Tel | Com | Bi/monthly | No | 24 | 3 (Ed,T,En) |
| Werkman *et al*, 2010 | Mail, On | Com | Other | No | 52 | 2 (Ed,En) |
| Wyke *et al,* 2019 | F2F | Com | Weekly | Yes | 12 | 6 (Ed,I,T,Ev,M,En) |

F2F = face-to-face; Tel = telephone; On = online; PA = physical activity; Com = combined (e.g., PA and diet); num = number; Ed = education; I = incentivisation; T = training; Ev = environmental; M = modelling; En = enablement.

**Overall analysis—main findings**

Intervention effects on physical activity are reported in Figure 4. The estimated overall mean effect of physical activity interventions in men was small but significant (*d*=0.35; SE=0.05; 95% CI=0.26 to 0.45; p<0.001). The effect size is consistent with a mean difference of 97 minutes of total physical activity per week or 980 steps per day between intervention and control participants. Review of the homogeneity statistic revealed a significant heterogeneous distribution ($Q_w$=72.32, p<0.001; $I^2$=68.20). The one study removed procedure indicated that no individual study had a substantial impact on the overall effect size. Egger's regression test revealed that publication bias may be present (p<0.01). No studies were added during the Trim and Fill procedure. Fail-safe N revealed that at least 876 unidentified studies with a mean effect of zero would be needed before the overall effect would no longer be statistically significant (p>0.05).

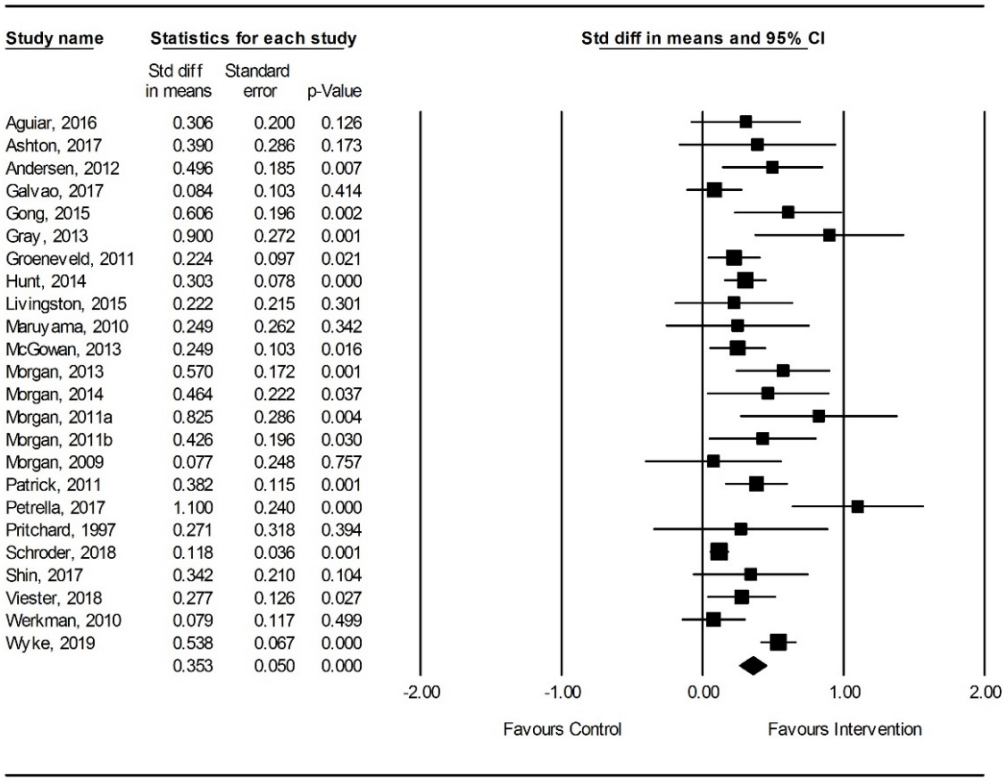



*Figure 4. Forest plot of effect sizes representing effect on physical activity (baseline to post-intervention)*

Twelve studies (Andersen et al., 2013; Galvao et al., 2017; Gaskin et al., 2017; Gong et al., 2015; Groeneveld et al., 2011; Hunt, Wyke, et al., 2014; Morgan et al., 2013; Morgan, Collins, et al., 2011b; Morgan et al., 2009; Viester et al., 2018; Werkman et al., 2010; Wyke et al., 2019) reported an additional follow-up measure at least 12 months post-intervention (Figure 5). The overall mean effect for long-term physical activity change was small but significant ($d$=0.32; SE=0.09; 95% CI=0.15 to 0.48; p<0.001) and had a significant heterogeneous distribution ($Q_w$=55.81, p<0.001; $I^2$=80.29). The one study removed procedure indicated that no individual study had a substantial impact on the overall effect size. Egger's regression test was non-significant (p>0.05). No studies were added during the Trim and Fill procedure and a Fail-safe N calculation indicated that 186 unidentified studies would be needed to nullify statistical significance (p>0.05).

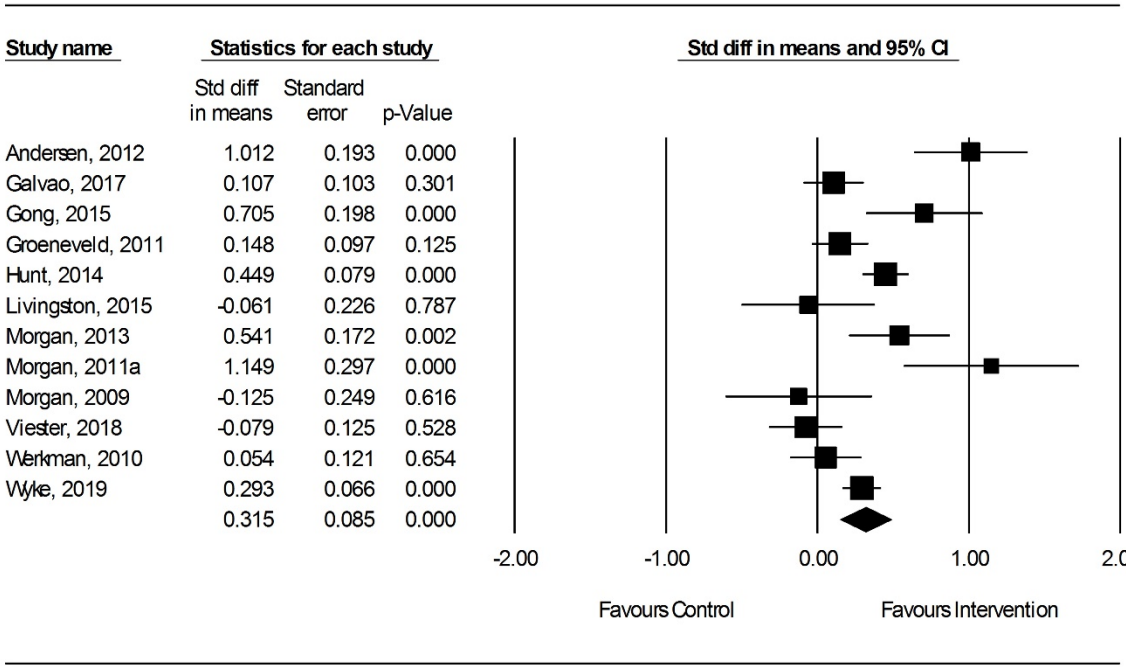



*Figure 5. Forest plot of effect sizes representing effect on long term (i.e., ≥12 month) physical activity change*

**Moderator analyses**

Study characteristics

Mixed effects analysis produced significant between-moderator results for study characteristics on physical activity measurement, $Q_b$ (1) =9.30, p≤0.01. Studies that employed objective measures of physical activity were found to have a larger effect size (*d*=0.51*;* 95% CI=0.37 to 0.65) than studies that used subjective measures of physical activity (*d*=0.26*;* 95% CI=0.17 to 0.35). Table 3 provides details of the analyses for study characteristics.

Intervention characteristics

Significant between-moderator results were present for contact frequency, $Q_b(2)=14.11$, p≤0.001, gender tailoring, $Q_b(1)=12.08$, p≤0.001, duration, $Q_b(1)=8.72$, p≤0.01, theory, $Q_b(1)=8.28$, p≤0.01, and number of types of behaviour change techniques, $Q_b(1)=10.62$, p≤0.001). Interventions that had between one or more weekly contacts produced a larger effect size (*d*=0.50; 95% CI = 0.39 to 0.62) than interventions that had less than one weekly contact (*d*=0.22; 95% CI=0.14 to 0.31). Interventions identified as gender-tailored had a larger effect size (*d*=0.47; 95% CI=0.36 to 0.58) than studies that were not gender-tailored (*d*=0.22; 95% CI=0.12 to 0.31). Those that were 12 weeks or less in duration produced a larger effect size (*d*=0.46; 95% CI=0.35 to 0.57) than interventions lasting 13 weeks or longer (*d*=0.23; 95% CI= 0.12 to 0.33). Interventions that identified one or more theory used the guide intervention design produced a larger effect size (*d*=0.40; 95% CI=0.31 to 0.49) than interventions that did not use theory (*d*=0.15; 95% CI=0.01 to 0.30). Interventions that utilised 4 or more types of behaviour change techniques had larger effect sizes (*d*=0.51; 95% CI=0.38 to 0.63) than those that used 3 or less types of behaviour change techniques (*d*=0.24, 95% CI=0.15 to 0.34). All moderators had low between-study variance ($T^2$) and explained moderate to large portions of subgroup variance ($I^2$). Table 3 provides details of the analyses for intervention characteristics.

*Table 3. Physical activity interventions moderator analyses*

| | Effect size descriptive statistics | | | | | Null test | Heterogeneity statistics | | |
|---|---|---|---|---|---|---|---|---|---|
| | **k** | ***D*** | **SE** | **$s^2$** | **95% *CI*** | **Z** | **Q** | **$T^2$** | **$I^2$** |
| Random effects model† | 24 | 0.35 | 0.05 | 0.002 | (0.26 to 0.45) | 7.13*** | 72.32* | 0.030 | 68.20 |
| **Study characteristics‡** | | | | | | | | | |
| Study design | | | | | | | 0.40 | | |
| RCT | 21 | 0.37 | 0.05 | 0.003 | (0.26 to 0.47) | 6.80*** | | 0.03 | 70.03 |
| Cluster RCT | 3 | 0.27 | 0.14 | 0.021 | (-0.01 to 0.55) | 1.87 | | 0.05 | 62.55 |
| Study quality | | | | | | | 0.00 | | |
| Strong | 4 | 0.36 | 0.13 | 0.002 | (0.10 to 0.61) | 2.75** | | 0.01 | 11.87 |
| Moderate | 20 | 0.35 | 0.05 | 0.003 | (0.25 to 0.46) | 6.51*** | | 0.03 | 72.00 |
| Measure | | | | | | | 9.30** | | |
| Subjective | 14 | 0.26 | 0.05 | 0.002 | (0.17 to 0.35) | 5.66*** | | 0.01 | 48.41 |
| Objective | 10 | 0.51 | 0.07 | 0.005 | (0.37 to 0.65) | 7.33*** | | 0.01 | 29.81 |
| PA outcome | | | | | | | 0.33 | | |
| Primary | 7 | 0.32 | 0.09 | 0.009 | (0.14 to 0.50) | 3.42*** | | 0.03 | 63.97 |
| Secondary | 16 | 0.39 | 0.07 | 0.004 | (0.26 to 0.51) | 5.97*** | | 0.04 | 68.91 |
| Sample size | | | | | | | 2.83 | | |
| N ≤150 | 13 | 0.46 | 0.08 | 0.006 | (0.30 to 0.61) | 5.76*** | | 0.02 | 29.30 |
| N ≥151 | 11 | 0.29 | 0.06 | 0.003 | (0.18 to 0.41) | 4.96*** | | 0.03 | 77.89 |
| **Participant characteristics‡** | | | | | | | | | |
| Mean age | | | | | | | 0.20 | | |
| ≤44 years | 9 | 0.39 | 0.10 | 0.009 | (0.20 to 0.58) | 4.09*** | | 0.00 | 0.00 |
| ≥45 years | 15 | 0.34 | 0.06 | 0.003 | (0.23 to 0.45) | 5.88*** | | 0.04 | 77.95 |
| Population | | | | | | | 0.78 | | |
| General | 20 | 0.38 | 0.06 | 0.003 | (0.27 to 0.49) | 6.68*** | | 0.04 | 71.28 |
| Clinical | 4 | 0.26 | 0.12 | 0.014 | (0.03 to 0.49) | 2.21* | | 0.02 | 47.50 |
| **Intervention characteristics‡** | | | | | | | | | |
| Contact frequency | | | | | | | 14.11*** | | |
| <1 weekly | 14 | 0.22 | 0.05 | 0.002 | (0.14 to 0.31) | 4.98*** | | 0.00 | 22.86 |
| ≥1 weekly | 10 | 0.50 | 0.06 | 0.003 | (0.39 to 0.62) | 8.51*** | | 0.02 | 47.60 |
| Engagement | | | | | | | 3.95 | | |
| High | 3 | 0.68 | 0.17 | 0.028 | (0.35 to 1.01) | 4.04*** | | 0.18 | 74.46 |
| Moderate | 10 | 0.34 | 0.07 | 0.010 | (0.20 to 0.48) | 4.79*** | | 0.03 | 63.95 |
| Low | 6 | 0.31 | 0.10 | 0.005 | (0.11 to 0.51) | 3.04** | | 0.00 | 0.00 |
| Gender-tailored | | | | | | | 12.08*** | | |
| No | 12 | 0.22 | 0.05 | 0.002 | (0.12 to 0.31) | 4.53*** | | 0.00 | 21.27 |
| Yes | 12 | 0.47 | 0.06 | 0.003 | (0.36 to 0.58) | 8.55*** | | 0.02 | 46.82 |
| Duration | | | | | | | 8.72** | | |
| ≤12 weeks | 13 | 0.46 | 0.06 | 0.003 | (0.35 to 0.57) | 8.03*** | | 0.03 | 53.08 |
| ≥13 weeks | 11 | 0.23 | 0.05 | 0.003 | (0.12 to 0.33) | 4.26*** | | 0.00 | 25.01 |
| Theory | | | | | | | 8.28** | | |
| No | 5 | 0.15 | 0.07 | 0.005 | (0.01 to 0.30) | 2.07* | | 0.00 | 0.01 |
| Yes | 19 | 0.40 | 0.05 | 0.002 | (0.31 to 0.49) | 8.84*** | | 0.02 | 49.62 |
| Behaviour change techniques | | | | | | | 10.62*** | | |
| ≤3 techniques | 16 | 0.24 | 0.05 | 0.002 | (0.15 to 0.34) | 5.32*** | | 0.01 | 26.98 |
| ≥4 techniques | 8 | 0.51 | 0.07 | 0.004 | (0.38 to 0.63) | 7.72*** | | 0.03 | 59.22 |

†$Q_w$-value used to determine heterogeneity

‡$Q_b$-value used to determine significant differences between moderators

*p≤.05, **p≤.01, ***p≤.001

k = number of effect sizes; d = effect size (Cohen's d); SE = standard error; $s^2$ = variance; Z = test of the null hypothesis; $T^2$ = between study variance in random effects model; $I^2$ = total variance explained by moderator(s).

## 2.6 Discussion

This paper reports on the first meta-analysis of RCTs to synthesise the effects of behaviour change interventions to increase men's physical activity, sustained physical activity change (at 12 months), and to identify variations in outcomes due to potential moderating variables. Overall, interventions had a small but significant effect on increasing physical activity levels ($d$=0.35) as well as post-intervention sustainability of changes in physical activity ($d$=0.32). The effect size is consistent with an increase of approximately 97 minutes of total physical activity per week or 980 steps per day between intervention and control participants. These effect sizes are larger than a meta-analysis investigating the effect of physical activity interventions for healthy adults ($d$=0.19; 358 studies, 99,011 participants); however, the samples in that review were predominantly (74%) women (Conn et al., 2011). Similar meta-analyses of interventions to promote physical activity among sedentary adults ($d$=0.31; 11 studies; 3940 participants; 44% men)(Foster et al., 2005) and chronically ill (e.g., hypertension, cancer, diabetes) adults ($d$=0.45; 163 studies, 22,527 participants, 50% men) (Conn et al., 2008) are more in line with the present findings.

*The role of physical activity in men's health promotion*

Our finding suggests that physical activity may be an important point-of-entry to encourage men's participation in behaviour change. As Connell (2005) suggested, 'masculinity' is associated with action and doing, and physical activity clearly qualifies as an acceptable outlet and performance opportunity for men. Men are motivated to engage in activities which are perceived to be more 'masculine', such as sport and physical activity, as they may be associated with strength, friendly competition, and mastery (Hunt, McCann, Gray, Mutrie, & Wyke, 2013). Particularly when the aim is to improve health, including a focus on physical activity may be more appealing and acceptable to men than providing support for 'dieting' or dietary modifications alone, as demonstrated in evidence from the UK and

elsewhere (Archibald et al., 2015; Hunt et al., 2013; Sharp, Spence, et al., 2020). Notably, a majority of the identified interventions in the present analysis had a primary focus on other health behaviours (e.g., weight loss) but used physical activity as an adjunct intervention strategy. Further, many of the studies (k=15; 75%) combined physical activity and other health behaviours (e.g., diet), revealing opportunities for layering behaviour changes, in relative and relational ways that may engage and sustain men's participation. In this regard, physical activity may be viewed as a gateway that garners masculine capital, through which men may become more willing to address other health behaviours (Gough, 2013; Sharp et al., 2018).

*Participant characteristics and sub-populations*

Participant characteristics within the included studies highlight some important trends and areas for future research. Although the target audience for many of the interventions reviewed here were overweight men, there are also likely to be gains in tailoring physical activity programs for other sub-groups of men including those experiencing chronic illness. For example, prescription physical activity (Cormie et al., 2016) and recreational football (Bjerre et al., 2016) have proven to be strong draws for men living with prostate cancer, as they have for weight loss (Hunt, Wyke, et al., 2014) and physical activity interventions (Wyke et al., 2019). Resistance training has also been noted as a preferred modality of physical activity among men due to its perceived 'masculine' nature associated with strength but most importantly because it targets disease-related risk factors for men (i.e., bone loss for men on androgen deprivation therapy) (Finlay, Wittert, & Short, 2018). Further, few studies provided sufficient detail of participants' socio-cultural background, illuminating the need to formally evaluate the fit of men's physical activity health promotion programs for marginalised sub-groups. Men's health inequities, for example, may limit the access and involvement of sub-groups including Indigenous men, those from culturally and linguistically diverse communities, and men with low socio-economic status. These sub-populations may benefit

from culturally sensitive approaches to physical activity, with programs designed to reduce structural barriers and address the resource poor realities of these under-served end-users. It is especially poignant within these contexts that sustained programing, inclusive of longitudinal evaluations, are completed to ensure sustainability of the changes that are often initially garnered and gained immediately post-intervention.

*Implications for intervention design*

Our findings indicate that a variety of program designs and approaches hold potential for positively influencing men's physical activity. For instance, using multiple appropriate behaviour change techniques and increased contact with participants (i.e., at least weekly throughout the program) were associated with significantly larger physical activity effects, suggesting that intensive interventions (i.e., greater intervention dose and frequency) may be more effective. While brief or limited contact interventions may be appealing as a cost-effective option, they limit opportunities for men to interact and connect with similar others. There is evidence to suggest that men are drawn to programs where they can connect with men similar to themselves, in a 'male-friendly' environment, and engage in friendly banter and competition (Bunn, Wyke, Gray, Maclean, & Hunt, 2016; Sharp et al., 2018). That shorter interventions (12 weeks or less) were more effective than longer interventions, may reflect the majority of reviewed studies (k=11) were 12 weeks in duration. Although very brief interventions can produce acute changes in physical activity (National Institute for Clinical Excellence, 2006; Vijay, Wilson, Suhrcke, Hardeman, & Sutton, 2016), sustainable behaviour change likely requires some threshold of intervention intensity. Similarly, if the relative intervention intensity of longer duration interventions is too low, it may not be sufficient to elicit behaviour change. That most of these interventions ran for 12 weeks, may bias or affirm that the optimal intervention duration for men lies somewhere in this range. Although the majority of interventions in the included studies involved some type of face-to-face contact

and multiple behaviour change techniques, it is noteworthy that interventions identified as gender-tailored were significantly more effective than those that were not ($d$=0.47 vs. 0.22). This encouraging evidence adds to a small but growing body of research that indicates that the mode of program delivery, as well as the content, is an integral factor in successful programs aimed at increasing men's physical activity (Bottorff et al., 2015; George et al., 2012). While offering men-only interventions is a gender-tailored intervention in itself, the novel and diverse modes of program delivery represented in these interventions point to the need to be responsive to the needs and preferences of diverse groups of men to optimise intervention engagement and program outcomes. Nevertheless, strategies used in the gender-tailored interventions reflect themes identified in successful efforts to promote men's health described by others and provide a useful direction for continuing efforts to promote men's health (Morgan, Warren, et al., 2011; Robertson et al., 2008; Robertson, Witty, Zwolinsky, & Day, 2013). For example, gender-related strategies found to engage and retain men include the use of male-oriented language (e.g., simple, straightforward messages/communications), images, humour and positive 'banter'; action oriented, strength-based approaches including realistic and manageable recommendations; and providing men with flexible options that promote autonomy, self-reliance, and mastery.

Interventions that were assessed using objective measures of physical activity were significantly more effective than interventions using subjective (self-report) measures. Self-reported behaviour has been observed to be both higher and lower than objective measures of physical activity (Prince et al., 2008). Factors shown to predict discordances between measures include demographic characteristics such as education status (Gorzelitz et al., 2018) as well as differences in perceptions of what constitutes moderate or vigorous activity across demographic sub-groups (Rebustini, Balbinotti, Ferretti-Rebustini, & Machado, 2016). Interpreting subjective measures can be challenging (Kelly, Fitzsimons, & Baker, 2016;

Steene-Johannessen et al., 2016). For example, an intervention may affect how accurately an individual perceives and reports their physical activity and sedentary behaviour (Kelly et al., 2016).

*Sustaining long-term physical activity change*

Though additional research is needed regarding long-term physical activity change, it is promising that the 12 of 24 studies that included a long-term (i.e., ≥12 months) follow-up measure had a small intervention effect ($d$=0.32). One study in the present analysis targeted overweight inactive male football fans and reported evidence of long-term behaviour maintenance of participants at 3.5 year follow-up (Gray et al., 2018). These longitudinal findings of 213 men suggested that physical activity was significantly higher at 3.5 years than at baseline. This large-scale trial has informed the development of several subsequent gender-tailored interventions that also now include long-term follow-up in order to assess sustainability of physical activity change. For example, EuroFit (Wyke et al., 2019), which was delivered in 4 European countries, engaging 1,113 men, includes a long term follow-up of 12-months. Researchers must continue to evaluate the extent to which changes are sustained following intervention completion and consider strategies to promote long-term behaviour change.

*Strengths and limitations*

We report two study strengths and three limitations. This meta-analysis is the first to examine the effects of behaviour change interventions in men and it builds on previous research identifying effective intervention strategies for engaging and retaining male participants. In addition, all 24 included studies had a randomised design, thus minimising bias.

The considerable heterogeneity across the studies, including the target population, the ways in which studies targeted men as participants, and the various modes of intervention delivery represent a limitation. We included both clinical (e.g., cancer patients) and healthy populations

which may be viewed as a limitation even though physical activity has been effective in the setting of several different chronic illnesses (Conn et al., 2008) and healthy populations.

With regards to the assessment of study quality, we acknowledge that there is often poor agreement between tools and that tools may measure different constructs of study quality (Armijo-Olivo et al., 2012). The EPHPP is the recommended tool for assessing the quality of public health and health promotion studies. Despite this, challenges with assessing community-based trials remain as the majority of studies were rated down for participant self-referral and a lack of participant blinding. For almost any real-world behavioural intervention, a degree of volition and motivation to attend is required, both overall and session-by-session. Further, usually it is not possible to blind participants, or those delivering or assessing the intervention to group allocation, in these type of interventions (i.e., participants know they are exercising). Considered collectively, these assessment tools include assumptions which favour a biomedical approach in which internal validity, as an outcome of tightly controlled trials, is prioritised over external validity and thus raises challenges for real-world implementation (Ammerman, Smith, & Calancie, 2014). What is not reflected within such assessment is the value of pragmatic trials in implementing behaviour change within the environments in which they will be used (Ammerman et al., 2014; Glasgow et al., 2012).

We also acknowledge that potentially relevant studies conducted on mixed-sex samples were not included because they failed to disaggregate their findings by sex--despite calls for the need to do so (Waters et al., 2011). Thus, the majority of studies included had male participants only.

## 2.7 Conclusion

This meta-analysis suggests that men can make small, but potentially important, changes in their physical activity. Specifically, gender-tailored interventions, which include a core focus on physical activity, may help attract, engage and retain men to health behaviour

interventions. This includes those with a primary focus on other behaviours, which is important for the improvement of individual and public health, in addition to physical activity. Scope clearly exists for researchers to better understand what types of interventions work for different men and why. Sustained improvement in physical activity is a public health holy grail and our study captures the current knowledge about men in that domain.

# CHAPTER 3. "People say men don't talk, well that's bullshit": A focus group study exploring challenges and opportunities for men's mental health promotion

## 3.1 Abstract

Men's mental health promotion presents unique challenges including gender-related barriers and stigmas, which demand novel approaches to prevention, treatment, and management. The aim of this study was to explore men's perceptions of mental health and preferences for mental health promotion. Seven focus groups (N=59) were conducted in Sydney, Australia, including 5 groups of men (M=50.65, SD=13.75 years) and 2 groups of stakeholders who had frontline experience working with men (e.g., men's groups, health clubs, mental health advocates). Data were analysed using thematic analysis and interpreted using a gender relations approach to explore connections between gender roles, relations and identities, and men's mental health. Three overarching themes were identified; (1) *Roles, identities, and the conceptualisation and concealment of mental health challenges*, revealing challenges to mental health promotion related to perceptions of men's restrictive emotionality and emotional awareness as well as difficulties with conceptualisation the internalised experiences of mental health, (2) *Constraining social contexts of stigma and gender relations*, identifying how social context and the policing of gender roles often obscured opportunities for discussing mental health and help-seeking behaviour, (3) *Anchoring mental health promotion to acceptable lifestyle practices*, highlighting potential remedies included leveraging men's social practices related to reciprocity, normalising mental health promotion relative to other behaviours, and embedding mental health promotion within acceptable masculine practices. Discussed are directions for men's community-based mental health promotion and opportunities for how masculinities may be negotiated and expanded to embody mental health promoting values.

## 3.2 Introduction

Consistent evidence has been found worldwide that suggests men are far less likely to seek help for mental health challenges, irrespective of age, nationality, or ethnic or racial background (Addis & Mahalik, 2003; Wang et al., 2007). In Australia, men are less likely than

women to access services for mental health disorders (28% vs. 41%), such as depression and anxiety, and they account for three-quarters of deaths from suicides (Australian Bureau of Statistics, 2008, 2017). Men experience mental health challenges diversely and the influence of gender, as a social determinant of health, has been well established (Gough & Robertson, 2009; Seidler et al., 2016). For example, factors driving men's resistance to seek help for psychological problems have been attributed to normative masculinities characterised by self-reliance, stoicism, and restrictive emotionality (Connell, 2005; Seidler et al., 2016). Additionally, gender-related barriers and stigmas to help-seeking contribute to many men's poor mental health literacy and reticence towards mental health support and intervention (Addis & Mahalik, 2003; Johnson et al., 2012; Seidler et al., 2016). Moreover, men are more likely to focus on physical symptoms (e.g., tiredness, irritability) and exhibit externalised behaviours (e.g., anger, substance use, risk-taking) that may not be recognised as by-products of mental health problems by friends, family or medical professionals (Addis, 2008; Genuchi & Mitsunaga, 2015). As a result, mental health problems may be hidden or overlooked, and often go unrecognised or undiagnosed (Oliffe, Rossnagel, Seidler, et al., 2019). However, evidence also suggests that men will seek out and engage in health services when they are designed and delivered in ways that align with men's preferences and interests (Owen, Wong, & Rodolfa, 2009), suggesting the need for gendered approaches to prevention and treatment. In this regard, there has been a growing interest in identifying strategies that engage men in mental health promotion and early intervention (Robertson et al., 2018), including community-based mental health programs (Seaton, Bottorff, Jones-Bricker, et al., 2017).

Mental health promotion is key to preventing men's mental disorders, and by extension advancing the well-being of their families and friends (Seaton, Bottorff, Jones-Bricker, et al., 2017). To date, efforts have focused on identifying and treating men's mental health disorders, destigmatising mental illness, and norming men's help-seeking behaviours (Griffith et al.,

2019). Primary prevention and early intervention in men's mental health is emergent with diverse community-based and e-health efforts augmenting traditional clinical services (Oliffe et al., 2020). Men's mental health promotion can work by reducing risk factors (e.g., stress, social-isolation, poor nutrition) and bolstering protective factors (e.g., emotional resilience, exercise, problem solving) to prevent mental ill-health and promote well-being (World Health Organization, 2004). As common risk and protective factors underpin many men's mental health disorders (e.g., depression, anxiety, and substance-related disorders), effective mental health promotion efforts offer opportunities to prevent the onset, delay recurrence, and decrease the impact of a range of mental health disorders. Furthermore, mental health promotion programs can go beyond incidence reduction to exert positive effects on overall well-being and quality of life (Adam, 2013).

To better understand men's mental health, we draw upon a gender relations approach to exploring masculinities and men's mental health. Connell's (1987) early work on *hegemonic masculinity* has long been used to explain how, within specific locations, temporalities and context, characteristics and performativity's are held up as the standard for idealised masculine behaviour. Hegemonic masculinity comprises of dominant norms (characteristics and patriarchal power) to which men (and women) diversely align and/or are complicit in sustaining. Even though many men do not conform to normative masculinities, they may be complicit with, and even gain benefit from, the power relations involved. Whereby, other men (and women) may be marginalised (i.e., lacking the characteristics to conform to hegemonic masculinities) or subordinate (i.e., non-conforming, expressing qualities opposite to hegemonic masculinities) (Connell, 2005). These concepts provide an overarching framework for understanding how gender is produced and reproduced through everyday social practices, arising from the complex interactions of agency, gender and socio-cultural influences (Connell, 2005). Contemporary developments have recognised and explored the plurality of

masculinities (2005) as well as the influence that masculinities have on men's health and health-related behaviours (Courtenay, 2000).

The relationship between masculinities and men's mental health is diverse with variations on normative patterns including men's stoicism and resistance to help-seeking. Normative masculinities often run counter to acknowledging and experiencing mental health problems. For example, expressing emotion such as sadness or crying may reduce masculine standing whereas emotional control or expressing emotion through anger may enhance masculine status (River & Flood, 2021). Associated normative attitudes often serve as barriers for men's proactive (or early) engagement with mental health services (Rice, Purcell, & McGorry, 2018). Additionally, programs and services are often not designed with men in mind, favouring traditional clinical settings and therapeutic approaches that focus on emotional vulnerability (Addis & Mahalik, 2003; Courtenay, 2000). More positively, as gender norms are increasingly questioned, expanded and diversely embodied, there are opportunities for engaging men in mental health promotion. Evidence suggests that some men have begun to challenge, redefine, or incorporate traditional expression of masculinity with health enhancing masculine values (Oliffe, Rice, et al., 2019). For example, there is evidence that men do not need to engage in all masculine behaviours and that masculine capital may be accrued and used to accommodate some non-masculine or feminine behaviour (De Visser et al., 2009). Similarly, Emslie et al. found that some men with depression had the resources to construct identities that resist normative masculinities whereas others found it easier to re-interpret potentially feminising experiences as 'masculine' (Emslie, Ridge, Ziebland, & Hunt, 2006). However, to date, most of the available evidence related to men's mental health has come from clinical populations. It cannot be assumed that general populations will have the same motivations or responsiveness to interventions, compared to men with a diagnosed mental illness. Thus, there is a need to specifically examine non-clinical populations of men, exploring their motivations,

experiences, and preferences regarding mental health promotion. The aim of this study was to explore men's perceptions of mental health and preferences for mental health promotion to inform avenues for men's mental health promotion.

## 3.3 Methods

This research was conducted as part of a larger study aimed at developing a gender-sensitised mental health promotion intervention for men living in Sydney, Australia. Focus groups were used to explore men's perceptions of mental health and preferences for mental health promotion. Focus groups were chosen as a valuable approach to capturing collective group attitudes, norms, and narratives that might not be obtained from individual interviews. Further, as an effective method for engaging men in mental health discourses, focus groups may help to destigmatise mental health by providing a supportive environment, interpersonal support, and validation for men experiencing psychological distress (Griffith et al., 2019; Nicholas, Hagen, Rahilly, & Swainston, 2012). This study was approved by the Human Research Ethics Committee (#ETH18-3184) at the University of Technology Sydney and all participants provided written informed consent prior to participation.

### Recruitment and Participants

Participants were men (18+ years) interested in making healthy lifestyle changes, and stakeholders working in men's health or community-based organisations and groups working to support men's well-being. Men were recruited from Sydney, Australia using print posters, online media (e.g., Twitter posts, Facebook ads), and information distributed through men's groups/organisations in the community, with advertisements inviting men to "discuss their motivations, interest, and challenges for staying happy and healthy". Stakeholder recruitment was facilitated through targeted emails to organisations, support groups, and men specific gatherings and meetings. Organisations were identified that worked directly in men's health (e.g., men's health support/advocacy groups) or served and engaged a large proportion of male

clientele (i.e., sports clubs). This sampling approach focussed on identifying individuals with knowledge and experience of the research topic. In this study, we used this approach to recruit stakeholders with frontline experience working with men. Our recruitment efforts of stakeholders were expanded using snowball sampling, where participants were encouraged to nominate other individuals with similar critical knowledge and experience that may be interested in participating (Naderifar, Goli, & Ghaljaie, 2017).

**Data collection**

A total of 7 focus groups were held between July 2019 and November 2019, including 5 groups of men (6-10 participants per group) and 2 groups of stakeholders (8 per group). Focus groups lasted approximately 2 hours and were facilitated by two members of the research team (1 male and 1 female in their 30s) from non-clinical backgrounds who had prior experience conducting qualitative research with men on topics related to health and well-being. Prior to commencement, men in the study completed a brief sociodemographic survey including age, education, marital/employment status, and household income. Stakeholders did not complete a demographic questionnaire, rather information was recorded regarding their respective organisations and background. These data were collected for descriptive purposes.

The aim of the focus groups was to understand men's awareness of, interest in, and recommendations for mental health promotion. A consultation-style approach was used, positioning participants as the experts on the topic of men's thoughts, needs, and interests (Oliffe & Mroz, 2005; Sanders, 2002). A semi-structured focus group guide was developed to explore participants' perceptions of men's mental health and preferences for mental health promotion, early intervention, and stigma reduction. Open-ended questions were used to stimulate dialogue, promote interaction between participants, and encourage participant self-disclosure without unduly influencing or leading responses. For example, questions included "*What things do men do to help their mental well-being?*" and "*How would it be acceptable to*

*discuss mental health with guys*?" In this way, men in the focus groups were invited to respond to topics based on their personal experiences and perspectives. In responding to similar questions, stakeholder participants were invited to draw on their observations and experiences in engaging men in health promotion initiatives, including those that include mental health components. Using more than one sources of data, often referred to as data triangulation (Flick, 2018), provided the researchers with an opportunity to obtain a broader, more comprehensive understanding of the topic under study. Throughout the research process, efforts were made to not unduly influence participants' responses. Focus groups were audio recorded using a digital recorder Sony IC recorder (ICD-UX560) and transcribed by a research assistant with training and experience in transcribing qualitative research. Completed transcripts were reviewed for accuracy by the lead author prior to analysis.

**Data Analysis**

We analysed focus group data using inductive thematic analysis, whereby patterns in the data were identified and described to interpret and explain what was said in addressing the research question, "what are men's perceptions of mental health and preferences for mental health promotion?" The process, as detailed by Braun & Clarke (2006) included (1) familiarisation with data, (2) generating initial codes, (3) allocating data segments to the codes, (4) sorting codes to identify potential themes, (5) reviewing themes to determine if they worked in relation to the data, and (6) naming and refining the themes. A coding framework was developed inductively to reflect important ideas represented in the focus groups discussions. For example, initial codes included headings such as *mental health perceptions and practices*, *characteristics and qualities of being a man,* and *gendered social support for mental health.* Two researchers independently coded one transcript to verify the consistency of the framework. Areas of disagreement were discussed, and categories were continually refined, with some codes being subsumed and collapsed while others were expanded to reflect major

findings. Coded data were reviewed by the lead author, examining similarities and differences within and across the focus groups to determine preliminary themes.

In the final stage of analysis, we drew upon Connell's (2005) masculinities framework to interpret and unpack the complex gendered dimensions of men's perceptions and experiences to distil patterns, account for variations in the themes, and refine thematic descriptions. We interpreted gender roles, relations and identities to bridge participants' narratives to integrate theory and deepen the analyses. Through this lens findings helped to advance our understandings of men's mental health and, in turn, inform the development of gender-specific approaches. For example, identifying and integrating complicit, marginalised and subordinate masculinities reflected in the data enabled us to better understand how normative masculinities are embodied, expressed, contested, and (re)negotiated. Representative quotes were chosen that exemplified participants' perspectives of men's mental health and preferences for mental health promotion. Study rigor was supported by the use of: a) purposeful sampling of stakeholders, b) strategies to optimise collection of rich and compressive data (e.g., data triangulation, using open-ended questions), c) analytical processes to verify and refine hunches and emerging themes (e.g., comparisons between focus groups), and d) representative examples and quotes from the data to support the findings. While the findings are not generalizable per se, because participants drew on specific social discourses related to mental health and gender, we believe the findings do hold relevance for some groups beyond the study sample and could inform future research and intervention development.

### 3.4 Findings

Participants (N=59) included 43 men and 16 stakeholders. Men had a mean age of 50.65 (SD=13.75) years and the majority were employed full time (58%), married/domestic partnership (63%), university degree (72%), household income >$100,000 (56%). Participant characteristics are reported in Table 4. Stakeholders worked at commercial health clubs (n=6),

non-profit men's organisations (n=5), professional sports organisations (n=3), and academic institutions (n=2). Stakeholders self-reported roles included program facilitator, community engagement manager, health/lifestyle coach (e.g., exercise physiologist, personal trainer), motivational speaker, spokesperson/advocate, and researcher. All stakeholders were men.

*Table 4. Characteristics of men*

| | **Men (N=43)** |
|---|---|
| **Age** | |
| Mean (SD; range: 22-75 years) | 50.65 (13.75) |
| **Highest Level of Education [**n (%)] | |
| Less than year 12 or equivalent | 1 (2) |
| Year 12 or equivalent | 2 (5) |
| Associate diploma or certificate | 9 (31) |
| University degree | 31 (72) |
| **Marital Status [**n (%)] | |
| Single/Never married | 7 (16) |
| Married/domestic partnership | 27 (63) |
| Widowed | 1 (2) |
| Divorced | 6 (14) |
| Separated | 2 (5) |
| **Employment Status [**n (%)] | |
| Full time work | 25 (58) |
| Part time work | 11 (26) |
| Retired | 4 (9) |
| Unemployed | 2 (5) |
| **Household Income [**n (%)] | |
| Less than $25,000 | 4 (9) |
| $25,000 to $34,999 | 1 (2) |
| $35,000 to $49,999 | 1 (2) |
| $50,000 to $74,999 | 4 (9) |
| $75,000 to $99,999 | 5 (12) |
| $100,000 to $124,999 | 7 (16) |
| More than $125,000 | 17 (40) |
| Prefer not to say | 3 (7) |

Three overarching themes capture men's perceptions of mental health and preferences for mental health promotion: (1) Roles, identities, and the conceptualisation and concealment of mental health challenges, (2) Constraining social contexts of stigma and gender relations,

and (3) Anchoring mental health promotion to acceptable lifestyle practices. These themes are detailed below along with illustrative quotes.

**Roles, identities, and the conceptualisation and concealment of mental health challenges**

The interiority (i.e., internalised experiences) of mental health made it challenging for men to conceptualise and express what they were feeling and their level of well-being. For some, it was particularly difficult to know how to act, when circumstances in their lives, such as relocating, divorce, work stress, and shrinking social networks built up and cumulated as unresolved problems. One man described how, retrospectively, he was blinded to his rising stress levels and the flow on impediments to his judgement;

> *I'm stressed but it's death by a thousand cuts. My stress level, I had no idea that my stress level was at that point, and then you're at the point where you can't see anything rationally. (Men's Group 1)*

Evident in this quote, and many men's narratives, were expectations that they could cope with stress (normative masculinity) and the surprise that 'things' had built up to the extent that their problem-solving (normative masculinity) was diminished and perhaps disabled.

Participants suggested that challenges for men attending to their mental well-being related to their roles as men, summating that it was, "*the propensity for men to immerse themselves in their work*" *(Men's Group 1)* and/or men's "*lack of emotional awareness*" (Stakeholder Group 1) that resulted in them neglecting their mental health. In doing so, stakeholders suggested that men's alignments to masculine norms (e.g., work and stoicism) amplified their risk for mental illness. Men described being on "*automatic pilot*" *(Men's Group 1)* and marching to the drum of "*1-2-1-2*" *(Men's Group 4)*, highlighted by this interaction among participants when asked what they do or like to do for their health;

> *P1: My health? I work, I look after my family. That is my number 1, number 2 priorities in life. Full stop. [General agreement] P2: Work, family. That's it. (Men's Group 3)*

Participants discussed how men only considered their health and mental well-being during "*recalibration points*" *(Men's Group 5)* that required them to reflect and react to crisis situations. One man explained how this occurred when someone (e.g., friend, colleague, family member) or something (e.g., adverse health event, divorce) brought it to their attention;

> *It's a life circumstance or if it's someone who knows you taps you on the shoulder, 'take a step out, you need to do this to do this', that course correction, because I think men don't find advice, they get consumed, they don't have those recalibration points, that moment of self-reflection, they go 'uhhh this is what I want to do in my life' unless someone taps you on the shoulder or something is forced upon you where you actually have the rude shock. (Men's Group 1)*

Illustrated was discord between routine and purpose, wherein the sense of belonging and purpose that men once drew from keeping busy transactionally obscured the direct pleasures it had once afforded. In essence, the means to an end work ethic became directionless invoking emptiness for some men. Another participant described how these changes could have a dramatic impact on men's perception of themselves, impacting their mental health; *"It can be quite lonely and isolating when you realise what have you got. Men divorce, they realise 'oh mate, you've got to re-invent.'" (Men's Group 1)* Implicit within these identity threats were reliance on (and relinquishing) idealised masculine roles as the family breadwinner with resounding grief for what had been lost, including the means to an end work ethic defining many men's lives.

Participants suggested, somewhat provisionally, that perceptions of mental health were changing from a rigid dichotomous perspective of being well or unwell to that of a sliding scale and continuum. One man described his acceptance of this concept;

> *In terms of mental health, I think that's changing. I'm quite comfortable with it. Yes, I do agree I've got mental health, ahh [sigh of relief] I've got mental health. I think*

*there's an education piece where mental health is like physical health, it's the same, you can improve it by using these tools. I think 'tools' is a great word, so using mental health tools. Like give me tools and then men will use those tools. (Men's Group 5)*

Reflected in this acceptance of mental health as important, were normative masculinities related to self-reliance and men's preferences for self-management of their health. Here we also see an example of men's willingness to invest in actions that can improve mental well-being when they are framed to align with masculine roles and identities (i.e., 'tools' for building and constructing). Alternatively, some were resistant, suggesting that mental health was a personal responsibility and that bringing attention to it contributed to the problem. While these comments were often contested, it provided insights to how normative masculinities can be used to silence and censor important topics. For example, one man explained how he believed that discussing mental health may result in a greater prevalence of problems;

*It's almost asking us to find a problem when the problem should be our responsibility to resolve ourselves. I think that there would be less problems if we didn't have an advertisement to say 'hey this is where you go for our problems', you know? I think it's promoting not being okay. All of us go through periods where we are not okay and if we weren't that wouldn't be life. Before there was Beyond Blue and before there was Lifeline they used to have wristbands with 'harden the fuck up' on it. Where if you had a problem, you got more disciplined and you sorted out your problem. (Men's Group 4)*

Here we saw attempts to mute the vulnerabilities being shared by other men by refuting the need for outside help and claiming independence and self-reliance. This assertion provided an example of how dominant masculinities can be expressed and used to contest or defend the marginalisation they can invoke on other men. Participants recognised the challenge of

engaging men who are uninterested or unaware of their mental well-being. One man described how he knew that he would benefit but did not perceive himself to be a priority;

> *For people like myself, even though intellectually I can embrace this, until I develop a proper sense of self-worth I'm never going to prioritise this. I think it's really great, but I don't have the time and that's because I don't use my time effectively because I don't perceive myself as being a priority. (Men's Group 3)*

Articulated here are examples of normative masculinities (work first, selflessness, fatalism) tinged with self-deprecating acknowledgments that he was responsible for being time poor and by extension blinded to introspection.

**Constraining social contexts of stigma and gender relations**

Clearly, participants recognised some misalignments between masculine ideals and men's mental well-being, and it was in this discord that conflict arose between wanting to take preventive action and being constrained by certain social contexts and gender relations. In this space, some men were open to mental health promotion resources and tools for self-management, whereas others remained resistant and attempted to minimise or marginalise vulnerabilities. Men and stakeholders believed that there were considerable barriers and stigmas associated with accessing preventive mental health services. It was clear that men were aware of existing mental health supports and services. Throughout discussions, men highlighted examples of organisations and/or initiatives targeted at mental health, including help-lines (e.g., Lifeline), websites (e.g., Beyond Blue, Black Dog Institute), and mental health campaigns (e.g., R U OK day). Nevertheless, participants believed that most men did not use these services because of a general lack of understanding about these finite resources being for people in crisis. One participant explained;

*I think all the mechanisms that are out there at the moment like your Beyond Blue. Guys are like, 'I'm struggling, but I'm not to that point.' We all need to understand that if you are struggling - you are at that point, so kind of identifying that. (Men's Group 1)*

Participants discussed that mental illness (and mental health) remained a largely stigmatised topic, muting potential avenues for discussing or opening up to others – even when they sought out help. This included fears of negative social repercussions including being perceived as inadequate or unmanly. This was especially apparent in workplace settings. One man explained how he sought support from his workplace when he was struggling with his mental health and felt like his concerns were not addressed;

*There is still stigma from workplaces, they preach this 'R U OK?' But it's a bit of a farce. I got dragged into HR meetings and in the end they just said, 'We'll just sweep it under the carpet, under the chair and hope it all sorts itself out.' You know? And nothing has been said since. (Men's Group 3)*

Similarly, one stakeholder recognised that the workplace may not be a safe place to address mental health, and shared this with the men he coached;

*I would coach someone to be very cautious about opening up to too many people, I wouldn't do it at work. You will pay. There will be programs for you, you might get a flyer [about them]. But [if you open up to others] you could shit your career. I would be coaching them to be careful. (Stakeholder Group 1)*

Cautions about raising concerns or asking for help in the workplace were also shared by participants suggesting that this could result in job loss. They advised that men needed to "*curate*" their emotions, as highlighted within this interaction between two men;

P1: *I think in my experience, from what I've seen, there is a lot of lip service that gets paid [to mental health] in an employment situation...*

P2: *I would say that too!*

P1: …*'Look we are inclusive in our mental health', but when someone puts their hand up and says I'm really struggling, everybody goes…*

P2: *You're sacked!*

P1: …'*Here's a number, call the helpline', like they are kind of saying, 'we didn't mean it'. I guess what I mean is that there is some place to bring some more of yourself and your emotions to the workplace but not too much. Curated. (Men's Group 4)*

Seen here were stigmas assigned to mental illness to the point that disclosures of vulnerabilities were incompatible with paid work, raising issues about the discord between what employers say and do with regards to promoting men's mental health. Some men faced similar challenges with negotiating their participation in social or support groups for men. In general, men highlighted that they did not always feel comfortable sharing or discussing their thoughts and feelings with others. In doing so, we see how masculinities are not self-reproducing and require considerable effort to maintain within social contexts. Even in close social circles, gender roles can be policed and contested. One man described how opening up about mental health was often seen as a sign of weakness and resulted in being ridiculed and ostracised by peers. He recounted, "*I told a mate that I was coming [to a men's group] and he laughed and I haven't spoken to him since.*" *(Men's Group 3)* Publicly acknowledging or discussing their involvement in a men's group with their friends, family, or colleagues was also viewed as risky. One man examined how men's groups were portrayed in the media as hosting marginalised, subordinate 'less-than' men, and how his own participation in a men's group was goaded by his daughter;

*One of his [the actor] friends in the show says he's going to a men's group and he [the actor] just absolutely takes the piss out of him. It's the way he does it too in this very sarcastic way and it's left at that. It doesn't feel safe for me to tell most people that I even go to a men's group. My daughter jokingly, who is 19, calls it your 'crying group'.*

*And I mean, how emasculating can you get? That is really emasculating.*" *(Men's Group 3)*

Revealed here was the co-construction of masculinities and the shaming that can be assigned for transgressing ideals of self-reliance and stoicism. Also implicit were views that men who wanted (and drew benefit from) the company of other men to connect on a deeper level were suspect and subordinate. Identifying the gathering as a 'crying group' signals marginalised masculinity, recognised by the participant and referencing fear for men expressing what is assigned and asserted as unregulated feminine emotions.

**Anchoring mental health promotion to acceptable lifestyle practices**

Participants had ideas about how community-based mental health promotion could be offered to men in acceptable ways. The concept of "*anchoring*" was proposed, whereby mental health promotion could be accomplished by circumventing stigmas or embedding behaviours within avenues that supported men's mental health. Considering the challenges with engaging men in community-based mental health promotion, participants proposed strategies for discussion, education, and management of one's mental health.

Participants discussed the importance of having mental health promotion anchored in peer social settings and described that the major draw of this approach was "*doing things together for the benefit of each other*" *(Men's Group 2)*. One stakeholder explained;

*In getting help, I am helping others. Maybe men aren't as good at getting help as they should be, but blokes really like giving help, offering help, being useful. So you train people to look after their mates rather than train them to look out for themselves, but in the process they learn how to look out for themselves*. (Stakeholder's Group 2)

In this sense, comradery, teamwork, and doing health for others highlighted health-related masculine values of selflessness and openness. Men explained how this provided opportunities for conversation to occur naturally;

*I found that places like Men's Sheds, where it's never overt, there's a lot of debriefing, there's a lot of talking about feelings, although they wouldn't admit to that. But it's that sort of safety that men feel around other men often helps with their mental health stuff a lot. (Men's Group 2)*

A key challenge remained with regards to engaging those men that were uninterested or unaware of promoting their mental health. Participants suggested that targeting groups of men with common interests may provide an entry point to start conversations around mental health promotion. One man explored this, speculating that champions within these groups could be used to initiate conversations;

*So how do you get through to guys that don't even know they have an issue? I think that is quite challenging. How do you infiltrate that or get one person that is the influencer of that group to start to go, 'Over here these guys are having this conversation, we haven't had that one!' (Men's Group 5)*

Similarly, one man referenced the need for a range of tailored mental health supports for diverse subgroups of men with the caveat that there was a need to be very careful when broaching the topic with some subgroups;

*I work with Aboriginal populations but even in the mainstream there's a growing awareness of the need for addressing mental health needs….Depending on the demographic you are trying to approach, that might turn some people off. I think it's how you promote it, how you use your words within whatever promotional information materials you have. Say for our population group, mental health is a massive need to address anything from mild anxiety and social/emotional well-being to full blown depression and intergenerational trauma. (Men's Group 2)*

Implicated here is not only the need to recognise the diverse backgrounds of men but also the diversity of masculinities both within and across subgroups of men that need to be considered in designing tailored approaches for promoting men's mental health.

Participants provided examples of activities that draw men together and that offer a context for integrating mental health promotion including sport (e.g., rugby, football), hobbies (e.g., gardening, woodworking, car mechanics), or other interests (e.g., mountain biking, surfing). Many described how the perceived enjoyment of these activities would be primary motivator to participate. One stakeholder shared his observations that under the right circumstances, men were open to engaging in discussion;

> *People say men don't talk, well that's bullshit, once they're in the right space you can't shut them up. And that to me is the point, how do we get them there and fitness and health could be that. And then you could tie the mental health into this. The reason can't be come and talk about mental health and have a bit of exercise. It's got to be the other way around in my view.*" (Stakeholder Group 2)

To avoid overt discussions about mental health with men, another suggested that this information should be embedded, or anchored, around other behaviours.

> *Maybe it needs to be focused on the health aspect and not the mental side. I guess if it was a group that was centred around - let's come in and improve our health as opposed to let's come in and improve our mental health - that might just be a stigma just on the one word included in the sentence. So how it's written and how it's communicated will be imperative to how the engagement occurs.* (Stakeholder Group 2)

In this context, discussions could take place that would not have otherwise occurred. One man provided an example of how exercise provided an avenue to allow men to have emotive discussions;

*I find a lot of my mates get out running, it's the only time I ever get them vulnerable. I think it's because I'm not looking at them, they're looking straight ahead. You know you have D&Ms [deep and meaningful conversations] with your mates in the car because you're sitting there facing forwards! It's really interesting I think that's the only way that a lot of men will start to get comfortable having vulnerable conversations. It's exercise and not being face to face. (Men's Group 5)*

Within these settings, participants also suggested that there were opportunities to incorporate education and information regarding mental health promotion. The example of **"***what is going on in your mind without labelling it*" *(Men's Group 2)* and using a "*multidimensional approach rather than sitting around talking*" *(Men's Group 1)* was used to describe opportunities for education. For example, there was agreement that following a workout or exercise session, it would be acceptable to engage men in a guided mindfulness activity as a post-workout cool down.

### 3.5 Discussion

Men's mental health promotion interventions are emergent and there is a need for evaluative evidence to identify strategies that enable mental health promotion and early intervention gains in community-based settings (Arango et al., 2018; Griffith et al., 2019). We conducted focus groups with men and stakeholders in Sydney, Australia, to explore men's perceptions of mental health and preferences for mental health promotion to inform avenues for men's mental health promotion. Our study findings contribute important insights into the complex relationship between men's mental health and masculinities and may help to inform optimal approaches to men's mental health promotion. Participants highlighted that mental health challenges were often hard to perceive due to perceptions of men's restrictive emotionality and emotional awareness. Further, participants revealed how social context and the policing of gender roles often obscured opportunities for discussing mental health and help-

seeking behaviour. Finally, participants identified strategies to men's mental health promotion including opportunities to leverage men's social practices related to reciprocity, normalising mental health promotion relative to other behaviours, and embedding mental health promotion within acceptable lifestyle practices. Elucidated within these findings are directions for mental health promotion within community-based settings.

**Men's mental health promotion**

Reflected in the focus group discussions was a shared understanding of the barriers to mental health promotion relating to perceptions of men's restrictive emotionality and emotional awareness, the conceptualisation and interiority of mental health, and stigmatisation of mental health promotion and practices. However, as noted by Emslie et al. (Emslie, Ridge, Ziebland, & Hunt, 2007), the relationship between gender and mental health is not straightforward and both men and women may find it difficult to recognise and articulate mental health problems. Nonetheless, notable throughout the present findings was the influence of normative masculinities including fatalism and self-reliance and examples of how counter masculinities (e.g., vulnerability) could be contested and muted. Of course, cultures and gender norms shift, and men emphasised the need to connect with other men to strategize the sharing and solving of their collective mental health challenges. It is the role of advocates, researchers, and policymakers to collaborate to facilitate these shifts and garner opportunities for healthful actions and discussions within existing and progressive paradigms. Further, future gender comparative work should be extended to breaking down gender binaries by inclusively examining transgender and gender diverse people to explore how gender ideologies influence mental health to inform tailored approaches to mental health promotion.

As the challenges raised by participants predominantly centred on social factors (e.g., stigmatisation), as distinct from other determinants of health (e.g., biological), it stands to reason that the potential remedies may also originate from the gendered places that invoked the

challenges. For example, the workplace was identified as a space where structural and institutional gender silenced men suspected of mental illness and/or marginalised those who revealed they had mental health challenges. Highlighted here was the lack of psychological safety and perception that acknowledging mental health problems risked ridicule, judgement, or recourse within this context. These findings align with Seaton et al. (2019), revealing how masculine workplace cultures may impact men's mental health and limit disclosures about vulnerabilities. Participants suggested men could be engaged in mental health promotion by leveraging men's social practices related to reciprocity, normalising mental health promotion relative to other behaviours, and embedding mental health promotion within acceptable lifestyle practices. Clearly, some of the nuance to engaging men lies within the framing of discussions and actions that can be argued as therapeutic without compromising masculine capital (Gough, 2013). Highlighted here are examples of how masculinities may be negotiated and expanded to encompass more mental health-related masculine values. For example, taking action for the benefit of others, as well as oneself, demonstrates health-related masculine values of selflessness and openness serves to engage and reflect normative masculinities of strength and self-reliance (Oliffe et al., 2018).

Paradoxically, campaigns and organisations directly marketing "mental health" are unlikely to attract men who are resistant to engaging help due to their alignment to masculine ideals that triage out or entirely deny *their* mental health challenges. While these campaigns and organisations should be applauded for their work to raise awareness and provide mental health supports, many men did not believe that their challenges fell within the scope of these formal services; instead suggesting alternative approaches to mental health promotion (e.g., connecting with and supporting others, anchoring conversations and skill building opportunities in activities that engage men). While efforts should be made to clarify available support, these organisations face inherent challenges that, by overtly naming mental health,

many men will be reticent to engage for fear of being perceived, seen and judged as mentally unwell (Addis & Mahalik, 2003; Seidler et al., 2016). As such, there is clear scope to target mental health promotion from the perspective of prevention. Important however, will be anchoring approaches in community contexts where men live and work and that allow for mutual help garnered by connecting with other men who have and manage similar or relatable challenges. Here the value of anchoring mental health shines as a strategy for engaging those that would otherwise not present to mental health programs and services.

**Anchoring mental health promotion to existing communities**

Mental health promotion provides a unique opportunity to prevent the onset, delay recurrence, and decrease the impact of a range of mental health disorders. In line with Oliffe et al. (2020), community-based programs can be familiar and acceptable for men as they bypass barriers that stem from traditional clinical interactions. Embedding mental health promotion within existing communities is especially important as it provides a safe space to talk about issues of concern whilst engaging in social activities with individuals who share common interests, motivations, and/or qualities (Robertson et al., 2018). Key considerations include the literacy and language used by men (and reflected in programs), the need for program pacing to blend activities and talk, and matching the environment to end-user sub-groups. It was clear that men wanted opportunities to talk and, while activities were important, they craved depth of discussion. The intersections of culture and gender also highlighted place-based considerations recognising normative masculinities as geographically anchored. By extension, men aligned to, and argued against dominant masculine ideals embodying an array of configurations and contexts in those milieus.

The importance of men working ‘shoulder-to-shoulder’ in an environment that combines purposeful social activity with opportunities to debrief cannot be overstated. Participating in traditionally masculine activities provides participants permission to express

themselves openly, facilitating companionship and closeness (Milligan et al., 2016). Here we find evidence for the importance of this social infrastructure, scaffolded by men's common interests and hobbies, which provides the health enhancing contexts to stimulate mental health and well-being. One noteworthy program that has been successful at engaging older men in psychosocial support through building and skill sharing is the Men's Sheds movement (Milligan et al., 2016). Synthesising elements of effective program design and delivery is important for adaptation to other contexts and populations of men. We find support for this approach with young and middle-aged men suggesting a myriad of social settings that may be leveraged to engage men in mental health promotion (e.g., sport, hobbies, clubs, social settings). While the demand is clearly there for men's programs, gender-sensitive designs and evaluations are key (Struik et al., 2019). Recommended in this regard are concerted consistent efforts for building community-based men's mental health programs as a means to guide the future work of others, and ideally make possible sustainable and scaled programs.

**Anchoring mental health promotion to lifestyle interventions**

Lifestyle interventions provide another opportunity to target men's mental health promotion. Interest in developing gender-sensitised interventions that engage and retain men have been successful at promoting weight loss, healthy eating, and physical activity (Bottorff et al., 2015; Sharp, Spence, et al., 2020; Young et al., 2012). To date, the large majority of lifestyle interventions have only targeted mental health as an adjunct outcome to changes in physical activity and/or diet. A recent systemic review by Drew et al. (2020) revealed that lifestyle interventions demonstrated potential for improvements to men's mental health-related quality of life, self-esteem, and positive affect. However, none of the included studies targeted mental health as a primary outcome. Further, the authors noted that very few studies included any direct mental health support within the lifestyle intervention, relying on the benefits of

increased physical activity and improved diet to influence participants mental health outcomes (Drew et al., 2020).

Our findings point directly to opportunities within these lifestyle programs to bundle mental health promotion with other health promoting behaviours. Within these settings, it is possible to take full advantage of men's openness to new information, experiences and skill-building related to health-enhancing behaviours to introduce strategies for mental well-being. For example, following a 12-week lifestyle intervention, participants reported that, as the program progressed, they began to consider healthy changes and behaviours that they would not have previously considered to be acceptable (Sharp et al., 2018). By coupling mental health promotion to other lifestyle changes, tips and tools for promoting mental well-being can be enveloped with physical activity and healthy eating in ways to integrate and evaluate men's mental well-being. Here participants' suggestions regarding tools and tactics can afford men autonomy in selecting *their* strategies for advancing mental health. This performativity and self-reliance, as a normative masculine frame, can also destigmatise by avoiding treatment labels and the implicit indebtedness of *receiving* professional help. In this regard, tools and tactics demand action, involvement, and skill – and made available through lobbying men to take up these challenges are the visibility of a hard work-ethic and investment in effective self-management. Notwithstanding the benefits of integrating mental health into lifestyle programs, supportive environments are also needed to enable and support men's mental health. In this regard, although workplace health promotion programs tailored for men demonstrate health behaviour changes confirming work as an important setting for inserting mental health promotion (Caperchione et al., 2016; Seaton, Bottorff, Oliffe, et al., 2017), formal policies and practices are key to norming conversations and help-seeking among working men.

**Strengths and Limitations**

These findings should be considered in light of the strengths and limitations of this research. Notably, the present study was strengthened by the relatively large sample of participants, including both men and stakeholders working in men's health, representing diverse backgrounds, experiences and interests. As the sample of men were invited on the pretense of discussing overall health, a broader array of perspectives regarding mental health may have been captured. These strengths notwithstanding, the collective nature of focus groups may result in some participant voices not being heard, including those participants who may have been reticent to disclose personal information to the group. Being aware of these issues, the researchers attempted to be as inclusive and open as possible, establishing a comfortable discussion environment and giving all participants a voice during discussions.

The current study cohort was drawn from a single urban location which may mean the findings are contextually tied to the specific locale and not necessarily reflective of men in other regions, including rural and remote locations where traditional masculine norms may be upheld with greater resolve. Additionally, the sample was comprised mainly of University educated men (73%) with a moderate-to-high level of income, thus in future it is important to include men from less educated/affluent and socially diverse groups. Moreover, it is important to incorporate men from other ethnic/cultural backgrounds both within the Australian context (e.g., Aboriginal and Torres Strait Islander men) and beyond. Overall, the current (de)limitations provide some direction for future research which might usefully include larger longitudinal and mixed methods studies to distil with greater certainty the similarities and differences for men's health practices in these contexts.

## 3.6 Conclusion

The findings from the current study demonstrate the need to provide better direction for gender-sensitised approaches to community-based mental health promotion for men.

Especially evident was the influence of gender roles, relations and identities as well as the importance of framing conversations in ways that resonate with potential end users. Clearly strategies are needed that address, or at least consider, men's restrictive emotionality and emotional awareness, the interiority of mental health, and stigmatisation of mental health promotion and practices. Highlighted throughout, from both men and stakeholders, was the significance of advancing men's mental health and wellbeing by anchoring mental health promotion to acceptable locations, contexts and behaviours. In doing so, programs and services may begin to align with gender-specific and -transformative approaches by considering men's specific needs and addressing harmful gender norms, roles and relations (World Health Organization, 2011). Accordingly, the effectiveness of potential remedies is deeply reliant on knowing, engaging, and working with – as well as reworking – some masculine ideals about how men engage in mental health promotion in specific locales.

# CHAPTER 4. Connecting Australian masculinities and culture to mental health: Men's perspectives and experiences

## 4.1 Abstract

Masculinities and culture are intertwined and have significant implications for men's mental health. This study aimed to explore influences of Australian masculinities and culture on men's mental health. Five focus groups were conducted with men (N=43) living in New South Wales, Australia. Three overarching themes were identified; 1) A history of strength and self-reliance: *taketh as we are, she'll be right*, (2) Social and geographical divides: *surrounded by men but never actually connecting*, and (3) Male socialisation and generational dissidence: *not getting the wisdom from the men that have gone before me*. Participants' perspectives and experiences offer a reference point and lens for understanding challenges and enhancing efforts to promote Australian men's mental health. Gender transformative program strategies are proposed to promote men's mental health and norm help-seeking.

## 4.2 Introduction

Culture refers to the dynamic traditions, beliefs, and habits of a group, and remains an influential contributor to masculine identity that helps to shape the norms, expectations, and practices in men's lives (Griffith, 2012). Although Australia is socially and culturally diverse, prevailing attitudes and beliefs are widely held (and policed) as formations of normative masculinities. Moreover, Australian masculine cultures and identities are steeped in tradition, context dependant and somewhat contradictory in their transformative potential. From its colonial, pioneering and Australian and New Zealand Arms Corps (ANZAC) histories that shaped the bushman ethos and early military engagements, to more recent beach and sporting identities, Australia's cultures are deeply entwined with these idealised masculinities. Characteristics of strength and self-reliance amid maintaining an easy-going persona, all normative masculine projects, are deeply prized and defended to the extent that vulnerabilities (such as having a mental health challenge and/or needing help) are steadfastly concealed and/or denied (Connell, 2005; Nichols & Stahl, 2017; Seidler et al., 2016). Australia's idealised

masculinities are somewhat iconic, a consistent motif that transcends domestic and international borders in popular culture, media, and vernacular. For example, The Aussie bloke is personified as laid-back and confident, with a sarcastic, self-effacing sense of humour who speaks his mind; The Athlete is a sportsman embodying roughness, heterosexuality, and loyalty; and The Larrikin is a good-natured, beer-swilling jokester with an easy-going, down-to-earth attitude (Adegbosin et al., 2019). Waling (2019) suggests that these idealised masculine tropes are less a reflection of who Australian men are, and more a reflection of how they like to conceive of themselves.

Irrespective of the legitimacy - parody continuum of these likeable Australian male characters, there are strong expectations that individually and as a collective they are decisive and rational in solving (or concealing) their own problems. Normative masculinities that influence men's mental health perspectives and experiences include strength, self-reliance, stoicism, and competitiveness (Seidler et al., 2016). Australia's egalitarianism, with its deeply classed underpinnings render masculinities much contested, wherein the willingness to stoush on differing viewpoints is understood (and deeply valued) as what men do (Conway, 1985). As such, mental health challenges and/or seeking mental health help might be seen (and experienced) as giving up or giving in, to the extent that many men cover with maladaptive behaviours (e.g., trivialising problems) to pass or refute any marginalisation invoked (or implied) by others (Seidler, Rice, Dhillon, & Herrman, 2019). For example, many men learn to embody restrictive emotionality from a young age through assertions that 'boys don't cry', and an extension of this socialisation manifests as boys and men denying vulnerabilities and/or reticence for seeking mental health care. Indeed, men's embodiment of normative masculinities, and their intersection with manly identities, can negatively impact mental health and help-seeking behaviour (Staiger et al., 2020; Vogel & Heath, 2016). Moreover, Australia's masculine cultures may increase the risk for maladaptive coping, including risk-taking and

alcohol/substance use as a form of blunting and/or self-medicating mental health challenges (De Visser & Smith, 2007; Ramirez & Badger, 2014). In this space however, some men transform (rather than transgress) such masculinities to position admitting vulnerabilities as courageous and mental health help-seeking as a strength-based project (Oliffe, Rice, et al., 2019).

Mental health, as distinct from mental illness, incorporates emotional, psychological, and social well-being (Keyes, 2002). Considerable research has been conducted examining factors that threaten men's mental health. For example, factors underpinning men's social isolation such as thwarted belonging, feeling like a burden, or social 'othering' can fuel detachment from mental health services (Oliffe, Broom, et al., 2019). Mental health promotion then, is idealised as an enabling process that considers mental health a resource, and focuses on men building competences, resources, and strengths (Griffith et al., 2016; Whitley, 2018). A cornerstone to men's mental health promotion is social connectedness and norming help-seeking behaviours (Griffith et al., 2019). In particular, encouraging men's social connection through informal avenues, including community-based men's mental health programs has been identified as an important strategy for advancing the mental health of men and their families (Ogrodniczuk, Oliffe, Kuhl, & Gross, 2016). That said, it is often within these spaces that normative masculine cultures are upheld and perpetuated. Therefore, examining Australian masculinities and cultures in these contexts and arenas is critical to understanding men's mental health perspectives and experiences, and transitioning those insights toward gender transformative mental health promotion programs.

Masculinities refer to a plurality of behaviours that influence how men think and act in relation to their view of what it means to 'be a man'. Since Connell's (1987) early work on hegemonic masculinity, critical masculinities studies have applied sets of models or typographies to men, and explored the extent to which men uphold or reject specific masculine

behaviours and ideals (Connell, 1995; Mac an Ghaill, 1996; Waling, 2019). Within the syntheses of masculinity work in men's mental health are nuances of social agency and context (O'Brien et al., 2005). In this way, contemporary masculinities research does not portray men as victims of (or to) their masculinity; rather men are understood as social agents that engage with and actively produce what masculinity means to them (Connell, 1995; Mac an Ghaill, 1996; Waling, 2019). Masculinities research has also shifted perspectives from masculinity being a rigid set of characteristics or traits that all men possess (Connell, 2005). Using a gender relations approach, Connell (2005) suggested that masculinities are produced and reproduced through everyday social practices, and that multiple masculinities exist, arising from the complex interactions of agency, gender and socio-cultural influences. Emergent here is the plurality of masculinities existing contextually along a complex continuum, wherein identities, roles and relations shape and are shaped by environment and experience (Griffith et al., 2016). Connell (2005) reminds us of the persistent influence of culture, and argues that gender done well explores the interconnections with culture and social class. Building on this point, it is important to explore the diversity in Australian men's masculine behaviours that may arise within and across locales, communities, and cultures to offer nuanced accounts of men's gender roles and relations and the implications for their mental health (Connell, 1998; Elliott, 2019). The aim of this study was to explore influences of Australian masculinities and culture on men's mental health.

## 4.3 Methods

### Study Design

Participants were recruited as part of a larger study aimed at developing a gender-transformative mental health promotion intervention for men living in Australia. While men's perspectives of related health behaviours, including physical activity and diet, were also of interest to the researchers, this study explored the connections between Australian

masculinities and culture in men's mental health. Participants were drawn from a community sample of men living in the Greater Sydney and Blue Mountains regions of New South Wales, Australia. The study was approved by the Human Research Ethics Committee (#ETH18-3184) at the University of Technology Sydney and all participants provided written informed consent prior to participation.

Five focus groups (6-10 men per group) were conducted between July 2019 and November 2019. Participants were asked to comment on their experiences of masculinity, culture, and mental health. A semi-structured focus group guide was developed to explore participants' perceptions and experiences comprising of open-ended questions to stimulate dialogue, encourage storytelling and interaction between participants without influencing or leading responses. Focus groups were audio recorded and transcribed verbatim.

**Participants**

Participants included 43 men (M=50.7 years; SD=13.8) interested in making healthy lifestyle changes. Men were recruited using print posters, online social media (e.g., Twitter posts, Facebook ads), and information distributed through men's groups/organisations in the community, with advertisements inviting men to "discuss their motivations, interest, and challenges when it comes to staying happy and healthy". Prior to commencing the focus groups, men completed a brief descriptive questionnaire including demographic information (e.g., education, employment, income).

Participants were married (n=27, 63%), held a university degree (n=31, 72%), worked full time (n=25, 58%), and had an annual household income ≥$100,000 (n=24, 56%). Further, 77% (n=33) of participants self-reported living in Australia for their entire lives, while 23% (n=10) reported immigrating to Australia or having previously lived abroad. Among those that immigrated to Australia or lived abroad for a significant portion of time, participants reported having lived in Australia on average 28.8±12.3 years (range 7-49). A total of 74% (n=32) of

participants lived in urban areas and 26% (n=11) in suburban areas. Participant details are presented in Table 5.

*Table 5. Participant characteristics*

| | **Men (N=43)** n (%) |
|---|---|
| **Age** | |
| Mean (SD; range: 22-75 years) | 50.65 (13.75) |
| **Highest Level of Education** | |
| Less than year 12 or equivalent | 1 (2) |
| Year 12 or equivalent | 2 (5) |
| Associate diploma or certificate | 9 (31) |
| University degree | 31 (72) |
| **Marital Status** | |
| Single/Never married | 7 (16) |
| Married/domestic partnership | 27 (63) |
| Widowed | 1 (2) |
| Divorced | 6 (14) |
| Separated | 2 (5) |
| **Employment Status** | |
| Full time work | 25 (58) |
| Part time work | 11 (26) |
| Retired | 4 (9) |
| Unemployed | 2 (5) |
| **Household Income ($)** | |
| Less than $25,000 | 4 (9) |
| 25,000 to 34,999 | 1 (2) |
| 35,000 to 49,999 | 1 (2) |
| 50,000 to 74,999 | 4 (9) |
| 75,000 to 99,999 | 5 (12) |
| 100,000 to $124,999 | 7 (16) |
| More than $125,000 | 17 (40) |
| Prefer not to say | 3 (7) |

**Analysis**

We analysed the focus group data using inductive thematic analysis, as detailed by Braun and Clarke (2006), whereby patterns in the data were identified and described to explore the connections between Australian masculinities and culture in men's mental health. This process began with two members of the research team independently reading and rereading the transcripts to become familiar with the data and identify preliminary patterns and descriptive

codes to fracture the data. Open coding was then used to identify and allocate text segments that related to the influences of Australian masculinities and culture on men's mental health. Codes were grouped into categories to produce a coding framework that reflected the main topics discussed during the focus groups. Codes and categories were continually refined, with some codes being subsumed and collapsed while others were expanded to reflect major findings. Coded data were reviewed and interpreted using the masculinities framework, examining similarities and differences within and across the focus groups to determine overarching themes reflecting the main findings. This process of continuous analysis allowed for the generation of clear definitions and names for each theme that looked beyond what was said to enable a more in-depth understanding of the meaning of the participants' experiences and perspectives (Clarke & Braun, 2017). All data were managed using Nvivo12. Study rigor was supported by the use of, a) purposeful sampling, b) field notes taken during focus groups, c) facilitator debriefs with the research team following each focus group, d) discussions between researchers to reach consensus for findings, for which analytic decisions were documented to provide an audit trail, and e) researcher selection of representative examples and quotes from the data to support the findings.

**Interpretation**

Data were interpreted using Connell's (2005) masculinities framework to explore how dynamic cultural factors shape and are shaped by the mental health perspectives and experiences in Australian men's lives as well as how men determined strategies for recreating, reimagining and redefining masculinities. Through this approach, we were able to simultaneously examine the social and mental health effects of identity and context to reflect the lived experiences of men living in Australia. Framing complicit, marginalised and subordinate masculinities (Connell, 2005) enabled us to interpret and account for men's varied contexts in transitioning descriptive behaviours to consider the agency-structure interactions

and connections between gender roles, relations and identities, and men's mental health. Finally, Connell's (2005) framework enabled us to better understand how gender and culture are diversely connected to shape participant's mental health behaviours including how men in Australia can create new normative masculinities for themselves.

## 4.4 Findings

Three overarching themes were inductively derived: (1) A history of strength and self-reliance: *taketh as we are, she'll be right*, (2) Social and geographical divides: *surrounded by men but never actually connecting*, and (3) Male socialisation and generational dissidence: *not getting the wisdom from the men that have gone before me*. These themes are detailed below and accompanied by illustrative quotes.

**A history of strength and self-reliance:** *taketh as we are, she'll be right*

Participants identified the importance of recognising (and ideally embodying) normative gendered practices while operating within Australian cultures. Prized in this respect was strength and self-reliance – characteristics defended unapologetically with irreverence for men who fell short of those ideals. That said, participants identified a misalignment between traditional Australian masculine identities and mental health, highlighting tensions between normative masculinities and men's mental health perspectives and experiences. Participants discussed how prevailing perspectives of masculinity had historical relevance, stemming from Australia's vast geography, political history, and rugged outdoors. Implicated as challenges for men, participants believed that there was a strong sense that men in Australia must be durable and resilient, which influenced how they approached their mental health. One participant explained:

> *I don't know if it goes back to the convict background, or the pioneering background of Australia, but there is definitely a stronger sense of independence…it's bloke's*

*responsibility to look after their health and its bloke's fault that their health ain't so good.*

Offered here were origins of Anglo-Celtic Australian masculinities, stemming from the hardships early settlers experienced coping with the unforgiving conditions of frontier life that demanded grit and self-reliance. In referencing (and perhaps revering) this cultural context, it was clear that Australian histories carried forward to explain many elements of contemporary mental health behaviours among men. For example, positioning mental health as a personal responsibility suggests that experiencing mental health challenges reflects personal folly and self-containment rather than biological imbalances requiring medical treatment. Further, men's adoration for these cultural characters and their tales of overcoming great hardships are relative (and benchmark) in summonsing internal grit and preventing men's help-seeking. Another participant explained how Australia's continental isolation from other countries contributed to the belief that Australian men must be decisive and unapologetic for who they are, including their (un)willingness to concede mental health challenges:

*From the history of how this country was formed: 'taketh as we are'. We are geographically isolated, if you don't like it, you've travelled a long way, this is what we are, this is how you take it, kind of thing.*

Affirmed by this participant were normative cultural frames of masculinity that policed and 'othered' outsiders who critiqued and/or failed to adapt (or be complicit) in sustaining such dominant ideals. This assertion nestles a natural resilience for mental health, and a taken-for-grantedness that men will be unaffected (or stoically endure hardship). In this sense, lack of reflection and belief that men need to be self-reliant in dealing with *their* problems limited opportunities for help-seeking. Further, while many men acknowledged that these values worked in opposition to supporting men's mental health, it was clear that identities were enmeshed with some of these colourful accounts of Australian history.

A cultural idiom that was repeated throughout conversations and aligns with stereotypes of the laidback Aussie bloke was the phrase, "*she'll be right*". The assumption of this statement is that, whatever is wrong will correct itself in time – as such issues might be best ignored or left unattended. This response is related men's "wait-and-see" attitude towards mental health (O'Loughlin et al., 2011) and signals a willingness to accept suboptimal situations rather than seek a more desirable solution. Outwardly, it conveys self-assuredness to others that you are worry-free and upbeat (rather than beat up). One participant explained how an easy-going attitude could be operationalised as apathy and inaction toward promoting one's mental health:

> *I think an Australian attitude towards a lot of things, health included, is it'll be okay, like it'll be right, like a little bit of head in the sand kind of attitude. So I think we don't tend to look at health until it actually becomes a problem. We don't necessarily have to worry about it.*

In subtly emphasising his alignment with the optimistic (and perhaps naive) dimensions of Australian culture, this participant signalled towards this disposition as explaining away why men do not worry or look for health problems or symptoms – and by extension need to seek help. As before, there was a nod to a cultural collective implying that Australian men can look after themselves and do not need support. Others argued that "*she'll be right*" had positive connotations that reflected hopefulness and a stress-free attitude. One participant explained that he believed the phrase reflected an optimistic outlook on life:

> *I also wanted to talk from a positive psychology point of view that 'she'll be right' is also a hopeful statement. Assuming things will be okay even though the facts would suggest otherwise. I'm not sure if it's a head in the sand or also a positive expectation.*

Within this exchange, tensions between seeing the bright side and hiding from ones' problems emerged. Differentiating from invincibility, there was an undertone of self-assuredness that

Australian men minimise and/or stoically sustain mental health challenges to some extent with their easy-goingness.

In summary, a *history of strength and self-reliance* revealed how deeply rooted masculine and cultural norms coupled strength and self-reliance with an easy-going attitude to guard as well as govern men's mental health behaviours. Although many participants acknowledged the limits and shortfalls of these normative masculinities for their mental health, most were complicit is sustaining those ideals. Aligning to these cultural histories and traditions garnered pride and belonging but also drove men's mental health challenges inward with a reticence for seeking help, even when their resiliencies failed.

**Social and geographical divides:** *surrounded by men but never actually connecting*

Contextualising and perhaps contesting the normative demands for men to be self-reliant in solving their own mental health challenges were critiques of the faux and falseness of Australian mateship. Seemingly contradictory to strength and self-reliance were participants' subjectivities about the importance of genuine social connectedness and comradery. Connecting with other men was viewed as one of the most important aspects supporting men's mental health, and was referred to as *an outlet, release,* or *opportunity to recharge*. Here, participants discussed the concept of mateship – a cultural idiom that is unique to Australia, referring to the social bounty and bond between men, underscored by qualities of friendship, loyalty, and equality (Dyrenfurth, 2015). For these men, mateship was associated with selflessness, belonging, and mutual help. However, some participants raised concerns, suggesting that the mateship cultures limited opportunities for emotional support or deep connection:

> *I think it's the big issue that mates don't really talk about the deeper stuff, even though there is that connection there, which I think is really important. I think for everybody that connection is probably one of the most vital things for our health.*

As a highly prized cultural currency, mateship was both lauded and critiqued by this participant. Herein the strength of those connections and the company of other men was normed as silently promoting mental health without explicitly discussing men's mental health challenges. Indeed, many participants interrogated cultural norms dictating that men's social connections should suffice to promote their mental health, especially given that vulnerability ridden conversations were prohibited because they would unfairly burden the best of mates. One man suggested that, "*you can be sitting around a pub drinking or TV or on the sporting field and be surrounded by men but never actually connecting"* while another stated, "*there is a negativity that if you do get sick that your mates do walk away because they can't handle you or can't see you like that."* Here the participants called into question mateship limits for self-disclosure, especially in the likelihood that vulnerabilities (synonymous with weakness) would emerge. In this example, embodying such vulnerability (and weakness) in the company of other men meant that they may be ostracised or subjected to shaming. Further, the culture of mateship might be understood as providing some men physical culture comforts (e.g., competing in team sport, paid work) but prohibiting a psychological connectedness outside of those activity driven arenas.

In addition to the social divides that governed many men's mental health behaviours, there were geographical divisions that bounded belongingness and opportunities for social connectedness. Participants explained how Australia's vast geographies and isolation demanded comradery and cooperation as a means of survival. One man explained how he was willing to engage mutual help:

> *I think once you've gone past the green belts on the coastal fringes it's actually quite inhospitable out there and a person by themselves needs other people to survive. It's a much more collective thing…Predating the dense urbanisation that happened, when we*

*were far more living off the sheep's back and being rural, you needed to trust your neighbour because you needed your neighbour as much as they needed you.*

Explained here was how remoteness demanded and fostered operational reliance's to legitimise some men's connections in Australia as necessity. Drawn on were iconic images that few urban-based men (including most participants) directly embodied. Herein Australian mateship was revered and understood from historical and rural contexts – as were the diluted forms and adaptations of mateship to more urban sprawls. Nonetheless, the normative cultural dimensions of men's mutual help that dated back to early settlers resonated with some aspects of contemporary Australia to norm men's connectedness through mental health challenges. Participants explained these values as contributing a strong sense of nationalism, regionalism and belonging alongside and intertwined with comradery between likeminded men. Evident also was a sense of pride associated with fitting into discrete geographies and milieus. For example, referenced were Australia's coastal beaches as performative sites for masculinity and culture, inclusive of the young and fit surf/lifesavers that inhabit them, as well as the topography of the beaches and inlets that mark the boundaries between suburbs. Implicit were hegemonic masculinities in which participants highlighted challenges with not fitting in and the ridicule associated with being seen and named as different. For example, in some regions being able to swim was 'natural' - something that everyone learned to do:

*Where I was growing up, everybody went down to the beach and I was in the Nippers. If you found somebody who didn't know how to swim, it was sort of like finding someone who didn't know how to drive a car. How do you get by? What happened to you that you lost that opportunity?*

*What's wrong with you?!*

*Shaming things…you have to drive and you have to swim!*

Culturally normed here were masculine sub-groups - beach-savvy, car driving Australian males, and the dismay assigned to those who were without those embodiments and materials. Herein the independence afforded by driving vast geographies signalled economic and perhaps racial divides, whereby having the skills and understanding to navigate (and master) the surf aligned with some men's cultural and gendered ideals. Marginalised here were those men without the background and means to access the costal fringes. Building on this example, mateship was clearly delineated and divided by geographies with the potential for culture clashes (coastal local versus day-tripper versus newly arrived or departed resident) in the doing of gender. While these milieus signal a plurality of masculinities, men who were unable to find their fit or "*tribe"* faced significant challenges with belonging and isolation.

The *social and geographical divides* findings revealed how Australia's geographies peeled an assortment of mateship cultures which varied in terms of their authentic connectedness and divisiveness and potential to other. While overarching were the cultural norms of Australian mateship, the mental health benefits were implied and did not seem to extend to address men's mental health challenges. Sharing or showing such vulnerabilities risked subordinate or marginalised masculinity and thwarted belongingness. While many participants touted these cultural contexts as opportunities for men to get together and connect, there was clearly some hollowness in as well as ill-fitting with these geographic moulds.

**Male socialisation and generational dissidence:** *not getting the wisdom from the men that have gone before me*

Idealised Australian masculinities highlighted men as *being useful, a breadwinner, helping others, outdoorsy, rugged and adventurous*. Participants discussed how these characteristics were underscored by a *culture of invincibility* that accentuated (and exaggerated) normative masculine stoicism, dominance and aggression. While men's alignments to these ideals varied, participants discussed the influence of this cultural hangover

in how men were socialised to align to these norms in rejecting emotionality. Relating to men's mental health, male socialisation often dictated how men connected, idealising men's strength and emotional control – especially in the company of other men. One man explained how he was raised to hide potential weaknesses by expressing anger:

> *The culture that was drilled into me from a young age which was around emotional safety, don't speak out, don't reveal weakness. The culture is one of ridicule that I grew up in for the first 30 years of my life, very strong ridicule about expressing any emotion, anything emotional, full stop. Apart from anger. Anger was the only legitimate emotion that I could express, that was approved of by most men that I grew up with. I can get angry, and I could have a bit of fun, but apart from that I was told "shut up, come sit down".*

Ridicule, as described by the participant, is reflective of teasing and policing cultures that point out (and correct) transgressions of normative masculinities. While teasing can denote inclusive collegial practices, it is also routinely used to enforce masculine and cultural norms. Moreover, anger is legitimatised and affirmed as a manly loss of control for purging pent-up emotions and contesting any marginalising effects invoked by others. Herein, anger might be understood as process and product in terms of how men express dissatisfaction, contest being marginalised and settle disagreements. However, as a response, anger may also conflate mental health challenges (e.g., anxiety and/or depressive symptoms) to shame and isolate men without other avenues for expressing and addressing their distress.

Some participants described how, as adults, they actively resisted normative masculine perceptions and practices, identifying adverse implications to their mental health. It was only through time and experience that men believed that they gained the ability to reflect on and challenge these normative masculinities. However, while participants believed that prevailing culture and gender norms influenced and enforced generationally, they pointed to

intergenerational disconnects that could mute important communications and knowledge sharing between men. One man explained how this could fuel conflict and dislocating forces between generations:

> *So I think going deeper down this connection path is also a cross-generational component that is causing a lot of anxiety and challenges around health. I'm not getting the wisdom from the men that have gone before me, and I'm also not sharing the state of the world from where I am and what I see. That's putting an extra stress on who I'm looking up to and who is supporting me when I'm going through challenges as a man.*

Here the participant described how generational normative masculinities could fail to educate men about their mental health challenges and strategies for promoting their mental health. This disconnect, in and of itself, could also be injurious to men's mental health.

In seeming opposition to the usual stoic practices around mental health, some men provided examples where progressive interpretations of masculinities allowed for mental health promoting behaviours. In particular, these caveats came from men who had previously experienced and overcame mental health challenges. Over-riding generational disconnects, men's lived experiences afforded strength-based asset-building narratives for how they overcame their mental health challenges. One man explained how recovering from his trauma and mental health issues made him feel a responsibility to help others:

> *I feel like it's my gift. I look at my journey, I've got a lot of trauma in my life. I tried to take my life and was very lucky to live. But now I am totally grateful for that journey because I can share so much with a lot of guys. I get my mates out for a run, when I know they are struggling. I know how thick their armour is so I don't ever push too hard. For me personally, I feel like it's my responsibility to do what I can.*

Expressed here and in many men's narratives was a willingness to help, albeit with care not to disrupt normative masculinities by assigning his friends vulnerabilities and the explicit need

for help. It is perhaps that the 'success' of overcoming their own challenges afforded freedoms to disclose past struggles with mental health. Despite his willingness, the participant recognised vulnerability in his mates and discussed opening with an invitation to go for a run (i.e., typical masculine code) to inconspicuously help or introduce the idea of being helped. In this regard, the participant used normative masculinities as a frame for men's connection where doing gender together (and relying on talk) helps to connect the participant to a mate in need. While asking for help is perceived as a vulnerability, overcoming challenges demonstrates power, strength, and resolve. Paradoxically, mental health challenges only warrant narratives and exchange after they have been resolved. Regardless, there are benefits of normalising conversations that promote emotional reflexivity and frank discussions. As these men overcome adversity they felt that they were well positioned to share experience and power, whereby supporting others around them. Similarly, one father explained how he struggled to develop meaningful relations while growing up, and the deleterious effects it has had on his mental health, with his son:

> *I've got a 15-year-old son and my sense of his experience is that there's still quite a powerful notion that men have to hold their own. That vulnerability is not an asset necessarily. I've done a lot of work with him to let him know that there's some strength in communication, in vulnerability, in knowing what's going on for yourself emotional.*

In positioning communication, vulnerability and emotional reflexivity as strength-based pursuits, the father demonstrates how mental health challenges and strategies for recognising and addressing those issues are normative. Implicit also was the affirmation to work on self-identity wherein his son might be best served to independently do that work rather than blindly align to maladaptive masculine behaviours.

The m*ale socialisation and generational dissidence* findings revealed stoicism and restrictive emotionality as commonly conveyed and conditioned across generations of

Australian men. On balance, men's lived experiences of mental illness challenges and/or recognition of correcting the shortfalls in their forefathers messaging were potential avenues for norming mental health promotion and seeking help to address ever common challenges.

## 4.5 Discussion

Masculinities and cultures are contextual, and exploring these nuances can help to inform strategies for engaging Australian men in mental health promotion. In Australia, normative masculinities are heavily influenced by idealised masculine identities and cultures emphasising Anglo-Celtic, heterosexual and cisgender values. To a large extent, these perspectives permeate local and global perspectives of the iconic Australian man and, whilst many men do not fully ascribe to these practices, they hold relevance (and are complicit) throughout many aspects of their lives (Elliott, 2019; Waling, 2019). The present findings provide important insights to the connections between Australian masculinities and culture in men's mental health. Additionally, by exploring how men navigate and negotiate their mental health relative to normative Australian masculinities and cultures, transformative programs can be designed to promote men's mental health and help-seeking.

### Australian masculinities, culture, and men's mental health

Within the Australian contexts, we see the complex plurality of masculinities being heavily influenced by history and culture. In many ways, our study points towards a misalignment between society's understanding of normative masculinities and critical aspects of men's mental health, including scenarios where local, regional and national pride comply and/or defend outdated masculine stereotypes. Specifically, many participants denounced negative masculine stereotypes but not the histories, cultures, or settings that produce and perpetuate them. As such, we conclude that Australian men's experiences and accounts of masculinity are ripe with contradiction (see also Waling, 2019). For example, men in the current study framed (and operated) their masculinities in ways that demand both self-reliance

and competitiveness as well as comradery and teamwork. Meanwhile, normative masculinities associated with (Australian) sport including dominance and power seem at odds with values upheld through mateship (e.g., selflessness and comradery). Knowing such culture rules also enables men to break with some of those norms.

Taken together, our study suggests that Australian culture has, for a long time, been tension filled in navigating and combining normative masculinities and men's mental health. However, the fluidity (and plurality) of masculinities (e.g., Oliffe, Rice, et al., 2019) and the ability of some study participants to negotiate masculinities supportive of their mental health, suggest that inclusive cultural change may well occur – if the social contexts in which men operate can shape (and be shaped by) this development. This implies that increased focus should be placed on the mechanisms and processes that facilitate relevant and meaningful progressions in local social settings (e.g., addressing masculine drinking culture in Australian stadiums) (Hart, 2016). Such inclusive, practical changes may assist in influencing and shaping wider cultural norms and expectations. For example, elite sportsmen publicly acknowledging mental health challenges may reflect and further contribute to the progressive relaxation of normative masculinities prizing strength and self-reliance. Overall, we posit that aspects of gender and culture are inherently connected and intertwined, and for sustained change to occur, both must be considered. While this more holistic approach undoubtedly creates challenges for mental health practitioners and policymakers, it also provides opportunities for more gender transformative programs.

In terms of theory, Connell (2005) continues to provide a robust framework to analyse and report the mental health perspectives and experiences of men. Moreover, the temporal dimensions and the plurality for how masculinities and culture entwine were especially evident and applied as a result of integrating that theory. That said, there may be benefit to paying more research attention to the dominant discourses of masculinity that prevail to negatively influence

men's mental health including their safety in speaking up about mental health challenges (see Chandler, 2021).

**Gender-based responses to promoting men's mental health**

Our findings point to men's interest in working together (passively or actively) to support their own as well as others mental health. However, paradoxically, men's social interactions and the cultural contexts where men gather were presented by participants as both the problem as well as a potential solution to men's mental health challenges. A significant counterweight to explain men's diverse experiences is related to their sense of belonging. Franklin et al. (2019) calls for a better understanding of the cultural and performative changes that underpin men's social connection and support, including the broader social structures as well as narrower interpersonal relationships contributing to men's 'unmet belongingness needs'. Our findings suggest that, under the iconic guise of Australian 'mateship', normative masculinities constrained men who desired connections that extended beyond passive connection to address their mental health concerns. Furthermore, men risked isolation and marginalisation if they were unable to fit within the geographies that defined variations of Australian mateship.

The study findings highlight perspectives and experiences to offer a reference point and lens for enhancing and understanding the challenges to Australian men's mental health promotion. The complexities of gendered help-seeking and help-giving in the context of men's mental health are themes that have been recognised by others as important considerations in efforts to promote men's mental health in Australia (Rice, Fallon, & Bambling, 2011) and elsewhere (Robertson et al., 2018). What the current study adds is how historical influences, cultural norms and values, and contextual factors intersect to influence masculinities and men's practices in ways that have a bearing on mental health in the Australian context. In line with evidence from Europe (Gough & Novikova, 2020), our findings indicate how Australian men can reframe help-seeking to align with normative masculinities as strength-based practices

rather than a weakness (e.g., requiring strength, action and resolve) or as a means of regaining masculine capital (e.g., sharing experiences to help others). Importantly, participants also demonstrate strategies for re-defining normative, context-specific activities (e.g., drinking, sports associated with competitiveness and power) into spaces where men collectively promoted their own and others mental health. Important examples where peer-based knowledge related to cultural norms afforded men ways to connect legitimately (e.g., over coffee, during a run) to create opportunities to check in, support, and engage other men in disclosures and mutual help while reducing risks related to transgressing masculine norms. These findings speak to evidence that suggest shifts are occurring in contemporary masculinities and that younger generations are redefining masculinities to be less restrictive and rigid (Elliott, 2019; Stahl, 2020). For example, Elliott (2019) found that participants could juggle contradictory requirements of traditional or progressive forms of masculinity, including expressions of softer masculinities in their narratives of friendships. Furthermore, Flood (2018) reported that younger men held more progressive views on what it is to be a 'real man' and were less aligned to hypersexuality, rigid household roles, and the idea that men should use violence to get respect. Our findings suggest that some older men are also reflecting on misalignments between normative masculinities and their mental health behaviours and renegotiating more healthful frames of belonging, social support, and connectedness.

**Practical implications for supporting Australian men's mental health**

Given the increased interest in men's health, a growing research focus has highlighted the need for tailored interventions, aimed at engaging men across a range of mental health concerns (e.g., Rice et al., 2021; Thapliyal, Conti, Bandara, & Hay, 2020). Increasingly, gendered approaches for men's mental health are cognisant of (but not curtailed by) normative masculine values, with program elements (e.g., name, offerings, setting) seeking to align with these values. Our findings point to avenues that may be used to engage men. As indicated,

mateship is valued capital for many Australian men. Leveraging this, to deepen and strengthen meaningful connections amongst men, and broadening this to their intimate relationships, will improve social supports and assist in loosening restrictive norms supporting men to build better relationships (Oliffe et al., 2021). However, current trends suggest that men are becoming more isolated and socially disconnected than ever before. Butera (2008) found that key aspects of traditional mateship, such as group loyalty, have been dropped in contemporary iterations. As a result, men may be failing to develop the capacity to create and maintain strong bonds under new circumstances (Franklin et al., 2019). Similarly, our findings suggest that mateship may provide men with limited opportunity for emotion support or connection. Important to this work is upskilling men's ability to converse in supportive ways. Such approaches should avoid pathologising men's communication styles, instead providing opportunity to enhance listening and validation skills (as opposed to problem solving skills). Men's health charity, Movember, has developed gendered Australian resources for this, including the Speak Easy initiative (Movember, 2021b), and Movember Conversations (Movember, 2021a). Educational reform has also been highlighted as a critical step to address male socialisation skills through effective gender equity policies (Weaver-Hightower, 2008). Such approaches include engaging young men in Secondary School settings regarding the health-related harms of rigid adherence to the normative "*man-code*" which emphasises toughness and stoicism, instead emphasising the value and importance of early mental health help-seeking (King, Rice, Schlichthorst, Chondros, & Pirkis, 2020). Scaling and evaluating similar male-friendly initiatives across the age range should be an urgent priority, as this work has the scope to improve men's peer relationships, and potentially reduce preventable mortality.

Mental health stigma remains a major concern for men, and approaches to address this should be mindful of developmental and generational differences. While younger men tend to report higher rates of mental health literacy relative to older counterparts, they still experience

internal and external barriers to engaging with mental health services (Rice, Purcell, et al., 2018; Rice, Telford, Rickwood, & Parker, 2018). Targeted campaigns focussing on endorsements from well-known male sporting or gaming identities may be an effective way to normalise and reframe men's mental health help seeking. For example, Australia's Headcoach initiative from youth mental health organisation, headspace, offers a model for such work (headspace, 2019). Future work must also consider strategies that equip young men to help one another in ways that normalise, support, and affirm mutual and self-help, rather than impede it.

**Limitations**

In light of the present findings, some limitations of this research must be acknowledged. As discussed throughout, masculinities are contextual and locale specific, therefore these findings are not reflective of all men's practices and experiences in Australia. While efforts were made to recruit a diverse sample of men, encourage open discussion, and avoid stigmatisation, men who were more reluctant to discuss mental health or disclose personal experiences may have been deterred from participating. Additionally, speaker logs were not kept during the focus groups, therefore we were unable to associate participant quotes with descriptive characteristics. It is also important to note that gender and culture intersect with wider social determinants, including economic hardship, access to services, racism and discrimination against marginalised groups of men. As others have suggested (Bridges & Pascoe, 2014; Elliott, 2019), hegemonic masculinities may shift and change in response to challenges, but underlying equities will persist. Future work might look to explore Aboriginal and Torres Strait Islander, migrant, or LGBTIQ+ experiences as well as further differentiate locale and population specific patterns (e.g., rural and remote areas).

## 4.6 Conclusion

The current study offers unique insights into influences of Australian masculinities and culture on men's mental health. These findings help to illuminate the dynamic influences of gender and culture as both enhancing and limiting to men's mental health as well as their contextual and often contradictory natures. Beyond acknowledging these relationships, there is clear scope for public health initiatives, policy and community programs to directly target and address gender and culture in transformative ways that support men's mental health. While seeking out men in community-based settings has opened the door to start important conversations about mental health behaviour and help-seeking, if we truly want to make transformative changes, consideration must be made to the deeply rooted masculinities and cultures that are entangled with men's mental health.

# CHAPTER 5. Gender-tailored intervention strategies for men's mental health promotion: A participatory design process

## 5.1 Abstract

Men's mental health promotion presents unique challenges and opportunities that demand novel approaches to prevention, treatment, and management. The aim of this study was to develop intervention content and distil recommendations for the development of a gender-tailored intervention that engages men in mental health promotion. Participants were Australian men (18+ years) and stakeholders with frontline experience working in men's health. An iterative multi-phase participatory design process was undertaken including focus groups (n=43 men; 16 stakeholders), a design workshop (n=4 men; 2 stakeholders), and individual semi-structured interviews (n=21 men). Content were organised under two main topics where inductive thematic analysis identified key themes throughout the participatory design process; (1) *Communicating mental health and well-being*, revealing acceptable language and approaches for discussing mental health with men including the use of colloquial masculine language, analogy and association, and strength-based calls-to-action, and (2) *Intervention content and activities*, detailing participant generated intervention content and activities designed to create buy-in and foster spaces for open frank discussions, target multiple behaviours (e.g., physical activity and mental health) through action-oriented approaches, and include opportunities for personalisation and autonomy. Findings provide vital clues for gender-tailoring the language, setting, and community-based delivery of men's mental health programs. These findings have direct relevance to community programming and may be embedded within existing interventions or used to inform new mental health promotion programs for men.

## 5.2 Introduction

Men face barriers to mental health help-seeking that contribute to lower uptake of clinical supports and treatment (Addis, 2008; Seidler et al., 2016). Community-based interventions and programs have been identified as a promising avenue for targeting men's

mental health promotion as it may reduce barriers associated with seeking medical treatment (Robertson et al., 2018). For example, these setting help to create safe spaces, promote trust, reduce stigma and normalise engagement (Robertson et al., 2018). Evidence suggests that men will engage in programs when their specific needs and interests are considered, and when programs are delivered in 'man-friendly' settings. However, to date, the vast majority of gender-tailored lifestyle interventions have had a primary focus on physical health outcomes (e.g., physical activity, diet, weight loss) (Drew et al., 2020). While interventions have reported success for improving mental health outcomes including stress, anxiety, and depressive symptoms, these changes have been largely attributed to being an incidental result of program participation (e.g., increased physical activity improving mental well-being) and mental health is rarely addressed directly during the interventions. There is clearly scope to develop strategies for implementing mental health promotion in ways that are acceptable to men and directly target mental health outcomes (Drew et al., 2020; Sharp, Stolp, et al., 2020). In this space, community-based mental health interventions are emergent; however, this research has largely focused on identifying and treating men's mental health disorders, destigmatising mental illness, and norming men's help-seeking behaviours (Griffith et al., 2019; Whitley, 2018). A need remains to develop strategies that engage men in mental health promotion programs targeted at prevention and early intervention.

Mental health promotion strategies are diverse and may include a variety of approaches such as developing knowledge and relationships, modifying risk exposure, or strengthening the coping mechanisms of the individual. Previous research into men's experience of depression and engagement found that men preferred practical solutions from talking therapies, as opposed to 'just talking' (Emslie et al., 2007; Seidler, Rice, Ogrodniczuk, et al., 2018). Further, men tend to value skills which help them to talk and overcome emotional distress. Accordingly, intervention content and activities may be developed that support men to identify and practice

skills and strategies that promote mental health and well-being. Research is needed to help direct the design and delivery of gender-tailored intervention content that engage and retain men. By involving men in the development and decision-making process, research outcomes may better reflect men's perspectives and experiences and, ultimately, improve men's engagement, satisfaction, and acceptability of interventions.

The co-creation of knowledge involves the incorporation of evidence-based information into health promoting practices in ways that engage knowledge users to maximise potential outcomes. The effective co-creation of knowledge in health care is a nonlinear process that involves diverse consumer groups to blend research knowledge with experiential (end users and stakeholders) and contextual knowledge (Jull, Giles, & Graham, 2017). The participatory design process is often iterative and involves the creative act of *making* by way of cultural probes, idea generation, and/or prototyping (Sanders & Stappers, 2014). Sanders and Stappers (2014) provide a framework for the design process including pre-design, generative, evaluative and post-design research phases. While the research undertaken within each phase is not linear or discrete, it provides overarching aims and goals for the co-creation of knowledge. For example, pre-design and post-design research focuses on the larger context of experience to understand participants past, present, and future dreams. Generative research explores ideas, insights and concepts that may then be designed and developed. Evaluative research is used to assess the products, spaces, systems or services that have been developed. In this way, participants are actively involved in all stages of the process, ideally resulting in the development of tailored, engaging and effective tools. This form of implementation science places emphasis on being a citizen-led, democratic process, rooted in social justice (Jull et al., 2017). Further, as an increasingly popular method for engaging men in mental health discourses, participatory design approaches may help to destigmatise mental illness and

provide space for open and frank discussions about mental health (Griffith et al., 2019; Nicholas et al., 2012).

**Study context and objectives**

There is an increasing need for the development of complex interventions to address health inequities and promote healthy behaviour change in real-world contexts (O'Cathain et al., 2019). Despite a rapidly growing body of descriptive research, far fewer studies report on research dissemination and there is often a considerable lag before evidence is integrated into public policy and practice (Green, Ottoson, Garcia, & Hiatt, 2009; Lee et al., 2021). Guidelines for designing complex interventions outline a multi-step process, involving development, feasibility/piloting, evaluation, and implementation (Skivington et al., 2021). While there is no consensus on the best approach to intervention development, it is clear that development is a dynamic process that requires careful planning, creativity, and flexibility (O'Cathain et al., 2019). This research was conducted as a part of a multi-phase participatory design project to develop a gender-sensitised mental health promotion intervention for men living in Sydney, Australia. This work was informed by the authors previous work in developing community-based lifestyle interventions for men (Bottorff et al., 2016; Sharp et al., 2018; Sharp, Bottorff, et al., 2020). Process outcome data from that research highlighted that some participants developed an openness and interest in mental health promotion through program participation (Sharp, Bottorff, et al., 2020). Conceptually, this article links to work that holds a 'relational' view of health promotion and builds on findings that highlight avenues for mental health promotion interventions for men (Sharp et al., in review). The aim of this study was to develop intervention content and distil recommendations for the development and implementation of gender-tailored intervention strategies for men's mental health promotion.

## 5.3 Methods

### Study Design

A community-based participatory design approach was employed to explore participants' perceptions of men's mental health and preferences for mental health promotion (Sanders & Stappers, 2014). This study used an iterative design process in which ideas identified during the pre-design and generative phases (i.e., the fuzzy front end) were used to inform program development (e.g., design, language, content) evaluated during subsequent design phases (Sanders & Stappers, 2014). This process ensured that consumers (i.e., men and stakeholders) were embedded in the conceptual design and development of the program at all stages, and that their feedback played a major role in translating research into practice. Focus groups, a collaborative workshop, and individual interviews were used to provide opportunities for both group-based creative thinking as well as individual disclosure (Nicholas et al., 2012). Throughout the study, participants were positioned as the experts on the topic of their thoughts, needs, and interests (Oliffe & Mroz, 2005). Dynamic participatory design strategies were utilised and detailed below within each phase (Sanders, Brandt, & Binder, 2010). This study was approved by the Human Research Ethics Committee (#ETH18-3184/#ETH20-4935) and all participants provided written informed consent prior to data collection.

### Phase 1: Predesign consultation sessions

Participants included forty-three Australian men (18 years+) and sixteen stakeholders working in men's health and were recruited using a combination of targeted emails to men's organisations, support groups and men specific gatherings and meetings, Facebook advertisements, and local men's groups. In total, five focus groups with men (6-10 per group) and two focus groups with stakeholders (8 per group) were conducted, lasting approximately two hours each. Stakeholders included program facilitators, community managers,

health/lifestyle coaches (e.g., exercise physiologist, personal trainer), motivational speakers, and spokesperson/advocates.

A semi-structured interview guide was developed to explore the socio-cultural needs, preferences, and interests of Australian men concerning physical activity, healthy eating, and mental health and to explore how these factors could be incorporated into a gender-sensitised health promotion program for Australian men. Open-ended questions were used to stimulate dialogue, promote interaction between participants, and encourage participant self-disclosure without unduly influencing or leading responses. Interactive activities were interspersed throughout the discussion. For example, participants were asked to design an advertisement or slogan that they think would resonate with men and that would encourage them to sign up for a health promotion program. The facilitated discussion focused on the following topics: perspectives and influences on men's mental health and help-seeking, current health promotion programs for men, recruiting Australian men, and avenues for engaging men in mental health promotion. Data collected during the focus groups regarding the development of intervention content was collated, analysed, and are presented as they relate to the development of mental health promotion content and resources. Additional insights from the focus groups exploring Australian masculinities, culture, and men's mental health promotion have been published elsewhere (Sharp et al., in review).

**Phase 2: Generative design workshop**

A sub-sample of men (n=4) and stakeholders (n=2) who participated in the focus groups were invited to attend a half-day (approx. 4 hours) design workshop. Focus group participants were purposefully selected based on their interest in the proposed intervention framework (i.e., 12-week group-based program) and availability to attend the workshop. Activities were developed to generate concepts for the ideal program experience, and further explore ideas and suggestions related to the design, language, and content of the program, as generated in Phase

1. Broader socio-cultural probes regarding men's perceptions and experiences with mental health, identified in Phase 1, were also synthesised and presented to Phase 2 workshop participants for additional feedback. Participants were engaged in discussion and guided through a series of activities that included individual reflection, collaborative ideation, breakout groups, voting, and paper prototyping. Participants were facilitated in generating ideas for the overall delivery of the intervention program including activities, educational information, and group discussions as well as the 'look and feel' of program materials (e.g., images, colours, and language). As part of the generative process, participants were asked to share ideas and suggestions to better address gender-related factors that challenge metal health promotion. Sources of data collected during Phase 2 included participant vote counts, notes, sketches, and mock-ups of intervention content, slogans, and activities.

**Phase 3: Prototype Evaluation**

From the data collected during Phase 1 and 2, prototypes of mental health promotion intervention resources were developed with specific consideration to the design, content, and delivery of information. A sample resource package was created that included top 10 tips, educational awareness materials, and facts about mental health. Additionally, sample intervention activities were developed and described as "delivery note" that detailed how a facilitator may deliver mental health promotion activities. Sample resources and delivery notes are available in Appendix B.

Men who had registered to participate in a healthy lifestyle intervention targeted at physical activity, health eating, and mental health were invited to participate in a brief 30-minute telephone interview prior to program commencement. Eligible participants included 41 men who met eligibility criteria and registered for the intervention trial (e.g., over-weight, inactive men, 35-65 years). Potential participants were recruited via email invitation, of which 21 individuals responded. Participants were sent an email that included prototypes of the

potential program content. Sample resources included educational information, activities, and discussion topics. A semi-structured interview guide was developed to evaluate the content and elicit participants' feedback on the usefulness, usability, and desirability of the content and identify potential problems and delivery pitfalls.

**Data Analysis**

Each phase was audio recorded and transcribed. All data, including transcripts and participant generated artifacts (e.g., text and imagery), were managed using Nvivo 12 (QSR International). Thematic analysis was used, as detailed by Braun and Clarke (2006), including familiarization with data, generating initial codes, allocating data segments to the codes, sorting codes to identify potential themes, reviewing themes to determine if they worked in relation to the data, and naming and refining the themes. Following Phase 1, findings were collated as they relate to specific aspects of intervention design and delivery and thematic analysis was used to identify patterns in the data and interpret various aspects specific to the research topic. By organising the data in this manner, we were able to extract interventions content and recommendations while analysing more tacit meanings in participants' responses, thus adding the advantages of the subtlety and complexity of phenomenological pursuits (Harper & Thompson, 2011). Phase 2 source documents (e.g., vote counts, sketches, mock-ups) were analysed deductively as they related to communication mental health and intervention content. Following each subsequent phase (i.e., Phase 2 and 3), codes were continually refined, examining similarities and differences within and among each phase, with some codes being subsumed and collapsed while others were expanded to reflect major findings. Important insights were described and underpinned the development of overarching themes, consistent across all phases, that relate to the design and delivery of mental health promotion programs.

## 5.4 Findings

**Participants**

A total of 80 participants took part in the study including fifty-nine (i.e., 43 men and 16 stakeholders) in Phase 1, six (i.e., 4 men and 2 stakeholders from Phase 1) in Phase 2, and twenty-one (21 men) in Phase 3. Characteristics of men who participated in Phase 1 and 3 are provided in Table 6. Stakeholders in Phase 1 worked at commercial health clubs (n=6), non-profit men's organisations (n=5), professional sports organisations (n=3), and academic institutions (n=2). Stakeholders self-reported roles included program facilitator, community engagement manager, health/lifestyle coach (e.g., exercise physiologist, personal trainer), motivational speaker, spokesperson/advocate, and researcher. All stakeholders were men.

*Table 6. Participant characteristics*

| | **Phase 1 Men (n=43)** | **Phase 3 Men (n=21)** |
|---|---|---|
| **Age** | | |
| Mean (SD) | 50.65 (13.75) | 54.52 (7.08) |
| Range (years) | 22- 75 | 40- 64 |
| **Highest Level of Education** [n (%)] | | |
| Less than year 12 or equivalent | 1 (2) | 1 (5) |
| Year 12 or equivalent | 2 (5) | 1 (5) |
| Associate diploma or certificate | 9 (31) | 5 (24) |
| University degree | 31 (72) | 14 (67) |
| **Marital Status** [n (%)] | | |
| Single/Never married | 7 (16) | 2 (9.5) |
| Married/domestic partnership | 27 (63) | 17 (81) |
| Widowed | 1 (2) | 0 (0) |
| Divorced | 6 (14) | 2 (9.5) |
| Separated | 2 (5) | 0 (0) |
| **Employment Status** [n (%)] | | |
| Full time work | 25 (58) | 17 (81) |
| Part time work | 11 (26) | 2 (9.5) |
| Retired | 4 (9) | 2 (9.5) |
| Unemployed | 2 (5) | 0 (0) |
| **Household Income** [n (%)] | | |
| Less than $25,000 | 4 (9) | 0 (0) |
| 25,000 to 34,999 | 1 (2) | 0 (0) |
| 35,000 to 49,999 | 1 (2) | 1 (2) |
| 50,000 to 74,999 | 4 (9) | 0 (0) |
| 75,000 to 99,999 | 5 (12) | 3 (14) |
| 100,000 to $124,999 | 7 (16) | 3 (14) |
| More than $125,000 | 17 (40) | 14 (67) |
| Prefer not to say | 3 (7) | 0 (0) |

Two main topics were identified and associated themes were coded as they relate to the participatory design process: (1) Communicating mental health and well-being, and (2) Intervention content and activities. The subsequent findings reflect themes in the data across developed across all three phases of the study. As such, illustrative quotes have been incorporated from each phase of the study.

**Communicating mental health and well-being**

Considerations were made as to how men discussed concepts of mental health and well-being. Participants were asked to identify acceptable language and approaches for discussing mental health with men. Acceptable language and phrases for communicating mental health with men are detailed in Table 7. Insights and considerations for the use of gendered language were distilled into three subthemes including: (1) *Colloquial masculine language*; (2) *Analogy and association*; and (3) *Strength-based calls-to-action*.

*Table 7. Acceptability of language to describe mental health and well-being*

| **Descriptions of mental health promotion / calls to action** | **Descriptions of positive affect** | **Descriptions of negative affect** |
|---|---|---|
| • *Recognize, connect, and recharge*<br>• *Building resilience*<br>• *Having an outlet*<br>• *Get the monkey off your back*<br>• *Flex your mind/brain*<br>• *Exercise your mind*<br>• *Mental fitness*<br>• *Tune up*<br>• *Personal space/time*<br>• *Growth*<br>• *Depth*<br>• *Fuelling your mind*<br>• *Being real/raw*<br>• *Head fit*<br>• *Grab your life back*<br>• *Improve overall performance*<br>• *Complete health* | • *Grounded*<br>• *Present*<br>• *Balanced*<br>• *Coping*<br>• *Happy*<br>• *Stable*<br>• *Feeling on top*<br>• *Relaxed* | • *Stress*<br>• *Low mood*<br>• *Not quite there*<br>• *Struggling a bit*<br>• *Feeling flat*<br>• *Depressed*<br>• *Procrastinating*<br>• *Lethargic*<br>• *Tense/tight*<br>• *Roadblocks*<br>• *Overwhelmed* |

***Colloquial masculine language.*** The language used to discuss mental health was identified as an important consideration for engaging men in mental health promotion as certain terms and phrases had negative implications or connotations. For example, common medicalised terms, including *mental health,* were negatively associated with clinical treatment and a loss of masculine capitol (e.g., feelings of inadequacy, loss of autonomy). Similarly, *well-being*, *meditation* and *mindfulness* were perceived as intangible and feminine practices. Participants in all phases were more likely to focus on physical manifestations of mental health such as energy levels (e.g., *lethargic, feeling flat, low mood*) and somatic sensations (e.g., muscular tension/relaxation). Acceptable psychosocial language included *depressed, stressed, struggling,* and *overwhelmed.*

To engage men in mental health promotion, language was important to signal an invitation to be open and frank discussions about mental health. For example, participants chose language that was determined to be casual, conversational and not associated with mental health stigma to describe spaces and activities that supported their mental health including *recharge, resilience, balance, grounded,* and *outlet*. Although some men cautioned against phrases that included use of the term *mental*, it was generally agreed that *mental fitness* was suitable as a performance-based term. One man in Phase 3 described his perspectives of the term *mental fitness* in the prototypes;

> *I think the language is really important and mental fitness is a really good way of saying that because, sport is not a big thing for me, but I do know that there is this strong mental aspect of really high-end competitive sport. The fact that it exists in the sports world takes away some of that stigma.*

When promoting mental health with men, participants discussed how language that perpetuated masculine stereotypes could be counterproductive and alienating. Phrases such as *man up* or

*toughen up* were believed to be dismissive, promoting of negative masculine stereotypes (e.g., stoicism, internalising problems), and misaligned with supportive practices.

***Analogy and association.*** Acceptable language used to discuss mental health often included analogies and associations to subjects that were not directly linked to mental health. For example, connections were often made to cultural norms and acceptable masculine practices that helped to reorient mental health topics (e.g., sport, manual labour). Connections were made between mental health and physical health (e.g., *healthy mind, healthy body*; *we exercise our bodies, why not our minds*) as a way to maintain and improve overall health, performance, and longevity. Further, traditionally masculine practices were used to align mental health with men's identities. For example, focus group participants discussed regular car maintenance as an analogy for the importance of taking care of one's mental well-being (e.g., *fuelling your car, fuelling your mind)*. This approach made mental health more tangible and allowed for topics to be discussed in acceptable and relatable terms. Sport was another common association and analogy that men used to conceptualise mental health. The concept of being game-ready was recognised as involving both physical and mental preparedness. Furthermore, sport helped to position mental health within a familiar circle of competencies that most men could relate to and engage with. One interview participant identified how performance-oriented language countered the deficit model traditionally associated with mental health and help-seeking;

> *You captured it in the same sort of training-type language. We learn how to use these tools, we develop these techniques, we develop skills in training our mental fitness just as we do our physical.*

In this way, mental health became a performative action that could be targeted, practiced, and improved. Represented here is also language associated with work (e.g., tools, skills). The

manual work and dexterity associated with construction, physical labour, and building also provided language acceptable for re-orienting mental health as a masculine practice/domain.

***Strength-based calls-to-action.*** Participant responses in all phases suggested a preference for strength-based approaches whereby the emphasis was placed on identifying and building upon what was working well for men. Framing mental health as a strength-based endeavour requiring grit and determination was perceived as a preferable approach. Participants preferred when mental health recommendations were presented such that outcomes were related to the positive improvements that change may have on their overall health and well-being (i.e., gain-framed) as opposed to the negative possibilities associated with inaction (i.e., loss-framed). One focus group participant explained how improving his personal performance was a motivator to discuss mental health;

> *[Men] value strength and that's why we don't talk. I wouldn't go to a psychologist or a psychiatrist unless I'd gone through the shit. But I spent $2000 on "performance" shit, like performance coaching. It was about me performing, it was about me getting better. Now I'm working on my wounded child and my schemas and all this shit. I signed up so I'm fucking driving this. It wasn't about my weaknesses, it's how can I get stronger.*

In practice, health benefits must also be relevant to men's interests and values and participants suggested that they wanted to feel like they were in control of the process and outcomes of the mental health intervention. As such, participants in all phases indicated that discussions about mental health should focus on actionable strategies.

**Intervention content and activities**

During the pre-design and generative phases, participants proposed (Phase 1) and developed (Phase 2) intervention content that could be implemented into a mental health promotion intervention that was subsequently reviewed during the evaluative phase (Phase 3).

Participant generated intervention content and activities are summarised in Table 8. Content was designed to engage men in mental health promotion, facilitate education, and encourage mental health discourse. Content subthemes are described below outlining overarching translational approaches to intervention content and delivery, including: (1) *Creating buy-in and fostering spaces for open frank discussions*; (2) *Multi-faceted and action-oriented approach*; and (3) *Personalisation and autonomy*

*Table 8.* Summary of participant generated intervention content and activities

| **Intervention content** | **Description** |
|---|---|
| Socio-economic factors | Discuss and raise awareness of socio-economic factors that are outside of an individual's control (e.g., economy, relationship breakdown) and how these factors may impact mental health. |
| Sociocultural aspects of masculinity | Consider male gender roles and relations and the implications that these social constructs have on men's mental health. |
| Myths about mental health | Identify common myths about mental health and well-being and address misconceptions and stigmas associated with help-seeking treatment and the treatment and management of common mental health problems (e.g., depression, anxiety) |
| Top 10 tips | Use action-oriented lists and top 10 tips to relay important evidence-based information about mental health. For example, provide list of the top 10 tips for managing stress. |
| Testimonials | Testimonials from athletes or men with lived experience provide unique opportunities to normalise mental health challenges and help-seeking behaviour. |
| Population statistics | Use numbers and statistics to quantify rates of mental health and successful treatment options. |
| Mind food/food for mood | Explore how food impacts energy levels and mood and provide examples of healthy food options that provide sustainable energy and improve mood. |
| Life hacks | Provide straightforward actionable advice to cope with specific situations or build resilience (e.g., manage stress, unwind). |
| Change your environment | Explore individualised options for environmental restricting to reduce and manage stress, anxiety, and depression. |
| Increasing self-worth | Encourage men to recognise that their value and the importance of managing mental well-being to fulfil the important roles that they have at work, home, and in the community. |
| **Intervention activities** | **Description** |
| Identify priorities | Make a list of your top priorities in life. Consider your current routine and reflect on how these behaviours align with your values and goals. |
| Journaling | Use journaling as a strategy to become more reflexive, introspective, and track progress or changes in mood/behaviour. |
| Jenga game | Use Jenga as a metaphorical demonstration of how healthy lifestyle behaviours and preventive action can strengthen one's foundation to counteract stress and negative experiences. |
| Experience sharing | Debrief with other participants regarding experiences and effective strategies for managing mental health and well-being. |
| Take 10 | Practice simple breathing or relaxation techniques for clarity and stress reduction when dealing with strong emotions. |
| Evaluation tools | Offer questionnaires that allow men to evaluate risk factors for poor mental health and compare their responses to population averages. Subsequent intervention strategies could be tailored to outcomes. |
| Tracking/monitoring (Stress test/measure) | Raise awareness and promote self-reflection by offering participants ways to track their mental health and well-being. |

***Creating buy-in and fostering spaces for open frank discussions.*** Participants in all phases believed that group-based interventions were an important approach to mental health promotion as they provided opportunities for social interaction between participants. In line with others, one focus group participant explained that including only men was important for mental health promotion;

> *I think that the mental health stuff makes a big difference if it's one gender. I think men talk about mental health in a very different way to women and they're uncomfortable talking about it to anybody but they are really uncomfortable talking about it in front of women*

Within these spaces, participants believed that qualities could be established relating to teamwork, comradery, friendly competition, and banter. Men described working with other men in this setting as having *a shared mission* and lighthearted environment. One interview participant described this environment as; *It's funny, it's cheeky at times and stuff like that but when you laugh it's amazing the positive endorphins.* Similarly, focus group participants were interested in ensuring a casual and non-confrontational setting with a desire to *keep it lighthearted, make sure you can still have a laugh, it's not deadly serious all the time*. The alternative, as described by one focus group participant, was that the program may feel like a *support group* and lose appeal for some men; *Otherwise it becomes a mental health Alcohol Anonymous. 'Hi I'm Aaron, I'm stressed. It's been 5 days since I've slept properly.'*

To facilitate discussion participants explored strategies that may serve to destigmatise and normalise mental health promotion. An important outcome for many participants was to increase men's general awareness and understanding about mental health. Participants suggested that this may be accomplished through quantifying mental health issues with statistics and population average, addressing misconceptions about men's mental health, and understanding socio-cultural and economic influences on mental health (e.g., masculinities).

For example, one focus group participant explained how statistics helped to normalise mental health and create opportunities for self-disclosure;

> *It's amazing how just some basic statistics on what men are going through around mental health, around suicide, around what happens to them when their partners leave them and things like that. That can often be an invitation for men to say, 'well yeah, I'll put my hand up, I experienced that' or 'I know someone'. It's an invitation to say, 'look it's okay, it's not just you'.*

Participants believed that exploring cultural and economic influences on men's mental health and help-seeking behaviour would help to normalise mental health promotion. For example, one focus group participant explained;

> *Trying to challenge that cultural side of it too. What does it mean to be unmanly, where does that come from, how come that's there and what function is it playing in society? Maybe at some point it was valuable and played a function but now it's actually causing harm.*

Additional strategies for creating buy-in focused on increasing awareness of mental health symptoms, increasing self-worth, encouraging introspection, and identifying personal motivations and priorities. One focus group participant described;

> *Empower them to spend time on themselves. Get a message across that it's okay to take this 45 minutes, half an hour, hour, whatever it is, to be for you. Away from work, away from family, away from whatever, all the other roadblocks that are going on, from you doing it yourself. 'I'm doing this, it's like my time.'*

***Multi-faceted and action-oriented approach*.** Participants across all phases highlighted the importance of a multi-faceted intervention approach targeting several aspects of health and well-being including physical activity, diet, mental health, sleep, relationships, weight loss, and developing a sense of community. Recognising the interrelationship between health

behaviours, participants believed that this approach gave men autonomy and flexibility in choosing a strategy that may directly or indirectly support mental health. Providing multiple avenues for mental health promotion destigmatised program uptake and participation as it allowed men an avenue to explain away program participation to their peers if challenged. Interventions addressing multiple health behaviours were believed to help engage men seeking mental health support who would otherwise avoid mental health initiatives delivered through the medical system. One focus group participant explained how incorporating physical activity or hands-on food preparation would help to maintain men's interest and participation;

> *It's integrating those things into a session is the difference, you do a bit of physical activity, say 'this is what you can do with some food.' I think it's that multidimensional approach rather than sitting around talking, you can integrate those different activities, spice it up so you don't sit around every session talking.*

Throughout each phase, participants discussed how mental health intervention delivery should be interactive and action-oriented to engage and retain men. Content delivery could be targeted directly at mental health promotion or indirectly at creating opportunities for men to discuss, debrief, and trouble shoot. Direct mental health content delivery might be, for example, group discussions and/or breakout debriefing. One focus group participant described a scenario where participants could provide social support to each other during a post-exercise 'cooldown' or debrief;

> *Do some exercise and then have like a 20-minute circle where everyone can talk about where they're at or maybe they break off when they start to get to know a couple of guys within the group.*

Similarly, one stakeholder provided a strategy used in his mental health programs that provided men an opportunity to self-monitor and reflect on their mental well-being;

> *One of the things that we do is to rank how we feel within the last month, how we are feeling in the present moment and we can compare them against our previous submissions. If we see a dip somewhere we usually give that more energy. If we see an improvement somewhere, we try and work out what did we put in place to improve that.*

Participants were confident that it was possible to create opportunities for and generate interest in educational information and skill building among groups of men. One man explained how a breathing technique could help men to recognise and manage stress better;

> *Breathing techniques you do for two minutes can change two seconds of stress and then you're like, 'okay, I'm alright.' And you are learning when you feel it, learning to identify when you're getting up to that anxiety and stress levels, what are the signs, because a lot of people don't even know they are crossing into those danger zones.*

***Personalisation and autonomy.*** Within each phase, participants' interests and motivations for program participation varied, and were described as; *be more effective, contribute, something to keep me busy, sense of accomplishment, awareness, healthy.* Participants discussed how men would be interested in practical strategies for identifying, tracking, and managing their mental health, referring to these techniques as "*life hacks, mind food, or mental fitness*". Participants described a desire to develop a *toolbox* of skills and resources that could be adapted to an individual's situation and implemented as one saw fit. For example, cognitive behavioural techniques such as relaxation breathing, mood tracking, and journaling were highlighted by participants as acceptable activities. Measurement and evaluative tools were important as they provided tangible metrics and benchmarks for men to track, monitor, and improve their mental health. One focus group participant described his interest in quantifiable data;

*I like looking at data, looking at trends to see if for me there is a correlation between when I'm stressed, is it because I'm just coming out of that meeting or is it because my mom called about something and now my stress level has gone way up or whatever.*

Strategies for measuring mental health, and specifically stress, were viewed advantageously to increase awareness as well as provide an objective means for tracking their mental health. One man suggested that "*the same way you measure your blood pressure or your oxygen sat., you measure your stress level*", while another jokingly asserted that "*having your stress and anxiety checked is much easier than a prostate.*" Journaling and mood notes were also identified as important strategies that additionally allowed for introspection and reflection;

*I try to get it in a written diary, it doesn't serve anyone, it just serves me in the moment but I think if I was to coach people it would be write it down, write down your feelings, and you'll get benefits from it. I write down how I'm feeling.*

This helped men be more aware of their behaviour and actions and notice changes related to mood or preventive actions. Another focus group participant described how it was important for him to see progress as tangible outcomes from the techniques that he was implementing;

*Am I making an improvement or not? I'm still stressed, but am I handling the stress better? I'm not snapping as much or whatever. If I don't know if I'm doing better then I'll slip back to being more stressed because I don't think I'm making any success.*

Participants also highlighted the importance of setting goals for accountability, motivation and tracking purposes. One interview participant described the importance of goal setting to track progress, make small manageable changes, and engage in introspection;

*Having a goal and it's a sense of achievement is going to stretch you slightly, something that is going to get you doing something different, but to achieve it in a day even if it's something so simple, that sense of accomplishment is huge*

## 5.5 Discussion

The present study details a community-based participatory design process to develop intervention content and distil recommendations for the development of gender-tailored interventions targeted at men's mental health promotion. Findings provide vital clues for gender-sensitising the language, setting, and community-based delivery of men's mental health promotion.

### Intervention Language

It has been noted that both men and women have challenges with finding the vocabulary to discuss their mental health problems and articulate emotions (Emslie et al., 2007). Previous research has also challenged the generalisations that men cannot or will not talk about mental health as a demonstration of strength and stoicism (Oliffe, Rossnagel, Bottorff, et al., 2019). Our findings help to understand the language of men's mental health and acceptable vocabulary that may increase engagement. Giving men permission to discuss mental health is important and language can be strategically used to destigmatise and facilitate conversations. The language that men used to describe mental health provided insights into acceptable terms and phrases that may inform intervention recruitment, content, and delivery. For example, program facilitators should carefully consider the language used to introduce and discuss mental health promotion content as it may be critical to buy in and set the stage for personal development. Attention must also be paid to the naming of programs/approaches to reflect the inclusion of strategies for the everyday man, such as stress management. Implying skill and strategy building in the title and content (e.g., life hacks, head fit) of community-based men's mental health programs might increase the reach of some interventions. However, caution must be taken when using curated language to avoid covert or misleading messaging. It is important that a level of clarity remains regarding the intent of the program for those men that may seek socially acceptable approaches for managing their mental health and well-being.

**Intervention Content**

From a preventive perspective, there is some evidence to suggest that cognitive, behavioural, and mindfulness-based techniques may be acceptable when tailored to men's values and interests (Seaton, Bottorff, Jones-Bricker, et al., 2017). Our findings further support that tailoring therapeutic components to acceptable social and behavioural practices can engage many men. Moreover, custom fitting men's mental health promotion programs both in terms of language and delivery can leverage important services, such as utilising association and analogies build connections to mental health promotion and engaging men in multi-faced action-oriented activities to build mental health promotion skills and strategies.

Participants in the present studies identified and detailed cognitive behavioural techniques such as relaxation breathing, mood tracking, and journaling as potentially acceptable activities for mental health promotion interventions. Such initiatives can support the development of men's mental health literacy, an essential aspect of men maintaining well-being and awareness of the need to take action (either via self-care, peer-led or professional supports) to reduce the impact of mental health symptoms (Rice, Purcell, et al., 2018). One noteworthy intervention aimed at preventive mental health promotion in men is *Headgear* (Deady et al., 2018). The intervention was delivered through an app and included small (5-10 minute) daily challenges over 30 days that included problem solving, mood tracking, and a skills toolbox. In the context of lifestyle interventions, where behaviour change techniques (e.g., self-monitoring, relapse prevention) are often employed to improve and maintain physical activity and healthy eating, these therapeutic components may be packaged as actionable strategies that men can use for mental health promotion. This approach aligns with previous research that explored men's and women's experiences of depression and engagement with health professionals, which found that men emphasised the importance of getting practical results from talking therapies (Emslie et al., 2007). Furthermore, the integration of therapeutic

components within lifestyle interventions sits well within the concept of the behavioural maintenance cycle, where positive action resulting in an individual to feel better reinforces further action. For example, we see through participants' understanding of the interrelationship between physical and mental health, how increasing one's physical activity and/or diet may stimulate action towards mental health promotion.

**Strengths and limitations**

A strength of this study was the community-based participatory design process used to engage consumers (i.e., men) and other stakeholders within the community being studied to collaboratively identify, develop, and evaluate potential interventions (Wallerstein & Duran, 2010). The participatory design approach was found to be highly effective for engaging men in mental health discourse as it was not implied that the participants themselves needed help but that they would be helping others by sharing experiences and identifying what worked well. It may be that allowing men the opportunity to be involved in the decision-making process affords men the permission and control to buy in. This approach is not only valuable for researchers, but also holds merit as an acceptable strategy for engaging men in mental health promotion.

The findings of this study are limited as participants were drawn from a single geographic region. Although the overarching principles align with findings from studies conducted elsewhere (Robertson et al., 2018; Seaton, Bottorff, Jones-Bricker, et al., 2017), sociocultural and contextual factors must also be considered when developing and implementing future interventions. It may also be considered a limitation that the developed content and resources were not fully implemented and tested within an intervention trial. As such, the extent to which the gender-tailored content may influence men's participation and mental health outcomes remains unclear. As an iterative process, post-design evaluations (e.g., measures of feasibility, acceptability and effectiveness) should be undertaken following

intervention delivery to continually refine the concepts and content that have been developed herein (Sanders & Stappers, 2014).

## 5.6 Conclusion

The findings from the present study have direct relevance to community programming and may be embedded within existing interventions or used to inform new mental health promotion programs for men. In community-based settings, where an identified gap in service has sparked a plethora of grassroots interventions ripe with enthusiasm and innovation, there is a need to emphasise the implementation of evidence-based techniques. Further, as emergent programs and services are developed to augment traditional clinical services, it is imperative that rigorous evaluation is undertaken to determine long-term effectiveness. As such, future research is needed to examine the effectiveness of the developed intervention techniques on participant engagement, satisfaction, and mental health-related outcomes.

# CHAPTER 6. What's next for men's physical activity and mental health promotion?

## Future directions in research and practice

## 6.1 Chapter overview

This chapter summarises the main findings presented in this thesis and details future directions for the field, focused on the development of community-based programs, interventions and policies that support men's mental health. This chapter also sets out a plan for future research to develop and trial a lifestyle intervention targeted at improving men's mental health.

## 6.2 Summary of key findings

Men and masculinities have long been regarded using a deficits model and (mis)labelled as a hard-to-reach population. The body of work presented in this thesis reflects a larger ideological and cultural shift in the field of men's health by examining men's health using a social constructivist perspective and strength-based approach. Acknowledging and addressing the influences of socio-cultural factors helps to move past unproductive constructs of men and masculinities to identify what is working well for men and building capacity in these areas. Further, this work reflects a shift away from a bio-medical model of identification and treatment, towards one of prevention and pragmatism by seeking to address the root causes of the issue. While the benefits of adopting these approaches have been theorised, the extent to which they may improve public health will not be realised until wide-spread implementation of policies and programs. Particularly in light of recent global events (i.e., COVID-19) and the profound impacts on men's health (Ogrodniczuk et al., 2021), the need for novel approaches cannot be overstated and public policy is urgently needed to support the mental health and well-being of men. The preparation of this thesis and the research herein was also not immune to the impacts of COVID-19, which in-part helped shape the narrowed focus to men's mental health promotion. Following, is a chapter-by-chapter summary of the key findings of this research as they relate to the four research questions outlined in Chapter 1.

The systematic review and meta-analysis outlined in Chapter 2 exemplifies the progress that has been made in engaging men in health promotion programs and examines their effectiveness on increasing men's physical activity. This is the first study to examine the effects of behaviour change interventions on men's physical activity, sustained change in physical activity behaviour, and to identify variations in effects due to potential moderating variables (e.g., theoretical underpinning, gender-tailored, contact frequency). The results reveal that behaviour change interventions can engage men in their health and support them to make meaningful important improvements in their physical activity post-intervention ($d$=0.35; SE=0.05; 95% CI=0.26 to 0.45; p<0.001) and sustain changes at long-term follow-up ($d$=0.32; SE=0.09; 95% CI=0.15 to 0.48; p<0.001). Findings suggest that a variety of intervention designs and approaches hold potential for influencing men's physical activity; however, interventions that (i) are based on a theoretical framework, (ii) are tailored to men's values and interests, (iii) include regular group contact and (iv) employ multiple behaviour change strategies appear most effective. This systematic review and meta-analysis served to quantify and explicitly answer the first research question: *How effective are health promotion interventions at increasing men's physical activity?* Importantly, this study revealed the potential for physical activity to be an effective strategy for engaging men in healthy behaviour change and set the stage for the purposeful investigation of men's mental health promotion in subsequent chapters.

Chapter 3 reported the results of a focus group study of men and stakeholders with frontline experience to explore men's perceptions of mental health and preferences for mental health promotion. Findings highlighted challenges related to perceptions of men's restrictive emotionality and emotional awareness as well as difficulties with conceptualisation the internalised experiences of mental health. Additionally, the ever-present influence of social context and gender roles emerged as a confounding factor that obscured opportunities for

discussing mental health and help-seeking behaviour for many men. However, within certain contexts and situations, some men appeared to be able to negotiate and expand masculine ideals that embodied mental health promoting values. Directions for men's mental health promotion were identified such as leveraging men's social practices and anchoring mental health promotion to acceptable lifestyle practices (e.g., physical activity). For example, opportunities for men's community-based mental health promotion were identified, including support for the adoption of holistic approaches that seeks to normalise and align mental health practices with acceptable lifestyle practices (e.g., sport). This analysis served to explicitly answer the second research question: *How can physical activity be used as a gateway to engage men in mental health promotion?*

Chapter 4 extended the gender relations analysis within Chapter 3 by exploring Australian masculinities and culture in men's mental health. This focus group study specifically examined how dynamic cultural factors influence the norms and expectations in Australian men's lives and how gender and culture connect to shape men's mental health practices. Findings demonstrated how traditional Australian masculinities are deeply rooted in history, cultures, and settings that often run counter to mental health promotion and help-seeking behaviour. Highlighted was the plurality of masculinities and potential for some men to transform masculine ideals in ways that positioned disclosing vulnerabilities as courageous and help-seeking as a strength-based activity, requiring comradery and teamwork. There is clear scope for public health initiatives, policy and community programs to directly target and address gender and culture in transformative ways that support men's mental health. Taken together, Chapter 3 and 4 provide an in-depth response to the third research question: *What factors influence men's mental health perspectives and practices and how can they be used to promote mental health?*

Chapter 5 details the community-based participatory process undertaken to develop intervention content and distil recommendations for the development and implementation of gender-tailored intervention strategies for men's mental health promotion. Highlighted through this process and discussed in Chapters 3 and 4 was men's openness to engaging in and supporting other men to engage in mental health promotion and help-seeking. Seemingly contradictory to previous research, men's willingness to engage in mental health promotion clearly pivoted on the effective design and delivery of intervention content. Through this process, recommendations and practical examples for gender-sensitising the language (e.g., using analogy and association), content (e.g., mood tracking), and community-based delivery (e.g., group-based debriefs and activities) of men's mental health promotion were identified. These applied research findings have direct implications for intervention development and may be incorporated into existing programs or used to design novel interventions targeted at mental health promotion. Chapter 5, therefore, explicitly answers the fourth research question: *How can health promotion interventions be tailored to better support men's mental health?*

## 6.3 Practical implications

The research evidence presented in this thesis have direct implications for health promotion and public health policy and practice. Practical implications of this research include:

- Behaviour change programs are effective at increasing men's physical activity which may, in turn, improve men's mental health.
- Engaging men in physical activity programs provides additional opportunities to target men's mental health by promoting self-reflection, discussion, and action towards healthy lifestyle change.
- Community-based contexts where men gather (e.g., sport, hobbies, pubs) may be leveraged to increase engagement in mental health initiatives. Programs should engage men in mental health promotion through evidence-based strategies such as connecting

men similar to themselves, in 'male-friendly' environments, and engaging in friendly banter and competition. Men's mental health can be targeted directly (e.g., psychoeducation) or indirectly (e.g., behaviour change skills, social interaction) within these settings.

- Public health initiatives must consider and address sociocultural influences on masculinities and men's mental health in Australia. Moreover, policy and programs must be cautious to not perpetuate unproductive stereotypes by appealing only to traditional masculinities. Foundational work with men that challenge and re-work sociocultural and economic influences on men's health and masculinities may support mental health outcomes and ongoing engagement in mental health initiatives.
- Acceptable program delivery and content are integral factors in successful programs aimed at increasing men's mental health. The language that men use to discuss mental health should be incorporated into program content and used by facilitators to promote open and relatable discourses. This has implications for program developers as well as clinicians working in men's health.
- Specific consideration must be made to men's health inequities that may limit the access and involvement of sub-groups including Aboriginal and Torres Strait Islander men, men from culturally and linguistically diverse communities, and men with low socio-economic status.
- Men are willing to be involved in the development of tailored mental health initiatives that address their specific needs and interests. Meaningfully involving men at all levels of decision making may ensure that programs and policies are more engaging, effective, and sustainable.

## 6.4 Summary of contributions to the literature

Approximately 1 in 5 men experience mental health challenges every year; yet many delay or avoid seeking professional medical services (Australian Bureau of Statistics, 2008). Moreover, the drop-out rate for men who do access mental health care is high (45%) (Seidler et al., 2021). Taken together, this research adds value to a rapidly growing body of work examining the influence of masculinities on men's mental health (Seidler et al., 2016), physical activity (Bottorff et al., 2015; Sharp, Spence, et al., 2020), help-seeking (Seidler, Rice, Ogrodniczuk, et al., 2018), and engagement with health promotion interventions (Drew et al., 2020; Young et al., 2012). Particularly considering recent health trends, the present research offers timely and novel approaches to bolstering men's mental health to help address some of the many challenges invoked by COVID-19 (Ogrodniczuk et al., 2021). For example, our findings related to social support and reciprocity align with Seidler et al. (2020), who found that most men would be open to helping other men in need. This suggests opportunities for mobilizing men to norm help-seeking as a reciprocated interaction. Here, physical activity was found to be an acceptable centerpiece for engaging men in health promotion. Carried forward, these approaches help to answer calls for a better integration of mental health promotion within physical activity interventions (Drew et al., 2020). Further, these findings point to the importance of shifting gender ideologies and cultural norms in men's mental health using a social constructivist masculinities framework to inform intervention design and evaluation (Connell, 2005; Courtenay, 2000). The influence of gender is a central driver that must be integrated throughout all aspects of the future research. These research findings help to move on from deficit-based depictions of masculinities in men's mental health to identify, mobilize and formally evaluate what gender dimensions are working for men's mental health promotion. As defined by the WHO (2011), gender-transformative approaches are those that go beyond considering men's specific needs to focus on transforming maladaptive gender norms, roles

and relations. This research is transformative as it sought to reframe men's social interactions and health-related practices in ways that are supportive of mental health.

## 6.5 Overall thesis limitations

The limitations of each of the studies included in this thesis have been discussed in detail in the individual chapters and, thus, the following points reflect limitations of this body of work as a whole. In particular, the contextual nature of the research remains the primary limitation and the findings must be considered with regard to the location and demographics of the study samples. Additionally, although the sample of participants was relatively large, the research questions were distinctly different, and new data sources were introduced to corroborate findings, that data from the focus groups were utilised in Chapters 6-8 may be considered a source of bias. Notably, participants were predominantly cis-gender, well-educated, middle class, white men with values that reflect Western perspectives. As such, the masculinities and experiences of this sample will certainly not be reflective of all men and issues of race, ethnicity, sexual identity and orientation, disability status and geography must be acknowledged as critical determinants of men's health. Much can be learned from a focused exploration of the experiences of other populations including Aboriginal and Torres Strait Islander, migrant, LGBTIQ+, or regional/remote populations. Thus, rather than considering the present findings as a generalisation of all men, this research should serve to exemplify the plurality of masculinities and multiplicity of constructs that may be derived in specific locations, milieus, and time periods.

## 6.6 Future research directions

From a pragmatic perspective, the balance between breadth and specificity of tailoring interventions to priority populations remains more of an art than a science. Evidence clearly suggests that interventions are most effective when designed to the specific needs and interests of the population; however, interventions that are too specific may lack the scalability and

reach that is required for systemic uptake by policy makers (Milat, King, Bauman, & Redman, 2013). Such programs may struggle to demonstrate enough generalisability or fail to obtain further support and funding needed to impact public health policy and practice (Zamboni, Schellenberg, Hanson, Betran, & Dumont, 2019). As such, traditional public health initiatives have approached lifestyle interventions and behaviour change from a 'one-size-fits-all' perspective (Percival et al., 2018). It is no surprise that some of the most innovative initiatives have been developed by community-based groups and non-profit organisations targeted at serving priority populations (Oliffe, Rossnagel, Bottorff, et al., 2019). However, as emergent programs and services are developed to augment traditional clinical practice, it is imperative that rigorous evaluation is undertaken to determine long-term effectiveness and scalability. The studies that make up this thesis serve to advance understanding of masculinities, men's mental health, and strategies for engaging men in mental health promotion and help-seeking and illuminate several avenues for future research. Notably, researchers should continue to explore men's incidental and recreational physical activity, as well as the gender relations and social interactions within these contexts, as important avenues to promote men's mental health. Additionally, research is needed to implement and evaluate this work through pragmatic community-based interventions to determine feasibility and effectiveness. Provided that interventions which utilised a behaviour change theory were found to be more effective than those that did not (Chapter 2; Sharp, Spence, et al., 2020), future research should map the gendered intervention approaches identified within this dissertation to theoretical constructs within these theories.

An important outcome of this thesis was to inform practice and translate research findings into use for real world application. The concepts identified in Chapters 1-4 and developed through the participatory design process outlined in Chapter 5 have been incorporated into a newly adapted community-based mental health intervention for men. Building on the

successful framework of the HAT TRICK program outlined in Chapter 1, the intervention will include 12 weekly group-based sessions targeted at mental health (primary outcome) and physical activity (secondary outcome). Participants will receive a program manual, inclusive of the resources developed in Chapter 5. The program will be offered through community partners (e.g., Orygen, Blackdog Institute) and be co-facilitated by experienced mental health facilitators and men in the local community trained to deliver the program. These male champions will help to enhance knowledge translation and foster long-term program sustainability.

This effectiveness of the program will be evaluated in a two-arm, pragmatic pilot randomised control trial. Potential participants will be screened for obtain physician clearance before randomisation. Following baseline measures, participants randomised to the gender-tailored lifestyle intervention or wait-list control arm. Participants in the intervention group will receive a gender-sensitised 12-week face-to-face intervention focused on physical activity, healthy eating, and mental health. The waitlist control group will receive no intervention and be asked to maintain their normal lifestyle. Following post-intervention testing, control participants will be offered the 12-week gender-sensitised lifestyle intervention. Outcome measures will be collected at baseline, immediately post-intervention, and 12-month follow-up. For example, the intervention content and resources have been incorporated into a gender-tailored program manual for participants. The primary outcomes for this prospective study will be to: (1) Deliver and evaluate the effectiveness of the gender-tailored intervention aimed at preventing chronic disease and associated risk factors by improving physical and mental health of men in Australia, and; (2) Determine the feasibility of the intervention in terms of cost-effectiveness, optimisation, acceptability, satisfaction, enjoyment, and program design (i.e., content, resources, and delivery).

This intervention is paradigm-shifting for men's health as it; 1) encompasses a gender-tailored approach, embedded in transformative gender relations approaches and behaviour change theories that support men's health, 2) is a collaborative, community-based initiative designed to reach diverse groups of men in Sydney and beyond, 3) encompasses a 'real world' translational approach providing an efficient model to reach and engage more men in mental health promotion, and 4) may serve as a non-clinical point-of-entry for men seeking alternative forms of mental health support and/or as an adjunct form of treatment and management for men who have experienced mental health problems (e.g., depression).

## 6.7 Overall thesis conclusion

This thesis helps to progress men's health research beyond assumptions and stereotypes that all men are uniformly uninterested in their health, towards a more nuanced understanding of the dynamic social and structural factors that influence men and masculinities and their engagement in health promotion programs. With a focus on health promotion, novel approaches to engaging and retaining men in mental health promotion through physical activity programs have been identified. Of critical importance is the tailoring of intervention programs to the target community by incorporating culturally appropriate approaches, settings, language and activities. This must begin with a deep understanding of the values, customs, and priorities of the target population and should involve some degree of community engagement and involvement prior to implementation. In doing so, a balance must be struck between leveraging dominant masculinities and challenging those that limit health promoting and help-seeking behaviours. As the field of men's mental health promotion continues to progress, the outcomes of this thesis provide clear direction for future research and for informing policies and programs targeted at improving the health and well-being of men. Nonetheless, this research remains a piece of the broader context and social movement that is needed to tackle the root causes of health inequities that must be addressed.

# CHAPTER 7. Appendices

### 7.1.1 Appendix A: Supplementary Materials (Chapter 2)

One small step for man, one giant leap for men's health: a meta-analysis of behaviour change interventions to increase men's physical activity

## Supplementary 1 (S1) – Table S1. PRISMA Checklist

| Section/topic | # | Checklist item | Reported on page # |
|---|---|---|---|
| **TITLE** | | | |
| Title | 1 | Identify the report as a systematic review, meta-analysis, or both. | 45 |
| **ABSTRACT** | | | |
| Structured summary | 2 | Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number. | 46 |
| **INTRODUCTION** | | | |
| Rationale | 3 | Describe the rationale for the review in the context of what is already known. | 47-48 |
| Objectives | 4 | Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS). | 49 |
| **METHODS** | | | |
| Protocol and registration | 5 | Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number. | 50 |
| Eligibility criteria | 6 | Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale. | 50-51 |
| Information sources | 7 | Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched. | 51 |
| Search | 8 | Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated. | 51 and S2 |
| Study selection | 9 | State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis). | 51-52 |
| Data collection process | 10 | Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators. | 52-53 |
| Data items | 11 | List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made. | 52 |
| Risk of bias in individual studies | 12 | Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis. | 53 |
| Summary measures | 13 | State the principal summary measures (e.g., risk ratio, difference in means). | 54 |
| Synthesis of results | 14 | Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., $I^2$) for each meta-analysis. | 54-55 |

| Section/topic | # | Checklist item | Reported on page # |
|---|---|---|---|
| Risk of bias across studies | 15 | Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies). | 54 |
| Additional analyses | 16 | Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified. | 55 |
| **RESULTS** | | | |
| Study selection | 17 | Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram. | 55, 56 |
| Study characteristics | 18 | For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations. | 55-58, S3 |
| Risk of bias within studies | 19 | Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12). | 57, S4 |
| Results of individual studies | 20 | For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot. | 59-61 |
| Synthesis of results | 21 | Present results of each meta-analysis done, including confidence intervals and measures of consistency. | 59 |
| Risk of bias across studies | 22 | Present results of any assessment of risk of bias across studies (see Item 15). | 60-63 |
| Additional analysis | 23 | Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]). | 60-63 |
| **DISCUSSION** | | | |
| Summary of evidence | 24 | Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers). | 64 |
| Limitations | 25 | Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias). | 68-69 |
| Conclusions | 26 | Provide a general interpretation of the results in the context of other evidence, and implications for future research. | 64-70 |
| **FUNDING** | | | |
| Funding | 27 | Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review. | See publication |

*From:* Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

**Supplementary 2 (S2)**

**Table S2. Medline (Ovid SP) (1946-) search terms**

| | Search Terms |
|---|---|
| 1 | Randomized Controlled Trial/ |
| 2 | ((randomi#ed or experimental) adj3 trial).ab,ti,kw or randomi#ed controlled trial.pt |
| 3 | Motor Activity/ or exp sports/ or Exercise/ or Circuit-based Exercise/ or High-intensity Interval Training/ or Muscle Stretching Exercises/ or Physical Conditioning, Human/ or Plyometric Exercise/ or Resistance Training/ or Exercise Therapy/ or Healthy Lifestyle/ or Health Promotion/ |
| 4 | (((trial or program* or intervention?) adj4 (PA or "physical activit*" or exercis* or walk* or run* or jog* or sport* or swim* or cycl* or soccer or football or rugby or hockey or cricket or basketball or tennis or volleyball or golf or yoga)) or active living or active commuting or exercise therapy or healthy lifestyle or lifestyle change or lifestyle behavio?r or behavio?r change or health promotion or health behavio?r).ab,ti,kw |
| 5 | Program Evaluation/ or Self Report/ or "Surveys and Questionnaires"/ or Fitness Trackers/ |
| 6 | ("outcome assessment" or evaluation? or self-report* or survey? or questionnaire? or accelerometer? or pedometer? or self-monitoring or telephone or web-based or fitness tracker? or activity tracker? or ((physical activity or exercise) adj3 (index* or level?))).ab,ti,kw |
| 7 | Male/ |
| 8 | (men or male?).ab,ti,kw |
| 9 | 1 or 2 |
| 10 | 3 or 4 |
| 11 | 5 or 6 |
| 12 | 7 or 8 |
| 13 | 9 and 10 and 11 and 12 |
| 14 | 13 limited to English and Abstract |

**Supplementary 3 (S3)**
**Table S3. Brief overview of intervention and intervention focus**

| Primary source | Intervention overview | Theoretical orientation | Intervention engagement | Measurement instrument | Measure |
|---|---|---|---|---|---|
| Aguiar *et al*, 2016 | - The Prevention Using Lifestyle Education (PULSE) program consisted of:<br>o Intervention content from SHED-IT in Morgan et al. (2013)<br>o Diabetes Prevention Handbook for men and PULSE Exercise Support Book for Men, including prescribed home-based exercise program, logbook, and resistance band device | SCT | LOW<br>13% of men met log book compliance | Pedometer | Steps/day |
| Andersen *et al*, 2012 | - Structured group exercise sessions led by exercise physiologist twice a week<br>- Two group lectures; individual counselling session; written material and a phone call | SCT | LOW<br>60% attendance of exercise portion<br>90% attended group lectures<br>All participants completed individual counselling and phone call. | Actigraph Accelerometer | Counts per minute per day |
| Ashton *et al*, 2017 | - The HEYMAN program consisted of:<br>o Responsive website<br>o Wearable physical activity tracker and resistance band for home-based strength training with associated app/website.<br>o One-hour weekly face-to-face exercise sessions (11x group based and 1x individual) focusing on aerobic and strength exercise<br>o Personalised food and nutrient report<br>o Private Facebook discussion group | SCT<br>SDT | MODERATE<br>100% visited website at least once, 63% visited weekly, 58% used app daily, 91% attended one 60-min face-to-face session | Pedometer | Steps/day |
| Galvao *et al*, 2017 | - Self-management materials and monthly telephone group (~6-8 participants) peer support for 6 months. 1/6 sessions focused on physical activity and peers discussed exercise at each session to check how men's physical activity goals were progressing<br>- Participants provided with elastic exercise device and heart rate monitor | Nil | MODERATE<br>Mean attendance 4/6 (67%) sessions, 28% accessed website at least once | Godin Leisure-Time Exercise Questionnaire | Total exercise min/week |

| | | | | | |
|---|---|---|---|---|---|
| | - Online material also available and men received feedback on unmet supportive care needs, distress score, waist circumference, and exercise levels | | | | |
| Gong *et al*, 2015 | - The KM2H program consisted of:<br>o Two 45–60-minute lectures (i.e., "Secrets for Blood Pressure Control through Exercise"; "Individualised Physical Activity Counselling")<br>o Two 10–20-minute telephone counselling on obstacles to engaging in physical activity<br>o Two group sessions (~8–10 participants) provide opportunities to share skills, experiences, and build social support<br>o Two booster sessions post-intervention | TTM<br>MPM<br>SCapT | unknown | Self-report Questionnaire (non-validated survey) | Levels of physical activity |
| Gray *et al*, 2013 | - Football Fans in Training (FFIT) included twelve weekly 90-minute group (~15 men) sessions at professional football stadia.<br>o Classroom-based education on topics related to weight management, healthy eating, alcohol and increasing daily physical activity<br>o Coach-led physical activity sessions including training in aerobic, strength and flexibility exercises<br>- Pedometers to support self-monitoring as part of incremental pedometer-based walking program | SCT<br>CT | MODERATE<br>76% attended at least 80% of the sessions | International Physical Activity Questionnaire (Short Form) | Total activity (MET min/week) |
| Groeneveld *et al*, 2011 | - Health under Construction consisted of:<br>o Three 45-60-minute face-to-face sessions<br>o Four 15-30-minute one-on-one telephone counselling sessions, using motivational interviewing delivered by occupational physician<br>o Participant's risk profile, personal determinants, and barriers for behaviour change were discussed, and goals set. Participants chose to aim at either diet and PA, or smoking | Nil | unknown | Short Questionnaire to Assess Health enhancing PA (SQUASH) | Leisure time physical activity and spot-related expenditure (MET min/week) |
| Hunt *et al*, 2014 | - As for FFIT in Gray et al. (2013) | SCT<br>CT | MODERATE<br>79% attended at least 6/12 sessions | International Physical Activity Questionnaire (Short Form) | Total activity (MET min/week) |

| | | | | | |
|---|---|---|---|---|---|
| Livingston *et al*, 2015 | - The ENGAGE intervention was a clinician-referred 12-week community exercise program consisting of:<br>o Two 50-minute supervised gym sessions and one home-based session per week based on exercise guidelines for cancer survivors developed by the American College of Sports Medicine and Exercise and Sport Science Australia | SCT | HIGH<br>85% attended at least 18/24 gym session, of those that completed diary (74%), 81% completed 9-12 home-based weekly session | Godin Leisure-Time Exercise Questionnaire | MVPA min/week |
| Maruyama *et al*, 2010 | - The LiSM program included:<br>o Individualised assessment and collaborative goal setting sessions based on food group intake and physical activity<br>o Two individual counselling sessions with a registered dietitian and physical trainer<br>o Monthly website advice designed to promote healthy dietary habits and physical activity<br>o Monthly individual contact with a dietitian and a physical trainer. The fourth counselling session, at end of the third month, conducted through the website<br>o Personal and interactive website to self-monitor weight, food intake and physical activity, and discuss awareness of lifestyles for self-monitoring throughout the intervention period<br>o Pedometer linked to website. Data automatically presented in figures on their individual website pages | Nil | LOW<br>Adherence to self-reporting was low (75% of intervention, 50% control returning usable records) | Pedometer | Steps/day |
| McGowan *et al*, 2013 | - The PROMOTE intervention provided all participants with physical activity Guidelines for Americans (2008)<br>- Self-administered implementation group:<br>o Recorded current levels of physical activity, set goals and made detailed plans to meet the physical activity guidelines, or increase physical activity by 60+ min/week if already meeting guidelines. List personal physical activity barriers, and strategies to overcome barriers<br>- The telephone-assisted implementation group:<br>o Same as above plus a 12-minute telephone call to assist with goal setting and planning | TPB | LOW<br>46% saying they did not really complete it, 23% reporting completing some of it, 17% most of it, and 14% all of it | Godin Leisure-Time Exercise Questionnaire | Total activity (min/week) |

| | | | | | |
|---|---|---|---|---|---|
| Morgan *et al*, 2013 | - Self-help, Exercise, Diet and Information Technology (SHED-IT) weight loss program for men consisted of a resource package including DVD, gender-tailored handbook and a pedometer to monitor step count<br>o Two of nine evidence-based weight loss messages focused on physical activity ('Every step counts', 'Reduce sitting time'. One of the three SMART goals that men were asked to set each month was related to physical activity<br>- Online version included exercise diary and some exercise-related feedback | SCT | unknown | Pedometer | Steps/day |
| Morgan *et al*, 2014 | - Health Dads, Healthy Kids (HDHK) consisted of seven weekly group sessions (90 minutes each):<br>o Four sessions for fathers only, and three practical sessions for fathers and children, which included co-physical activity.<br>o Weight loss component of HDHK intervention was adapted from SHED-IT program | SCT<br>FST | MODERATE<br>Mean attendance rate for 7 sessions was 71% | Pedometer | Steps/day |
| Morgan *et al*, 2011a | - As for HDHK in Morgan et al (2014) | SCT<br>FST | HIGH<br>Participants attended 81% of the sessions | Pedometer | Mean steps/day |
| Morgan *et al*, 2011b | - Workplace POWER (Preventing Obesity Without Eating like a Rabbit) consisted of:<br>o One face-to-face information session (75 min) covering energy balance, shift work challenges to diet and physical activity, weight loss tips, and behaviour change strategies (self-monitoring, goal setting, social support)<br>o Group-based financial incentives ($AU50 voucher per person for sport store for group with highest mean weight loss at 1 month and end of program<br>o Online component (direction to publicly accessible, free weight loss website)<br>o Program booklet, weight loss handbook, and pedometer | SCT | LOW<br>Average of 24 exercise entries on website across 14 weeks. 28% complied with web-based components | Godin Leisure-Time Exercise Questionnaire | Total MET minutes/week |
| Morgan *et al*, 2009 | - As for SHED-IT in Morgan et al (2013) | SCT | LOW<br>Average of 23 exercise entries on website throughout | Pedometer | Mean steps/day |

| | | | | | |
|---|---|---|---|---|---|
| | | | intervention. 41% complied with web-based tasks | | |
| Patrick *et al*, 2011 | - Internet-based intervention designed to promote weight loss through goals for diet and physical activity including increasing steps per day, and strength training consisting of:<br>o Computerised assessment to allow tailoring of messages<br>o Weekly web-based learning presented in short sessions using "business-like" language and graphics<br>o Individualised feedback on progress<br>o Pedometers to self-monitor daily step count and recording of minutes of other physical activity | SCT | MODERATE<br>Average of 23.4 weekly logins | International Physical Activity Questionnaire (Long Form) | Total walking (min/day) |
| Petrella *et al*, 2017 | - As for FFIT in Gray et al [20] and Hunt et al [22], except ice-hockey setting | CT<br>SCT<br>SRT | HIGH<br>Mean session attendance of 82% | Pedometer | Mean steps/day |
| Pritchard *et al*, 1997 | - Two intervention arms including weight loss through diet or through physical activity<br>o Self-selected aerobic leisure exercise regimen, minimum 3 x weekly | Nil | MODERATE<br>>70% attendance at bimonthly presentations | Activity Diary | Index of activity |
| Schröder *et al*, 2018 | - The PREDIMED-Plus program targeted goal setting, action planning, feedback, informational materials, motivation, and self-monitoring during:<br>o Twelve individual (60-minute) sessions<br>o Twelve telephone calls<br>o Three one-hour group sessions. Tailored physical activity goals and an action plan<br>- Participants are provided with a pedometer and a physical activity diary for self-monitoring | Nil | unknown | Regicor Short Physical Activity Questionnaire | MET min/day |
| Shin *et al*, 2017 | - The EPAROSFI program included:<br>o Standardised education materials<br>o One-to-one education on diet and exercise from a nurse for 5 minutes each session. Contents included consequence of obesity, dietary recommendations for weight loss, and physical activity recommendation including intensity, time, and type | BET | MODERATE<br>Incentive group decreased from about 0.9 to 0.5 goals accomplished per day. | International Physical Activity Questionnaire (Short Form) | Kcal/week |

| | | | | | |
|---|---|---|---|---|---|
| | o Fitmeter accelerometer and smartphone app to self-monitor, with or without additional financial incentives | | | | |
| Viester *et al*, 2018 | - The VIP in Construction program includes personal health coaching, information, tools to support changes in PA and dietary behaviour<br>- Two to four coaching sessions and tailored information offered during work hours including training instruction for core stability and strengthening exercises<br>- "VIP in construction" toolbox (overview of company health-promoting facilities, waist–measuring tape, pedometer, BMI calculator, calorie guide, recipes, and knowledge tests) | TPB<br>HBM<br>TTM<br>PAPM | unknown | Short Questionnaire to Assess Health enhancing PA (SQUASH) | MVPA (min/week) |
| Werkman *et al*, 2010 | - Five program modules over 1 year. Module 3 aimed to improve dietary and/or physical activity; participants could receive computer-tailored feedback on: physical activity, fibre, portion size. Module 1 included pedometer. Modules 4 and 5 online – participants access information on diet and physical activity behaviour. | TPB<br>TTM<br>PAPM | MODERATE<br>82% used toolkit, 72% CD1, 41% CD2, 54% website and 16% interactive components | Physical Activity for the Elderly | Daily PA (min/week) |
| Wyke *et al,* 2019 | - EuroFIT included twelve weekly 90-minute group (~15-20 men) sessions at professional football stadia.<br>o Classroom-based education on topics related to increasing daily physical activity and reducing sedentary time and maintaining changes long-term, and healthy eating (including alcohol consumption)<br>o Coach-led physical activity sessions including training in aerobic, strength and flexibility exercises<br>- Pedometers to support self-monitoring as part of incremental pedometer-based walking program; novel pocket-worn device SitFIT) to self-monitor sedentary and non-sedentary time | SCT<br>CT | MODERATE<br>86% attended at least 6 of the 12 sessions, 54% attended 10 or more, 15% attended all 12 sessions | ActivPAL | Steps/day |

Nil = Not identified; SCT = Social Cognitive Theory; SDT = Self Determination Theory; TTM = Transtheoretical Model; MPM = Model of Personalised Medicine; SCapT = Social Capital Theory; CT = Control theory; TPB = Theory of Planned Behaviour, FST = Family Systems Theory; SRT = Self-regulation Theory; BET = Behavioural Economic Theory; HBM = Health Belief Model; PAPM = Precaution Adoption Process Model

**Supplementary 4 (S4)**

**Table S4 Study quality assessment (EPHPP)**

| Primary source | Component rating | | | | | | Global rating |
|---|---|---|---|---|---|---|---|
| | Selection bias | Study design | Confounders | Blinding | Data collection | Withdrawals / dropouts | Overall study quality |
| Aguiar *et al*, 2016 | Weak | Strong | Strong | Moderate | Strong | Strong | **Moderate** |
| Andersen *et al*, 2012 | Weak | Strong | Strong | Moderate | Strong | Strong | **Moderate** |
| Ashton *et al*, 2017 | Weak | Strong | Strong | Moderate | Strong | Strong | **Moderate** |
| Galvao *et al*, 2017 | Moderate | Strong | Strong | Moderate | Strong | Moderate | **Moderate** |
| Gong *et al*, 2015 | Moderate | Strong | Strong | Strong | Moderate | Strong | **Strong** |
| Gray *et al*, 2013 | Weak | Strong | Strong | Weak | Strong | Strong | **Moderate** |
| Groeneveld *et al*, 2011 | Weak | Strong | Strong | Weak | Strong | Weak | **Moderate** |
| Hunt *et al*, 2014 | Weak | Strong | Strong | Weak | Strong | Weak | **Moderate** |
| Livingston *et al*, 2015 | Weak | Strong | Strong | Weak | Strong | Strong | **Moderate** |
| Maruyama *et al*, 2010 | Weak | Strong | Strong | Weak | Strong | Strong | **Moderate** |
| McGowan *et al*, 2013 | Strong | Strong | Strong | Weak | Strong | Moderate | **Moderate** |
| Morgan *et al*, 2013 | Weak | Strong | Strong | Moderate | Strong | Strong | **Moderate** |
| Morgan *et al*, 2014 | Weak | Strong | Strong | Weak | Strong | Strong | **Moderate** |
| Morgan *et al*, 2011a | Weak | Strong | Strong | Weak | Strong | Moderate | **Moderate** |
| Morgan *et al*, 2011b | Strong | Strong | Strong | Weak | Strong | Strong | **Strong** |
| Morgan *et al*, 2009 | Weak | Strong | Strong | Strong | Strong | Strong | **Strong** |
| Patrick *et al*, 2011 | Weak | Strong | Strong | Moderate | Strong | Moderate | **Moderate** |
| Petrella *et al*, 2017 | Weak | Strong | Strong | Weak | Strong | Strong | **Moderate** |
| Pritchard *et al*, 1997 | Weak | Strong | Strong | Weak | Weak | Strong | **Moderate** |
| Schröder *et al*, 2018 | Moderate | Strong | Strong | Weak | Strong | Weak | **Moderate** |
| Shin *et al*, 2017 | Weak | Strong | Strong | Weak | Strong | Strong | **Moderate** |
| Viester *et al*, 2018 | Moderate | Strong | Strong | Moderate | Strong | Strong | **Strong** |
| Werkman *et al*, 2010 | Weak | Strong | Weak | Weak | Strong | Strong | **Moderate** |
| Wyke *et al,* 2019 | Weak | Strong | Strong | Moderate | Strong | Strong | **Moderate** |

### 7.1.2 Appendix B: Supplementary Materials (Chapter 5)

Gender-tailored intervention strategies for men's mental health promotion: A participatory design process

*Figure 6. Participatory design intervention content prototype*

Sample Content Week 1

# WHAT DRIVES YOU TO STAY HEALTHY?

Being healthy means something different to everyone. For some, being healthy might mean being able to keep up with the kids, being able to work and support family, or being able to tackle a flight of stairs without being out of breath. For others, being healthy may be about improving their immune system, preventing injury, or enhancing their psychological well-being. As we age, staying healthy allows us to enjoy those well-earned retirement years.

Here's what other guys told us about why they want to get active and eat healthy.

WHAT ARE MY REASONS?

- ☐ KEEP UP WITH THE KIDS
- ☐ WORK HARDER
- ☐ BREATHE EASIER
- ☐ SLEEP BETTER
- ☐ BE HAPPY
- ☐ REDUCE STRESS
- ☐ SUPPORT FAMILY
- ☐ REDUCE CANCER RISK
- ☐ LIVE LONGER
- ☐ LOSE WEIGHT
- ☐ _____

Sample Content Week 5

# TOP 10 strategies to strengthen your mental fitness

TAKING CARE OF YOUR MENTAL FITNESS IS AN IMPORTANT, AND OFTEN OVERLOOKED, PART OF A COMPREHENSIVE GAME PLAN. CHECK OUT THESE EASY TIPS TO KEEP YOUR HEAD IN THE GAME.

## 1 GET ACTIVE

Get active outdoors. Getting outside for some fresh air can help you feel revitalised and energised by reducing tension, frustration, and the feeling of being overwhelmed.

## 2 FOCUS ON THE POSITIVE

Most of the time we live our lives on 'autopilot'. Take a minute to think about 3 positive things that happened this week. A positive mind frame can lead to positive action.

## 3 KNOW YOUR LIMITS

Work on stress management - focus on what you can control and drop what you cannot. Know your limits and learn the power of saying "NO".

## 4 FOOD FOR MOOD

Nutrition is key; the food you eat can actually affect your mood. Choose healthy and nutrient-dense options, such as salmon, sweet potato and avocado, to keep our head clear and help prevent mood swings.

## 5 GET CONNECTED

Surround yourself with good people - focus on making strong connections with a few good friends an family members. Quality over quantity!

## 6 FLEX YOUR BRAIN

Find a hobby or activity that is challenging and keeps your brain active like learning a new language, taking a cooking class, trying a new sport (like tennis or yoga) or playing an instrument.

## 7 TRY TO PLAN AHEAD

Preparing for aspects of your daily routine can take the stress out of everyday tasks and help make the most of your free time.


## 8 UNPLUG

Spending excessive time watching TV or using your phone and tablet can impair your sleep quality, increase irritability and decrease your ability to cope with stress. Try going screen-free for a night!

## 9 BE REALISTIC

Cut yourself some slack! Don't set unrealistic expectations for yourself, work on small achievable goals to increase your self-efficacy and confidence


## 10 TALK IT OUT

Face-off with your mental health. Talk to a friend or family member, or consult a health care professional, if things don't seem right. There are a lot of people out there who can offer strategies to help - you don't have to do all the heavy lifting alone.

Sample Content Week 5

# FACT OR MYTH?

TALKING ABOUT YOUR FEELINGS IS UNMANLY

**MYTH**

Did you know that most men say they'd be there for a friend in need, but don't feel comfortable asking a friend for help? It's okay to speak up.

REAL MEN DON'T LET THINGS GET TO THEM

**MYTH**

1 in 8 Australian men will experience major depression at some point in their life. Feelings of depression can be caused by many factor, including seemingly ordinary life events (e.g., bereavement, job loss), and are not something you can ignore or "snap out of".

PHYSICAL ACTIVITY CAN IMPROVE YOUR MENTAL FITNESS

**FACT**

As little as 10 minutes of activity can help improve your mood and reduce stress and anxiety.

BEING DEPRESSED OR ANXIOUS IS A SIGN OF PERSONAL WEAKNESS

**MYTH**

Depression and anxiety are real illnesses. Recognising and addressing these feelings now will help to prevent and manage problems down the road.

MEN SHOULD BE ABLE TO COPE ON THEIR OWN

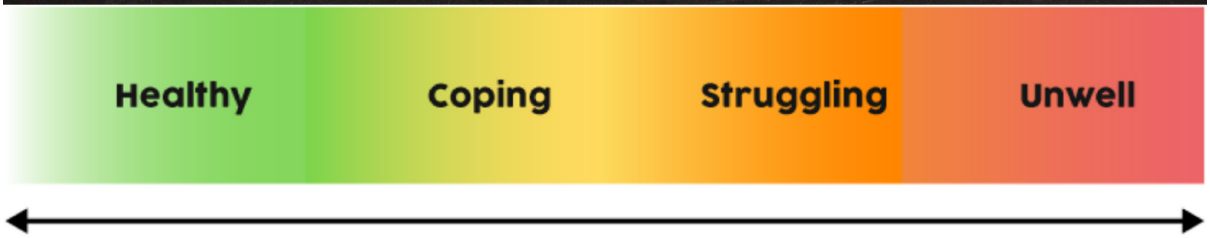
**MYTH**

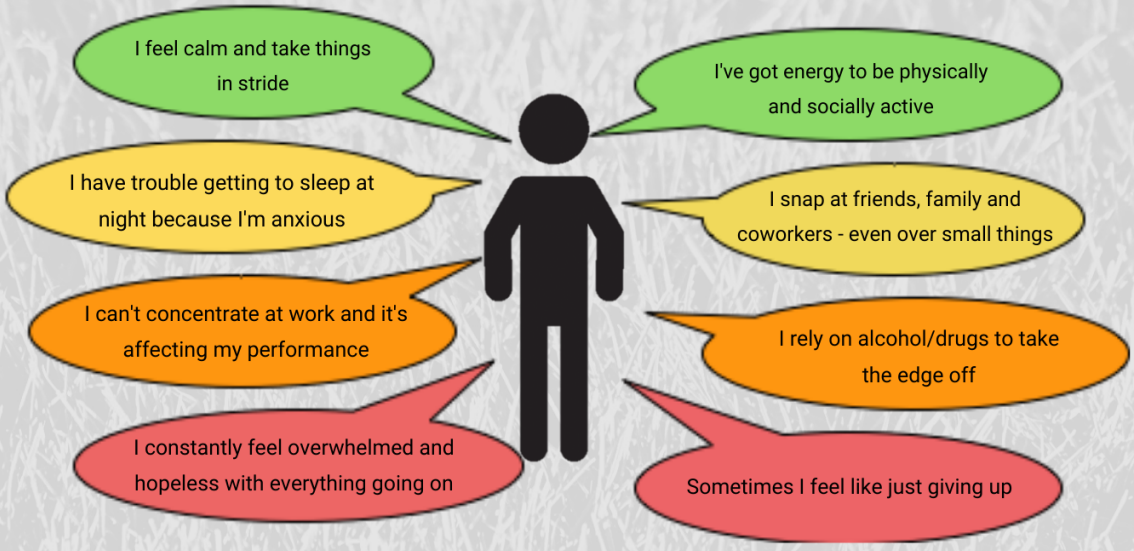
Teaming up with friends and professionals really means taking control and it's the smartest thing you can do.

Sample Content Week 5

# BALANCING YOUR MENTAL Fitness

LIFE HAS ITS UPS AND DOWNS, WHICH CAN AFFECT OUR THOUGHTS AND EMOTIONS, AND PLAY A LARGE ROLE IN THE CHOICES WE MAKE. THINK ABOUT HOW THE STRESSES IN YOUR LIFE MIGHT BE AFFECTING YOU AND YOUR HEAD.




**If you find that negative feelings are persistent and getting in the way of everyday life, it may be time to talk to a friend or consult a health professional.**

www.lifeline.org.au
13 11 14

*Figure 7. Participatory design delivery notes prototype*

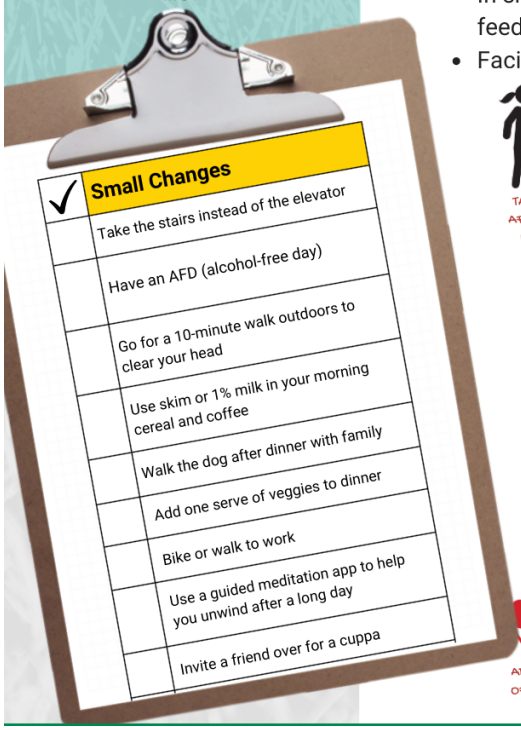
# DELIVERY NOTES

Sample Activity Week 2


*Did writing down your schedule make you more aware of anything?*

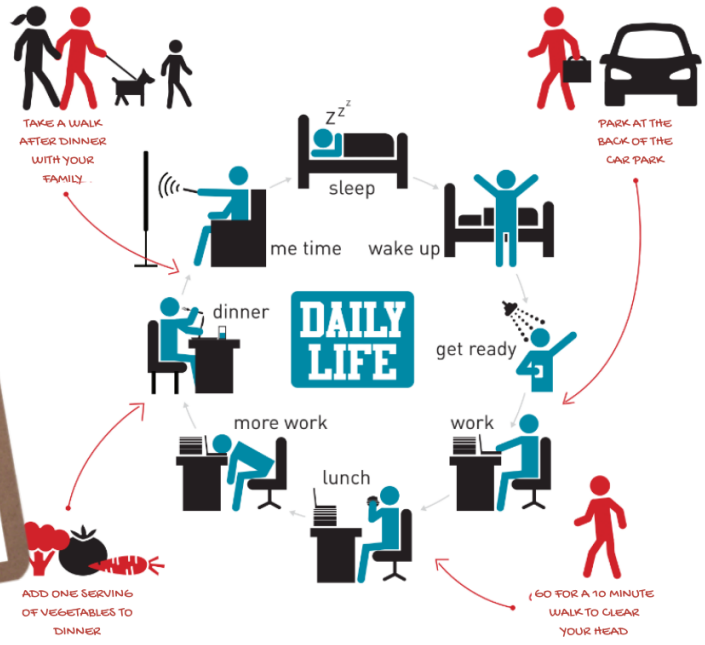
*What can you do if your schedule changes regularly?*

*Can you learn anything from the other guys about how to better incorporate small changes into your life?*




## Change a Bit

- The purpose of this activity is to show men that they don't have to eat like rabbits or live at the gym to be healthy.
- The goal is to identify times in our day where we can make small changes to better health.
- Ask everyone to briefly write down a typical weekday and weekend day from waking up in the morning to going to bed at night.
- Have them review their schedule and identify times when they can realistically make sustainable healthy changes.
- In small groups, get the men to discuss their schedules, provide feedback, and ask questions.
- Facilitators will summarise key points to the group



# Delivery Notes

Sample Activity Week 4


*On a scale of 1-10, how hard are you working right now? Aim for a moderate intensity between 4-6 on the scale*

*Try side steps or backwards walking for an extra challenge*

*Exercises can be adapted for intensity and previous injuries. Emphasis should be placed on proper form*

## Exercise

- **Warm up:** In pairs, lead men through 5-minutes of walking and dynamic movements around Moore Park.
- Up the intensity by having the pair at the back of the line race (fast walk) to the front; repeat.
- **Game time:** In teams of 5, play a king of the court match of walking soccer, rugby, or football (no running!).
- Teams on the sidelines are challenged to do a strength exercise (e.g., squats, push-ups, crunches).
- **Cool down:** Light stretches and dynamic movements. End with 'Relax + Reflect' activity.

## Relax + Reflect

It's easy to get caught up in life and forget about the here and now. Take a moment to appreciate the air in your lungs, the effort you just put in, and that feeling of accomplishment.

*Try to allow thoughts to come and go by noticing them and brushing them away*

*Find an area that is particularly tense or sore? Mentally note it, breath out, relax, and move on*

*Distracted? Bring your focus back to the breath*

1. Lying on your back, close your eyes and notice the space around you - sounds (close and far), smells, and feeling of the ground underneath you.
2. Mentally scan down the body and check in with each area, starting at the head, shoulders, upper arms, lower arms, etc.
3. Move the focus to your breathing. Count each breath - in (one) and out (two). When you get to ten, start over.

Spend a few minutes here before asking everyone to open their eyes. Before getting up, get them to take a 'snapshot' of how they feel.

# CHAPTER 8. References

Adam, D. (2013). On the spectrum. *Nature, 496*(7446), 416.

Addis, M. E. (2008). Gender and depression in men. *Clinical Psychology: Science and Practice, 15*(3), 153-168.

Addis, M. E., & Mahalik, J. R. (2003). Men, masculinity, and the contexts of help seeking. *American psychologist, 58*(1), 5.

Adegbosin, A. E., Plummer, D., Yau, M., Franklin, R., Cordier, R., & Sun, J. (2019). Larrikins? Wowsers? Hipsters? Snags? What does it mean to be a 'real man'in modern-day Australia? *Journal of Sociology, 55*(3), 551-570.

Aguiar, E. J., Morgan, P. J., Collins, C. E., Plotnikoff, R. C., Young, M. D., & Callister, R. (2016). Efficacy of the type 2 diabetes prevention using lifestyle education program RCT. *American journal of preventive medicine, 50*(3), 353-364.

Ammerman, A., Smith, T. W., & Calancie, L. (2014). Practice-based evidence in public health: improving reach, relevance, and results. *Annual review of public health, 35*, 47-63.

Andersen, E., Burton, N. W., & Anderssen, S. A. (2012). Physical activity levels six months after a randomised controlled physical activity intervention for Pakistani immigrant men living in Norway. *International journal of behavioral nutrition and physical activity, 9*(1), 47. doi:10.1186/1479-5868-9-47

Andersen, E., Hostmark, A. T., Holme, I., & Anderssen, S. A. (2013). Intervention effects on physical activity and insulin levels in men of Pakistani origin living in Oslo: a randomised controlled trial. *Journal of Immigrant & Minority Health, 15*(1), 101-110.

Antonovsky, A. (1996). The salutogenic model as a theory to guide health promotion. *Health promotion international, 11*(1), 11-18.

Arango, C., Díaz-Caneja, C. M., McGorry, P. D., Rapoport, J., Sommer, I. E., Vorstman, J. A., . . . Freedman, R. (2018). Preventive strategies for mental health. *The Lancet Psychiatry, 5*(7), 591-604.

Archibald, D., Douglas, F., Hoddinott, P., Van Teijlingen, E., Stewart, F., Robertson, C., . . . Avenell, A. (2015). A qualitative evidence synthesis on the management of male obesity. *BMJ Open, 5*(10), e008372.

Armijo-Olivo, S., Stiles, C. R., Hagen, N. A., Biondo, P. D., & Cummings, G. G. (2012). Assessment of study quality for systematic reviews: a comparison of the Cochrane Collaboration Risk of Bias Tool and the Effective Public Health Practice Project Quality Assessment Tool: methodological research. *Journal of evaluation in clinical practice, 18*(1), 12-18.

Ashton, L. M., Morgan, P. J., Hutchesson, M. J., Rollo, M. E., & Collins, C. E. (2017). Feasibility and preliminary efficacy of the 'HEYMAN'healthy lifestyle program for young men: a pilot randomised controlled trial. *Nutrition journal, 16*(1), 2.

Australian Bureau of Statistics. (2008). *National Survey of Mental Health and Wellbeing: Summary of Results*. Canberra

Australian Bureau of Statistics. (2017). *Causes of Death*. Canberra Retrieved from http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by Subject/3303.0~2017~Main Features~Australia's leading causes of death, 2017~2

Australian Bureau of Statistics. (2018). *National Health Survey*. Canberra Retrieved from http://www.abs.gov.au/ausstats/abs@.nsf/mf/4364.0.55.001

Australian Bureau of Statistics. (2020). *Causes of Death*. Canberra Retrieved from https://www.abs.gov.au/statistics/health/causes-death/causes-death-australia/latest-release - key-statistics

Australian Government. (2009). *Prevelence of mental disorders in the Australian population*.

Australian Health Ministers' Advisory Council. (2017). *National Strategic Framework for Chronic Conditions*.

Australian Institute of Health and Welfare. (2017). *The health of Australia's males*. Canberra: AIHW

Australian Institute of Health and Welfare. (2018). *Physical activity across the life stages*. Canberra: AIHW

Baker, D., & Rice, S. (2017). *Keeping it real: Reimagining mental health care for all young men*. Melbourne: Orygen, The National Centre of Excellencein Youth Mental Health

Balshem, H., Helfand, M., Schünemann, H. J., Oxman, A. D., Kunz, R., Brozek, J., . . . Norris, S. (2011). GRADE guidelines: 3. Rating the quality of evidence. *Journal of clinical epidemiology, 64*(4), 401-406.

Bandura, A. (1986). Social foundations of thought and action. *Englewood Cliffs, NJ, 1986*.

Baum, F., & Fisher, M. (2014). Why behavioural health promotion endures despite its failure to reduce health inequities. *Sociology of health & illness, 36*(2), 213-225.

Beyond Blue. (2018). Our work with men. Retrieved from https://www.beyondblue.org.au/about-us/about-our-work/our-work-with-men

Biddle, S. J., & Mutrie, N. (2007). *Psychology of physical activity: Determinants, well-being and interventions*: Routledge.

Bjerre, E., Bruun, D. M., Tolver, A., Brasso, K., Krustrup, P., Johansen, C., . . . Midtgaard, J. (2016). Effectiveness of community-based football compared to usual care in men with prostate cancer: Protocol for a randomised, controlled, parallel group, multicenter superiority trial (The FC Prostate Community Trial). *BMC cancer, 16*(1), 767.

Borenstein, M., Hedges, L. V., Higgins, J. P., & Rothstein, H. R. (2011). *Introduction to meta-analysis*: John Wiley & Sons.

Bottorff, J. L., Oliffe, J. L., Sarbit, G., Sharp, P., Caperchione, C. M., Currie, L. M., . . . Stolp, S. (2016). Evaluation of quitnow men: An online, men-centered smoking cessation intervention. *Journal of medical Internet research, 18*(4), e83.

Bottorff, J. L., Seaton, C. L., Johnson, S. T., Caperchione, C. M., Oliffe, J. L., More, K., . . . Tillotson, S. M. (2015). An Updated Review of Interventions that Include Promotion of Physical Activity for Adult Men. *Sports Medicine, 45*(6), 775-800. doi:10.1007/s40279-014-0286-3

Bozzo, A., Bali, K., Evaniew, N., & Ghert, M. (2017). Retractions in cancer research: a systematic survey. *Research integrity and peer review, 2*(1), 5.

Braun, V., & Clarke, V. (2006). Using thematic anaylsis in psychology. *Qualitative Research in Psychology, 3*(2), 77-101.

Bridges, T., & Pascoe, C. J. (2014). Hybrid masculinities: New directions in the sociology of men and masculinities. *Sociology Compass, 8*(3), 246-258.

Brownhill, S., Wilhelm, K., Barclay, L., & Schmied, V. (2005). 'Big build': hidden depression in men. *Australian and New Zealand journal of psychiatry, 39*(10), 921-931.

Bunn, C., Wyke, S., Gray, C. M., Maclean, A., & Hunt, K. (2016). 'Coz football is what we all have': masculinities, practice, performance and effervescence in a gender-sensitised weight-loss and healthy living programme for men. *Sociology of health & illness, 38*(5), 812-828.

Butera, K. J. (2008). Neo-mateship'in the 21st century: Changes in the performance of Australian masculinity. *Journal of Sociology, 44*(3), 265-281.

Caperchione, C. M., Bottorff, J. L., Oliffe, J. L., Johnson, S. A., Hunt, K., Sharp, P., . . . Goldenberg, S. L. (2017). The HAT TRICK program for improving physical activity, healthy eating and connectedness among overweight, inactive men: study protocol of a pragmatic feasibility trial. *BMJ Open*.

Caperchione, C. M., Bottorff, J. L., Stolp, S., Sharp, P., Johnson, S. T., Oliffe, J. L., & Hunt, K. (2020). Positive lifestyle behavior changes among canadian men: findings from the hat trick program. *American Journal of Health Promotion*, 0890117120957176.

Caperchione, C. M., Stolp, S., Bottorff, J. L., Oliffe, J. L., Johnson, S. T., Seaton, C., . . . Errey, S. (2016). Changes in men's physical activity and healthy eating knowledge and behavior as a result of program exposure: findings from the workplace POWERPLAY program. *Journal of Physical Activity and Health, 13*(12), 1364-1371.

Caperchione, C. M., Vandelanotte, C., Kolt, G. S., Duncan, M., Ellison, M., George, E., & Mummery, K. W. (2012). What a man wants: understanding the challenges and motivations to physical activity participation and healthy eating in middle-aged Australian men. *American Journal of Men's Health, 6*(6), 453-461.

Carroll, P., Harrison, M., Richardson, N., Robertson, S., Keohane, A., Kelly, L., & Donohoe, A. (2018). Evaluation of a gender-sensitive physical activity programme for inactive men in Ireland: Protocol paper for a pragmatic controlled trial. *Journal of Physical Activity Research, 3*(1), 20-27.

Casals, M., Girabent-Farres, M., & Carrasco, J. L. (2014). Methodological quality and reporting of generalized linear mixed models in clinical medicine (2000-2012): a systematic review. *PloS one, 9*(11).

Chandler, A. (2021). Masculinities and suicide: Unsettling 'talk'as a response to suicide in men. *Critical Public Health*, 1-10.

Chapman, J. J., Fraser, S. J., Brown, W. J., & Burton, N. W. (2016). Physical activity preferences, motivators, barriers and attitudes of adults with mental illness. *Journal of Mental Health, 25*(5), 448-454.

Chauvet-Gelinier, J.-C., Roussot, A., Cottenet, J., Brindisi, M.-C., Petit, J.-M., Bonin, B., . . . Quantin, C. (2019). Depression and obesity, data from a national administrative database study: Geographic evidence for an epidemiological overlap. *PloS one, 14*(1), e0210507.

Choi, K. W., Chen, C.-Y., Stein, M. B., Klimentidis, Y. C., Wang, M.-J., Koenen, K. C., & Smoller, J. W. (2019). Assessment of bidirectional relationships between physical activity and depression among adults: a 2-sample mendelian randomization study. *JAMA psychiatry*.

CIHR. (2020). What is gender? What is sex? Retrieved from https://cihr-irsc.gc.ca/e/48642.html

Clarke, V., & Braun, V. (2017). Thematic analysis. *The Journal of Positive Psychology, 12*(3), 297-298. doi:10.1080/17439760.2016.1262613

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*.

Cole, B. P., & Davidson, M. M. (2019). Exploring men's perceptions about male depression. *Psychology of Men & Masculinities, 20*(4), 459.

Cole, B. P., & Ingram, P. B. (2019). Where do I turn for help? Gender role conflict, self-stigma, and college men's help-seeking for depression. *Psychology of Men & Masculinities*.

Conn, V. S., Hafdahl, A. R., Brown, S. A., & Brown, L. M. (2008). Meta-analysis of patient education interventions to increase physical activity among chronically ill adults. *Patient education & counseling, 70*(2), 157-172.

Conn, V. S., Hafdahl, A. R., & Mehr, D. R. (2011). Interventions to increase physical activity among healthy adults: meta-analysis of outcomes. *American journal of public health, 101*(4), 751-758.

Connell, R. W. (1987). Gender and power: society, the person and sexual politics. In. Sydney, Australia: Stanford, California: Stanford University Press.

Connell, R. W. (1995). Masculinities Sydney. *New South Wales, Australia: Allen & Unwin*.

Connell, R. W. (1998). Masculinities and globalization. *Men and masculinities, 1*(1), 3-23.

Connell, R. W. (2005). *Masculinities*: Polity.

Connell, R. W. (2013). *Gender and power: Society, the person and sexual politics*: John Wiley & Sons.

Connell, R. W., & Messerschmidt, J. W. (2005). Hegemonic masculinity: Rethinking the concept. *Gender & society, 19*(6), 829-859.

Conway, R. (1985). *The great Australian stupor*. South Melbourne, Australia: Sun Books.

Cormie, P., Oliffe, J. L., Wootten, A. C., Galvão, D. A., Newton, R. U., & Chambers, S. K. (2016). Improving psychosocial health in men with prostate cancer through an intervention that reinforces masculine values–exercise. *Psycho-Oncology, 25*(2), 232-235.

Cotman, C. W., Berchtold, N. C., & Christie, L.-A. (2007). Exercise builds brain health: key roles of growth factor cascades and inflammation. *Trends in neurosciences, 30*(9), 464-472.

Courtenay, W. H. (2000). Constructions of masculinity and their influence on men's well-being: a theory of gender and health. *Social Science & Medicine, 50*(10), 1385-1401. doi:S0277953699003901.

Crone, D., Smith, A., & Gough, B. (2006). The physical activity and mental health relationship—A contemporary perspective from qualitative research. *Acta universitatis palackianae olomucensis. Gymnica, 36*(3).

Dale, H., Brassington, L., & King, K. (2014). The impact of healthy lifestyle interventions on mental health and wellbeing: a systematic review. *Mental Health Review Journal*.

Davies, C. A., Spence, J. C., Vandelanotte, C., Caperchione, C. M., & Mummery, W. K. (2012). Meta-analysis of internet-delivered interventions to increase physical activity levels. *International Journal of Behavioral Nutrition & Physical Activity, 9*(1), 52.

De Visser, R. O., & Smith, J. A. (2007). Alcohol consumption and masculine identity among young men. *Psychology and Health, 22*(5), 595-614.

De Visser, R. O., Smith, J. A., & McDonnell, E. J. (2009). 'That's not masculine' Masculine Capital and Health-related Behaviour. *Journal of health psychology, 14*(7), 1047-1058.

Deady, M., Johnston, D., Glozier, N., Milne, D., Choi, I., Mackinnon, A., . . . Bryant, R. (2018). A smartphone application for treating depressive symptoms: study protocol for a randomised controlled trial. *BMC psychiatry, 18*(1), 166.

Department of Health. (2020). *National Men's Health Strategy 2020-2030*. Canberra

Department of Health and Ageing. (2010). *National Male Health Policy*. Canberra

Dishman, R. K., & O'Connor, P. J. (2009). Lessons in exercise neurobiology: the case of endorphins. *Mental Health and Physical Activity, 2*(1), 4-9.

Drew, R. J., Morgan, P. J., Pollock, E. R., & Young, M. D. (2020). Impact of male-only lifestyle interventions on men's mental health: A systematic review and meta-analysis. *Obesity Reviews*.

Duval, S., & Tweedie, R. (2000). Trim and fill: a simple funnel-plot–based method of testing and adjusting for publication bias in meta-analysis. *Biometrics, 56*(2), 455-463.

Dyrenfurth, N. (2015). *Mateship: a very Australian history*: Scribe Publications.

Effective Public Health Practice Project. (1998). Quality Assessment Tool For Quantitative Studies. Retrieved from https://merst.ca/ephpp/

Egger, M., Smith, G. D., Schneider, M., & Minder, C. (1997). Bias in meta-analysis detected by a simple, graphical test. *BMJ, 315*(7109), 629-634.

Elley, C. R., Kerse, N., Arroll, B., & Robinson, E. (2003). Effectiveness of counselling patients on physical activity in general practice: cluster randomised controlled trial. *BMJ, 326*(7393), 793.

Elliott, K. (2019). Negotiations between progressive and 'traditional'expressions of masculinity among young Australian men. *Journal of Sociology, 55*(1), 108-123.

Emslie, C., Ridge, D., Ziebland, S., & Hunt, K. (2006). Men's accounts of depression: reconstructing or resisting hegemonic masculinity? *Social Science & Medicine, 62*(9), 2246-2257.

Emslie, C., Ridge, D., Ziebland, S., & Hunt, K. (2007). Exploring men's and women's experiences of depression and engagement with health professionals: more similarities than differences? A qualitative interview study. *BMC Family Practice, 8*(1), 1-10.

Evans, J., Frank, B., Oliffe, J. L., & Gregory, D. (2011). Health, illness, men and masculinities (HIMM): a theoretical framework for understanding men and their health. *Journal of Men's Health, 8*(1), 7-15.

Finlay, A., Wittert, G., & Short, C. E. (2018). A systematic review of physical activity-based behaviour change interventions reaching men with prostate cancer. *Journal of Cancer Survivorship, 12*(4), 571-591.

Flick, U. (2018). Triangulation in data collection. *The SAGE handbook of qualitative data collection*, 527-544.

Flood, M. (2018). *The Man Box: A Study on Being a Young Man in Australia*. Retrieved from Melbourne:

Foster, C., Hillsdon, M., Thorogood, M., Kaur, A., & Wedatilake, T. (2005). Interventions for promoting physical activity. *Cochrane database of systematic reviews*(1).

Foster, C., Richards, J., Thorogood, M., & Hillsdon, M. (2013). Remote and web 2.0 interventions for promoting physical activity. *Cochrane database of systematic reviews*(9).

Frank, B. (1993). The 'new men's studies' and feminism: promise or danger. *Men and masculinities. A critical anthology*, 333-343.

Franklin, A., Barbosa Neves, B., Hookway, N., Patulny, R., Tranter, B., & Jaworski, K. (2019). Towards an understanding of loneliness among Australian men: Gender cultures, embodied expression and the social bases of belonging. *Journal of Sociology, 55*(1), 124-143.

Galdas, P. M., Cheater, F., & Marshall, P. (2005). Men and help-seeking behaviour: Literature review. *Journal of Advanced Nursing, 49*(6), 616-623.

Galvao, D. A., Newton, R. U., Girgis, A., Lepore, S. J., Stiller, A., Mihalopoulos, C., . . . Chambers, S. K. (2017). Randomized controlled trial of a peer led multimodal intervention for men with prostate cancer to increase exercise participation. *Psycho Oncology.* Retrieved from

Gaskin, C. J., Craike, M., Mohebbi, M., Courneya, K. S., & Livingston, P. M. (2017). A Clinician Referral and 12-Week Exercise Training Program for Men With Prostate Cancer: Outcomes to 12 Months of the ENGAGE Cluster Randomized Controlled Trial. *Journal of Physical Activity & Health, 14*(5), 353-359. Retrieved from

Genuchi, M. C., & Mitsunaga, L. K. (2015). Sex differences in masculine depression: Externalizing symptoms as a primary feature of depression in men. *The journal of men's studies, 23*(3), 243-251.

George, E. S., Kolt, G. S., Duncan, M. J., Caperchione, C. M., Mummery, W. K., Vandelanotte, C., . . . Noakes, M. (2012). A review of the effectiveness of physical activity interventions for adult males. *Sports Medicine, 42*(4), 281-300.

Glasgow, R. E., Vinson, C., Chambers, D., Khoury, M. J., Kaplan, R. M., & Hunter, C. (2012). National Institutes of Health approaches to dissemination and implementation science: current and future directions. *American journal of public health, 102*(7), 1274-1281.

Glowacki, K., Duncan, M. J., Gainforth, H., & Faulkner, G. (2017). Barriers and facilitators to physical activity and exercise among adults with depression: A scoping review. *Mental Health and Physical Activity, 13*, 108-119.

Gong, J., Chen, X., & Li, S. (2015). Efficacy of a Community-Based Physical Activity Program KM2H2 for Stroke and Heart Attack Prevention among Senior Hypertensive Patients: A

Cluster Randomized Controlled Phase-II Trial. *PLoS ONE [Electronic Resource], 10*(10), e0139442. Retrieved from

Gorzelitz, J., Peppard, P. E., Malecki, K., Gennuso, K., Nieto, F. J., & Cadmus-Bertram, L. (2018). Predictors of discordance in self-report versus device-measured physical activity measurement. *Annals of epidemiology, 28*(7), 427-431.

Gough, B. (2013). The psychology of men's health: Maximizing masculine capital. *Health Psychology, 32*(1), 1.

Gough, B., & Novikova, I. (2020). Mental health, men and culture: how do sociocultural constructions of masculinities relate to men's mental health help-seeking behaviour in the WHO European Region?

Gough, B., & Robertson, S. (2009). *Men, masculinities and health: Critical perspectives*: Macmillan International Higher Education.

GRADE Working Group. (2004). Grading quality of evidence and strength of recommendations. *BMJ, 328*(7454), 1490.

Gray, C. M., Hunt, K., Mutrie, N., Anderson, A. S., Leishman, J., Dalgarno, L., & Wyke, S. (2013). Football Fans in Training: the development and optimization of an intervention delivered through professional sports clubs to help men lose weight, become more active and adopt healthier eating habits. *BMC Public Health, 13*, 232. doi:10.1186/1471-2458-13-232

Gray, C. M., Hunt, K., Mutrie, N., Anderson, A. S., Treweek, S., & Wyke, S. (2013). Weight management for overweight and obese men delivered through professional football clubs: a pilot randomized trial. *International Journal of Behavioral Nutrition & Physical Activity, 10*, 121.

Gray, C. M., Wyke, S., Zhang, R., Anderson, A. S., Barry, S., Brennan, G., . . . Donnachie, C. (2018). Long-term weight loss following a randomised controlled trial of a weight management programme for men delivered through professional football clubs: the Football Fans in Training follow-up study. *Public Health Research, 6*(9), 1-114.

Greaves, C. J., Sheppard, K. E., Abraham, C., Hardeman, W., Roden, M., Evans, P. H., & Schwarz, P. (2011). Systematic review of reviews of intervention components associated with increased effectiveness in dietary and physical activity interventions. *BMC public health, 11*(1), 119.

Green, L. W., Ottoson, J. M., Garcia, C., & Hiatt, R. A. (2009). Diffusion theory and knowledge dissemination, utilization, and integration in public health. *Annual review of public health, 30*, 151-174.

Green, S., & Higgins, J. (2005). *Cochrane handbook for systematic reviews of interventions*: Cochrane Training.

Griffith, D. M. (2012). An intersectional approach to men's health. *Journal of Men's Health, 9*(2), 106-112.

Griffith, D. M., Bruce, M. A., & Thorpe Jr, R. J. (2019). *Men's Health Equity: A Handbook*: Routledge.

Griffith, D. M., Gilbert, K. L., Bruce, M. A., & Thorpe, R. J. (2016). Masculinity in Men's Health: Barrier or Portal to Healthcare? In *Men's health in primary care* (pp. 19-31): Springer.

Groeneveld, I. F., Proper, K. I., van der Beek, A. J., Hildebrandt, V. H., & van Mechelen, W. (2011). Short and long term effects of a lifestyle intervention for construction workers at risk for cardiovascular disease: a randomized controlled trial. *BMC public health, 11*, 836.

Guha, M. (2014). Diagnostic and statistical manual of mental disorders: DSM-5. *Reference Reviews*.

Hald, G. M., Ciprić, A., Øverup, C. S., Štulhofer, A., Lange, T., Sander, S., . . . Strizzi, J. M. (2020). Randomized controlled trial study of the effects of an online divorce platform on anxiety, depression, and somatization. *Journal of family Psychology, 34*(6), 740.

Hallal, P. C., Andersen, L. B., Bull, F. C., Guthold, R., Haskell, W., Ekelund, U., & Lancet Physical Activity Series Working Group. (2012). Global physical activity levels: surveillance progress, pitfalls, and prospects. *The Lancet, 380*(9838), 247-257.

Harper, D., & Thompson, A. R. (2011). *Qualitative research methods in mental health and psychotherapy: A guide for students and practitioners*: John Wiley & Sons.

Hart, A. (2016). Good Sports, drinking cultures and hegemonic masculinities in a community sporting club case study. *Drugs: Education, prevention and policy, 23*(4), 302-311.

headspace. (2019). Headcoach. Retrieved from https://headspace.org.au/headcoach/

Heck, R. H., Tabata, L., & Thomas, S. L. (2013). *Multilevel and longitudinal modeling with IBM SPSS*: Routledge.

Heilman, B., Barker, G., & Harrison, A. (2017). The Man Box: a study on being a young man in the US, UK, and Mexico: key findings. *Washington DC and London: Promundo US and Unilever*.

Hunt, K., Gray, C. M., Maclean, A., Smillie, S., Bunn, C., & Wyke, S. (2014). Do weight management programmes delivered at professional football clubs attract and engage high risk men? A mixed-methods study. *BMC public health, 14*, 50. doi:10.1186/1471-2458-14-50

Hunt, K., McCann, C., Gray, C. M., Mutrie, N., & Wyke, S. (2013). "You've got to walk before you run": positive evaluations of a walking program as part of a gender-sensitized, weight-management program delivered to men through professional football clubs. *Health psychology, 32*(1), 57-65. doi:10.1037/a0029537

Hunt, K., Wyke, S., Gray, C. M., Anderson, A. S., Brady, A., Bunn, C., . . . Treweek, S. (2014). A gender-sensitised weight loss and healthy living programme for overweight and obese men delivered by Scottish Premier League football clubs (FFIT): a pragmatic randomised controlled trial. *Lancet, 383*(9924), 1211-1221.

Israel, B. A., Cummings, K. M., Dignan, M. B., Heaney, C. A., Perales, D. P., Simons-Morton, B. G., & Zimmerman, M. A. (1995). Evaluation of health education programs: current assessment and future directions. *Health education quarterly, 22*(3), 364-389.

Israel, B. A., Schulz, A. J., Parker, E. A., & Becker, A. B. (1998). Review of community-based research: assessing partnership approaches to improve public health. *Annual review of public health, 19*(1), 173-202.

Jackson, N., & Waters, E. (2005). Criteria for the systematic review of health promotion and public health interventions. *Health promotion international, 20*(4), 367-374.

Johnson, J. L., Oliffe, J. L., Kelly, M. T., Galdas, P., & Ogrodniczuk, J. S. (2012). Men's discourses of help-seeking in the context of depression. *Sociology of health & illness, 34*(3), 345-361.

Jull, J., Giles, A., & Graham, I. D. (2017). Community-based participatory research and integrated knowledge translation: advancing the co-creation of knowledge. *Implementation science, 12*(1), 1-9.

Kandola, A., Ashdown-Franks, G., Hendrikse, J., Sabiston, C. M., & Stubbs, B. (2019). Physical activity and depression: towards understanding the antidepressant mechanisms of physical activity. *Neuroscience & Biobehavioral Reviews, 107*, 525-539.

Kelly, L., Harrison, M., Richardson, N., Carroll, P., Robertson, S., Keohane, A., & Donohoe, A. (2019). The impact of a gender-specific physical activity intervention on the fitness and fatness profile of men in Ireland. *European Journal of Public Health, 29*(6), 1154-1160.

Kelly, P., Fitzsimons, C., & Baker, G. (2016). Should we reframe how we think about physical activity and sedentary behaviour measurement? Validity and reliability reconsidered. *International Journal of Behavioral Nutrition & Physical Activity, 13*(1), 32.

Keyes, C. L. (2002). The mental health continuum: From languishing to flourishing in life. *Journal of health and social behavior*, 207-222.

Kianoush, F., & Masoomehni, K. (2015). Application REML model and determining cut off of ICC by multi-level model based on Markov Chains simulation in health. *Indian Journal of Fundamental and Applied Life Sciences, 5*, 1432-1448.

Kidd, B. (2013). Sports and masculinity. In *Sport in Society* (Vol. 16, pp. 553-564).

Kimmel, M. (2017). *Manhood in America*: Oxford University Press New York, NY.

King, K., Rice, S., Schlichthorst, M., Chondros, P., & Pirkis, J. (2020). Breaking the man code: Gender, health and young men. *Lancet Global Health*.

Lee, C., & Owens, R. G. (2002). The Psychology of Mens' Health.

Lee, K., Ding, D., Grunseit, A., Wolfenden, L., Milat, A., & Bauman, A. (2021). Many papers but limited policy impact? A bibliometric review of physical activity research. *Translational Journal of the American College of Sports Medicine, 6*(4), e000167.

Levant, R. F., & Wimer, D. J. (2014). Masculinity constructs as protective buffers and risk factors for men's health. *American journal of men's health, 8*(2), 110-120.

Livingston, P. M., Craike, M. J., Salmon, J., Courneya, K. S., Gaskin, C. J., Fraser, S. F., . . . Engage Uro-Oncology Clinicians' Group. (2015). Effects of a clinician referral and exercise program for men who have completed active treatment for prostate cancer: A multicenter cluster randomized controlled trial (ENGAGE). *Cancer, 121*(15), 2646-2654.

Lubans, D., Richards, J., Hillman, C., Faulkner, G., Beauchamp, M., Nilsson, M., . . . Biddle, S. (2016). Physical activity for cognitive and mental health in youth: a systematic review of mechanisms. *Pediatrics, 138*(3).

Lutz, R. S., Lochbaum, M. R., Lanning, B., Stinson, L. G., & Brewer, R. (2007). Cross-lagged relationships among leisure-time exercise and perceived stress in blue-collar workers. *Journal of Sport and Exercise Psychology, 29*(6), 687-705.

Mac an Ghaill, M. (1996). *Understanding masculinities: Social relations and cultural arenas*: McGraw-Hill Education (UK).

MacDonald, J. (2016). A Different Framework for Looking at Men's Health. *International Journal of Men's Health, 15*(3).

Mahalik, J. R., Levi-Minzi, M., & Walker, G. (2007). Masculinity and health behaviors in Australian men. *Psychology of Men & Masculinity, 8*(4), 240.

Maruyama, C., Kimura, M., Okumura, H., Hayashi, K., & Arao, T. (2010). Effect of a worksite-based intervention program on metabolic parameters in middle-aged male white-collar workers: a randomized controlled trial. *Preventive medicine, 51*(1), 11-17.

Mauvais-Jarvis, F., Merz, N. B., Barnes, P. J., Brinton, R. D., Carrero, J.-J., DeMeo, D. L., . . . Klein, S. L. (2020). Sex and gender: modifiers of health, disease, and medicine. *The Lancet, 396*(10250), 565-582.

McGowan, E. L., North, S., & Courneya, K. S. (2013). Randomized controlled trial of a behavior change intervention to increase physical activity and quality of life in prostate cancer survivors. *Annals of Behavioral Medicine, 46*(3), 382-393.

Michie, S., Van Stralen, M. M., & West, R. (2011). The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implementation science, 6*(1), 42.

Milat, A. J., King, L., Bauman, A. E., & Redman, S. (2013). The concept of scalability: increasing the scale and potential adoption of health promotion interventions into policy and practice. *Health promotion international, 28*(3), 285-298.

Milligan, C., Neary, D., Payne, S., Hanratty, B., Irwin, P., & Dowrick, C. (2016). Older men and social activity: A scoping review of Men's Sheds and other gendered interventions. *Ageing & society, 36*(5), 895-923.

Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Annals of internal medicine, 151*(4), 264-269.

Morgan, P. J., Callister, R., Collins, C. E., Plotnikoff, R. C., Young, M. D., Berry, N., . . . Saunders, K. L. (2013). The SHED-IT community trial: a randomized controlled trial of internet- and paper-based weight loss programs tailored for overweight and obese men. *Annals of Behavioral Medicine, 45*(2), 139-152.

Morgan, P. J., Collins, C. E., Plotnikoff, R. C., Callister, R., Burrows, T., Fletcher, R., . . . Lubans, D. R. (2014). The 'Healthy Dads, Healthy Kids' community randomized controlled trial: a community-based healthy lifestyle program for fathers and their children. *Preventive medicine, 61*, 90-99.

Morgan, P. J., Collins, C. E., Plotnikoff, R. C., Cook, A. T., Berthon, B., Mitchell, S., & Callister, R. (2011a). Efficacy of a workplace-based weight loss program for overweight male shift workers: the Workplace POWER (Preventing Obesity Without Eating like a Rabbit) randomized controlled trial. *Preventive medicine, 52*(5), 317-325.

Morgan, P. J., Collins, C. E., Plotnikoff, R. C., Cook, A. T., Berthon, B., Mitchell, S., & Callister, R. (2011b). Efficacy of a workplace-based weight loss program for overweight male shift workers: the Workplace POWER (Preventing Obesity Without Eating like a Rabbit) randomized controlled trial. *Preventive medicine, 52*(5), 317-325.

Morgan, P. J., Lubans, D. R., Callister, R., Okely, A. D., Burrows, T. L., Fletcher, R., & Collins, C. E. (2011). The 'Healthy Dads, Healthy Kids' randomized controlled trial: efficacy of a healthy lifestyle program for overweight fathers and their children. *International Journal of Obesity, 35*(3), 436-447.

Morgan, P. J., Lubans, D. R., Collins, C. E., Warren, J. M., & Callister, R. (2009). The SHED-IT randomized controlled trial: evaluation of an Internet-based weight-loss program for men. *Obesity, 17*(11), 2025-2032.

Morgan, P. J., Warren, J. M., Lubans, D. R., Collins, C. E., & Callister, R. (2011). Engaging men in weight loss: Experiences of men who participated in the male only SHED-IT pilot study. *Obesity Research & Clinical Practice, 5*(3), e239-e248. doi:10.1016/j.orcp.2011.03.002

Movember. (2021a). Movember Conversations. Retrieved from https://conversations.movember.com/

Movember. (2021b). Speak Easy. Retrieved from https://au.movember.com/get-involved/speakeasy

Naderifar, M., Goli, H., & Ghaljaie, F. (2017). Snowball sampling: A purposeful method of sampling in qualitative research. *Strides in Development of Medical Education, 14*(3).

National Institute for Clinical Excellence. (2006). *Four commonly used methods to increase physical activity: brief interventions in primary care, exercise referral schemes, pedometers and community-based exercise programmes for walking and cycling*. Great Britain: NICE.

Nicholas, M., Hagen, P., Rahilly, K., & Swainston, N. (2012). *Using participatory design methods to engage the uninterested.* Paper presented at the Proceedings of the 12th Participatory Design Conference: Exploratory Papers, Workshop Descriptions, Industry Cases-Volume 2.

Nichols, S., & Stahl, G. (2017). "Gotta Get That Laziness Out of Me": Negotiating Masculine Aspirational Subjectivities in the Transition from School to University in Australia. In *Masculinity and Aspiration in the Era of Neoliberal Education* (pp. 166-183): Routledge.

Nickel, S., & von dem Knesebeck, O. (2020). Effectiveness of community-based health promotion interventions in urban areas: A systematic review. *Journal of community health, 45*(2), 419-434.

O'Cathain, A., Croot, L., Duncan, E., Rousseau, N., Sworn, K., Turner, K. M., . . . Hoddinott, P. (2019). Guidance on how to develop complex interventions to improve health and healthcare. *BMJ Open, 9*(8), e029954.

O'Loughlin, R. E., Duberstein, P. R., Veazie, P. J., Bell, R. A., Rochlen, A. B., Fernandez y Garcia, E., & Kravitz, R. L. (2011). Role of the gender-linked norm of toughness in the decision to engage in treatment for depression. *Psychiatric Services, 62*(7), 740-746.

O'Brien, R., Hunt, K., & Hart, G. (2005). 'It's caveman stuff, but that is to a certain extent how guys still operate': men's accounts of masculinity and help seeking. *Social Science & Medicine, 61*(3), 503-516.

Ogrodniczuk, J., Oliffe, J., Kuhl, D., & Gross, P. A. (2016). Men's mental health: Spaces and places that work for men. *Canadian Family Physician, 62*(6), 463-464.

Ogrodniczuk, J. S., Rice, S. M., Kealy, D., Seidler, Z. E., Delara, M., & Oliffe, J. L. (2021). Psychosocial impact of the COVID-19 pandemic: A cross-sectional study of online help-seeking Canadian men. *Postgraduate Medicine*.

Ohrnberger, J., Fichera, E., & Sutton, M. (2017). The relationship between physical and mental health: A mediation analysis. *Social Science & Medicine, 195*, 42-49.

Oliffe, J. L., Bottorff, J. L., Sharp, P., Caperchione, C. M., Johnson, S. T., Healy, T., . . . Errey, S. (2017). Healthy eating and active living: rural-based working men's perspectives. *American journal of men's health, 11*(6), 1664-1672.

Oliffe, J. L., Broom, A., Popa, M., Jenkins, E. K., Rice, S. M., Ferlatte, O., & Rossnagel, E. (2019). Unpacking social isolation in men's suicidality. *Qualitative health research, 29*(3), 315-327.

Oliffe, J. L., Kelly, M., Montaner, G., Seidler, Z. E., Maher, B., & Rice, S. (2021). Men Building Better Relationships: A Scoping Review. *Health Promotion Journal of Australia*.

Oliffe, J. L., & Mroz, L. (2005). Men interviewing men about health and illness: Ten lessons learned. *Journal of Men's Health, 2*(2), 257-260.

Oliffe, J. L., & Phillips, M. J. (2008). Men, depression and masculinities: A review and recommendations. *Journal of Men's Health, 5*(3), 194-202.

Oliffe, J. L., Rice, S. M., Kelly, M. T., Ogrodniczuk, J. S., Broom, A., Robertson, S., & Black, N. (2019). A mixed-methods study of the health-related masculine values among young Canadian men. *Psychology of Men & Masculinity*.

Oliffe, J. L., Rossnagel, E., Bottorff, J. L., Chambers, S. K., Caperchione, C., & Rice, S. M. (2020). Community-based men's health promotion programs: eight lessons learnt and their caveats. *Health promotion international*.

Oliffe, J. L., Rossnagel, E., Seidler, Z. E., Kealy, D., Ogrodniczuk, J. S., & Rice, S. M. (2019). Men's depression and suicide. *Current psychiatry reports, 21*(10), 103.

Orrow, G., Kinmonth, A.-L., Sanderson, S., & Sutton, S. (2012). Effectiveness of physical activity promotion based in primary care: systematic review and meta-analysis of randomised controlled trials. *BMJ, 344*, e1389.

Orygen. (2015). The National Centre of Excellence in Younth Mental Health. Retrieved from https://www.orygen.org.au/

Owen, J., Wong, Y. J., & Rodolfa, E. (2009). Empirical search for psychotherapists' gender competence in psychotherapy. *Psychotherapy: Theory, Research, Practice, Training, 46*(4), 448.

Pagoto, S. L., Schneider, K. L., Oleski, J. L., Luciani, J. M., Bodenlos, J. S., & Whited, M. C. (2012). Male inclusion in randomized controlled trials of lifestyle weight loss interventions. *Obesity, 20*(6), 1234-1239.

Paluska, S. A., & Schwenk, T. L. (2000). Physical activity and mental health. *Sports medicine, 29*(3), 167-180.

Patrick, K., Calfas, K. J., Norman, G. J., Rosenberg, D., Zabinski, M. F., Sallis, J. F., . . . Dillon, L. W. (2011). Outcomes of a 12-month web-based intervention for overweight and obese men. *Annals of Behavioral Medicine, 42*(3), 391-401.

Percival, V., Dusabe-Richards, E., Wurie, H., Namakula, J., Ssali, S., & Theobald, S. (2018). Are health systems interventions gender blind? examining health system reconstruction in conflict affected states. *Globalization and health, 14*(1), 1-23.

Petrella, R. J., Gill, D. P., Guangyong, Z. O. U., De Cruz, A., Riggin, B., Bartol, C., . . . Zwarenstein, M. (2017). Hockey Fans in Training: A Pilot Pragmatic Randomized Controlled Trial. *Medicine & Science in Sports & Exercise, 49*(12), 2506-2516.

Prime, H., Wade, M., & Browne, D. T. (2020). Risk and resilience in family well-being during the COVID-19 pandemic. *American psychologist, 75*(5), 631.

Prince, S. A., Adamo, K. B., Hamel, M. E., Hardt, J., Gorber, S. C., & Tremblay, M. (2008). A comparison of direct versus self-report measures for assessing physical activity in adults: a systematic review. *International Journal of Behavioral Nutrition & Physical Activity, 5*(1), 56.

Pringle, A., Zwolinsky, S., Smith, A., Robertson, S., McKenna, J., & White, A. (2011). The pre-adoption demographic and health profiles of men participating in a programme of men's health delivered in English Premier League football clubs. *Public Health, 125*(7), 411-416.

Pritchard, J. E., Nowson, C. A., & Wark, J. D. (1997). A worksite program for overweight middle-aged men achieves lesser weight loss with exercise than with dietary change. *Journal of the American Dietetic Association, 97*(1), 37-42.

Proudfoot, J., Fogarty, A. S., McTigue, I., Nathan, S., Whittle, E. L., Christensen, H., . . . Wilhelm, K. (2015). Positive strategies men regularly use to prevent and manage depression: a national survey of Australian men. *BMC Public Health, 15*(1), 1135.

Ramirez, J. L., & Badger, T. A. (2014). Men navigating inward and outward through depression. *Archives of psychiatric nursing, 28*(1), 21-28.

Rao, J., & Scott, A. (1992). A simple method for the analysis of clustered binary data. *Biometrics*, 577-585.

Rebustini, F., Balbinotti, M. A. A., Ferretti-Rebustini, R. E. d. L., & Machado, A. A. (2016). Sport psychometry, participants and invariance: a critical review. *Journal of Physical Education, 27*.

Rice, S., Oliffe, J., Seidler, Z., Borschmann, R., Pirkis, J., Reavley, N., & Patton, G. (2021). Gender norms and the mental health of boys and young men. *The Lancet Public Health, 6*(8), e541-e542.

Rice, S. M., Fallon, B., & Bambling, M. (2011). Men and depression: The impact of masculine role norms throughout the lifespan. *Australian Educational and Developmental Psychologist, The, 28*(2), 133.

Rice, S. M., Fallon, B. J., Aucote, H. M., Möller-Leimkühler, A., Treeby, M. S., & Amminger, G. P. (2015). Longitudinal sex differences of externalising and internalising depression symptom trajectories: Implications for assessment of depression in men from an online study. *International journal of social psychiatry, 61*(3), 236-240.

Rice, S. M., Fallon, B. J., Aucote, H. M., & Möller-Leimkühler, A. M. (2013). Development and preliminary validation of the male depression risk scale: Furthering the assessment of depression in men. *Journal of affective disorders, 151*(3), 950-958.

Rice, S. M., Purcell, R., & McGorry, P. D. (2018). Adolescent and young adult male mental health: transforming system failures into proactive models of engagement. *Journal of Adolescent Health, 62*(3), S9-S17.

Rice, S. M., Telford, N. R., Rickwood, D. J., & Parker, A. G. (2018). Young men's access to community-based mental health care: qualitative analysis of barriers and facilitators. *Journal of mental health, 27*(1), 59-65.

Richards, J., Hillsdon, M., Thorogood, M., & Foster, C. (2013). Face-to-face interventions for promoting physical activity. *Cochrane database of systematic reviews*(9).

Rickwood, D., & Thomas, K. (2012). Conceptual measurement framework for help-seeking for mental health problems. *Psychology research and behavior management, 5*, 173.

River, J., & Flood, M. (2021). Masculinities, emotions and men's suicide. *Sociology of health & illness*.

Robertson, L. M., Douglas, F., Ludbrook, A., Reid, G., & van Teijlingen, E. (2008). What works with men? A systematic review of health promoting interventions targeting men. *BMC Health Services Research, 8*(1), 141. doi:10.1186/1472-6963-8-141

Robertson, S., Gough, B., Hanna, E., Raine, G., Robinson, M., Seims, A., & White, A. (2018). Successful mental health promotion with men: the evidence from 'tacit knowledge'. *Health promotion international, 33*(2), 334-344.

Robertson, S., Witty, K., Zwolinsky, S., & Day, R. (2013). Men's health promotion interventions: what have we learned from previous programmes? *Community Practitioner, 86*(11), 38-42.

Rochlen, A. B., Paterniti, D. A., Epstein, R. M., Duberstein, P., Willeford, L., & Kravitz, R. L. (2010). Barriers in diagnosing and treating men with depression: a focus group report. *American Journal of Men's Health, 4*(2), 167-175.

Rosenthal, R. (1991). *Meta-analytic procedures for social research* (Vol. 6): Sage.

Rovito, M. J., Leonard, B., Llamas, R., Leone, J. E., Talton, W., Fadich, A., & Baker, P. (2017). A Call for Gender-Inclusive Global Health Strategies. In: SAGE Publications Sage CA: Los Angeles, CA.

Rozanski, A., Blumenthal, J. A., & Kaplan, J. (1999). Impact of psychological factors on the pathogenesis of cardiovascular disease and implications for therapy. *Circulation, 99*(16), 2192-2217.

Ryff, C. D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. *Journal of personality and social psychology, 69*(4), 719.

Salmon, P. (2001). Effects of physical exercise on anxiety, depression, and sensitivity to stress: a unifying theory. *Clinical Psychology Review, 21*(1), 33-61.

Sanders, E. B.-N. (2002). From user-centered to participatory design approaches. In *Design and the social sciences* (pp. 18-25): CRC Press.

Sanders, E. B.-N., Brandt, E., & Binder, T. (2010). *A framework for organizing the tools and techniques of participatory design.* Paper presented at the Proceedings of the 11th biennial participatory design conference.

Sanders, E. B.-N., & Stappers, P. J. (2014). Probes, toolkits and prototypes: three approaches to making in codesigning. *CoDesign, 10*(1), 5-14.

Sandi, C. (2004). Stress, cognitive impairment and cell adhesion molecules. *Nature Reviews Neuroscience, 5*(12), 917.

Schroder, H., Cardenas-Fuentes, G., Martinez-Gonzalez, M. A., Corella, D., Vioque, J., Romaguera, D., . . . Salas-Salvado, J. (2018). Effectiveness of the physical activity intervention program in the PREDIMED-Plus study: a randomized controlled trial. *International Journal of Behavioral Nutrition & Physical Activity, 15*(1), 110.

Schultchen, D., Reichenberger, J., Mittl, T., Weh, T. R., Smyth, J. M., Blechert, J., & Pollatos, O. (2019). Bidirectional relationship of stress and affect with physical activity and healthy eating. *British Journal of Health Psychology, 24*(2), 315-333.

Seaton, C. L., Bottorff, J. L., Jones-Bricker, M., Oliffe, J. L., DeLeenheer, D., & Medhurst, K. (2017). Men's mental health promotion interventions: a scoping review. *American Journal of Men's Health, 11*(6), 1823-1837.

Seaton, C. L., Bottorff, J. L., Oliffe, J. L., Jones-Bricker, M., Caperchione, C. M., Johnson, S. T., & Sharp, P. (2017). Acceptability of the POWERPLAY Program: A Workplace Health Promotion Intervention for Men. *American Journal of Men's Health, 11*(6), 1809-1822.

Seaton, C. L., Bottorff, J. L., Oliffe, J. L., Medhurst, K., & DeLeenheer, D. (2019). Mental health promotion in male-dominated workplaces: Perspectives of male employees and workplace representatives. *Psychology of Men & Masculinities, 20*(4), 541.

Segerstrom, S. C., & Miller, G. E. (2004). Psychological stress and the human immune system: a meta-analytic study of 30 years of inquiry. *Psychological bulletin, 130*(4), 601.

Seidler, Z., Rice, S., Kealy, D., Oliffe, J., & Ogrodniczuk, J. (2020). Getting them through the door: A survey of men's facilitators for seeking mental health treatment. *International Journal of Mental Health and Addiction, 18*(5), 1346-1351.

Seidler, Z. E., Dawes, A. J., Rice, S. M., Oliffe, J. L., & Dhillon, H. M. (2016). The role of masculinity in men's help-seeking for depression: a systematic review. *Clinical Psychology Review, 49*, 106-118.

Seidler, Z. E., Rice, S. M., Dhillon, H. M., & Herrman, H. (2019). Why it's time to focus on masculinity in mental health training and clinical practice. *Australasian Psychiatry, 27*(2), 157-159.

Seidler, Z. E., Rice, S. M., Ogrodniczuk, J. S., Oliffe, J. L., & Dhillon, H. M. (2018). Engaging men in psychological treatment: A scoping review. *American journal of men's health, 12*(6), 1882-1900.

Seidler, Z. E., Rice, S. M., Oliffe, J. L., Fogarty, A. S., & Dhillon, H. M. (2018). Men in and out of treatment for depression: Strategies for improved engagement. *Australian Psychologist, 53*(5), 405-415.

Seidler, Z. E., Wilson, M. J., Kealy, D., Oliffe, J. L., Ogrodniczuk, J. S., & Rice, S. M. (2021). Men's Dropout From Mental Health Services: Results From a Survey of Australian Men Across the Life Span. *American journal of men's health, 15*(3), 15579883211014776.

Sharp, P., Bottorff, J. L., Hunt, K., Oliffe, J. L., Johnson, S. T., Dudley, L., & Caperchione, C. M. (2018). Men's Perspectives of a Gender-Sensitized Health Promotion Program Targeting Healthy Eating, Active Living, and Social Connectedness. *American Journal of Men's Health, 0*(0), 1557988318799159. doi:10.1177/1557988318799159

Sharp, P., Bottorff, J. L., Oliffe, J. L., Hunt, K., & Caperchione, C. M. (2020). Process evaluation of HAT TRICK: Feasibility, acceptability, and opportunities for program refinement *Health Education Research*. doi:10.1093/her/cyaa029

Sharp, P., Spence, J. C., Bottorff, J. L., Oliffe, J. L., Hunt, K., Vis-Dunbar, M., & Caperchione, C. M. (2020). One small step for man, one giant leap for men's health: a meta-analysis of behaviour change interventions to increase men's physical activity. *British Journal of Sports Medicine*.

Sharp, P., Stolp, S., Bottorff, J. L., Oliffe, J. L., Hunt, K., & Caperchione, C. M. (2020). Can lifestyle interventions improve Canadian men's mental health? Outcomes from the HAT TRICK programme. *Health promotion international*.

Shilton, T., & Barry, M. M. (2021). The critical role of health promotion for effective universal health coverage. *Global Health Promotion*, 1757975920984217.

Shin, D. W., Yun, J. M., Shin, J. H., Kwon, H., Min, H. Y., Joh, H. K., . . . Cho, B. (2017). Enhancing physical activity and reducing obesity through smartcare and financial incentives: A pilot randomized trial. *Obesity, 25*(2), 302-310.

Sinclair, A., & Alexander, H. (2012). Using outreach to involve the hard-to-reach in a health check: what difference does it make? *Public Health, 126*(2), 87-95.

Skivington, K., Matthews, L., Simpson, S. A., Craig, P., Baird, J., Blazeby, J. M., . . . McIntosh, E. (2021). A new framework for developing and evaluating complex interventions: update of Medical Research Council guidance. *BMJ, 374*.

Smith, J., Braunack-Mayer, A., & Wittert, G. (2006). What do we know about men's help-seeking and health service use?

Smith, J. A., Watkins, D. C., & Griffith, D. M. (2020). Equity, gender and health: New directions for global men's health promotion. In.

Stahl, G. (2020). 'My little beautiful mess': a longitudinal study of working-class masculinity in transition. *NORMA, 15*(2), 145-161.

Staiger, T., Stiawa, M., Mueller-Stierlin, A. S., Kilian, R., Beschoner, P., Gündel, H., . . . Schmauß, M. (2020). Masculinity and help-seeking among men with depression: a qualitative study. *Frontiers in Psychiatry, 11*, 1317.

Steene-Johannessen, J., Anderssen, S. A., Van der Ploeg, H. P., Hendriksen, I. J., Donnelly, A. E., Brage, S., & Ekelund, U. (2016). Are self-report measures able to define individuals as physically active or inactive? *Medicine & Science in Sports & Exercise, 48*(2), 235.

Struik, L. L., Abramowicz, A., Riley, B., Oliffe, J. L., Bottorff, J. L., & Stockton, L. D. (2019). Evaluating a Tool to Support the Integration of Gender in Programs to Promote Men's Health. *American Journal of Men's Health, 13*(6), 1557988319883775.

Stults-Kolehmainen, M. A., & Sinha, R. (2014). The effects of stress on physical activity and exercise. *Sports Medicine, 44*(1), 81-121.

Teixeira, P. J., Carraça, E. V., Markland, D., Silva, M. N., & Ryan, R. M. (2012). Exercise, physical activity, and self-determination theory: a systematic review. *International Journal of Behavioral Nutrition and Physical Activity, 9*(1), 78.

Teychenne, M., White, R. L., Richards, J., Schuch, F. B., Rosenbaum, S., & Bennie, J. A. (2020). Do we need physical activity guidelines for mental health: What does the evidence tell us? *Mental Health and Physical Activity, 18*, 100315.

Thapliyal, P., Conti, J., Bandara, R. S., & Hay, P. (2020). "It exists": An exploratory study of treatment experiences in men with eating disorders. *Australian Psychologist*.

Thomas, B., Ciliska, D., Dobbins, M., & Micucci, S. (2004). A process for systematically reviewing the literature: providing the research evidence for public health nursing interventions. *Worldviews on Evidence-Based Nursing, 1*(3), 176-184.

Viester, L., Verhagen, E. A. L. M., Bongers, P. M., & van der Beek, A. J. (2018). Effectiveness of a Worksite Intervention for Male Construction Workers on Dietary and Physical Activity Behaviors, Body Mass Index, and Health Outcomes: Results of a Randomized Controlled Trial. *American Journal of Health Promotion, 32*(3), 795-805.

Vijay, G., Wilson, E. C., Suhrcke, M., Hardeman, W., & Sutton, S. (2016). Are brief interventions to increase physical activity cost-effective? A systematic review. *British Journal of Sports Medicine, 50*(7), 408-417.

Vogel, D. L., & Heath, P. J. (2016). Men, masculinities, and help-seeking patterns. In *APA handbook of men and masculinities.* (pp. 685-707): American Psychological Association.

Waling, A. (2019). *White masculinity in contemporary Australia: The good ol'Aussie bloke*: Routledge.

Wallerstein, N., & Duran, B. (2010). Community-based participatory research contributions to intervention research: the intersection of science and practice to improve health equity. *American journal of public health, 100*(S1), S40-S46.

Wang, H., Naghavi, M., Allen, C., Barber, R. M., Bhutta, Z. A., Carter, A., . . . Coates, M. M. (2016). Global, regional, and national life expectancy, all-cause mortality, and cause-specific mortality for 249 causes of death, 1980–2015: a systematic analysis for the Global Burden of Disease Study 2015. *The Lancet, 388*(10053), 1459-1544.

Wang, P. S., Aguilar-Gaxiola, S., Alonso, J., Angermeyer, M. C., Borges, G., Bromet, E. J., . . . Gureje, O. (2007). Use of mental health services for anxiety, mood, and substance disorders in 17 countries in the WHO world mental health surveys. *The Lancet, 370*(9590), 841-850.

Warburton, D. E., & Bredin, S. S. (2017). Health benefits of physical activity: a systematic review of current systematic reviews. *Current opinion in cardiology, 32*(5), 541-556.

Ware Jr, J. E., Kosinski, M., & Keller, S. D. (1996). A 12-Item Short-Form Health Survey: construction of scales and preliminary tests of reliability and validity. *Medical care*, 220-233.

Waters, L. A., Galichet, B., Owen, N., & Eakin, E. (2011). Who participates in physical activity intervention trials? *Journal of Physical Activity & Health, 8*(1), 85-103.

Weaver-Hightower, M. (2008). *The politics of policy in boys' education: Getting boys "right"*: Springer.

Werkman, A., Hulshof, P. J., Stafleu, A., Kremers, S. P., Kok, F. J., Schouten, E. G., & Schuit, A. J. (2010). Effect of an individually tailored one-year energy balance programme on body weight, body composition and lifestyle in recent retirees: a cluster randomised controlled trial. *BMC Public Health, 10*, 110.

Whitley, R. (2018). Men's mental health: beyond victim-blaming. In: SAGE Publications Sage CA: Los Angeles, CA.

Wilkinson, R. G., & Marmot, M. (2003). *Social determinants of health: the solid facts*: World Health Organization.

Williams, J. E., & Best, D. L. (1990). *Measuring sex stereotypes: A multination study, Rev*: Sage Publications, Inc.

Wilson, J. M., Lee, J., Fitzgerald, H. N., Oosterhoff, B., Sevi, B., & Shook, N. J. (2020). Job insecurity and financial concern during the COVID-19 pandemic are associated with worse mental health. *Journal of occupational and environmental medicine, 62*(9), 686-691.

World Health Organization. (1986). *Ottawa Charter*. Geneva: World Health Organization

World Health Organization. (2004). *Prevention of mental disorders: Effective interventions and policy options: Summary report*: World Health Organization.

World Health Organization. (2005). *Promoting mental health: concepts, emerging evidence, practice: a report of the World Health Organization, Department of Mental Health and Substance Abuse in collaboration with the Victorian Health Promotion Foundation and the University of Melbourne*: World Health Organization.

World Health Organization. (2011). *Gender mainstreaming for health managers: a practical approach*: Geneva: World Health Organisation.

World Health Organization. (2014). Mental health: a state of well-being. Retrieved from https://www.who.int/features/factfiles/mental_health/en/

World Health Organization. (2016a). Chronic diseases and health promotion - Integrated chronic disease prevention and control. Retrieved from https://www.who.int/chp/about/integrated_cd/en/

World Health Organization. (2016b). Health Impact Assessment (HIA) - The determinants of health.

Wyke, S., Bunn, C., Andersen, E., Silva, M. N., van Nassau, F., McSkimming, P., . . . van der Ploeg, H. P. (2019). The effect of a programme to improve men's sedentary time and physical activity: The European Fans in Training (EuroFIT) randomised controlled trial. *PLoS medicine, 16*(2), e1002736. doi:http://dx.doi.org/10.1371/journal.pmed.1002736

Wyke, S., Hunt, K., Gray, C. M., Fenwick, E., Bunn, C., Donnan, P. T., . . . Treweek, S. (2015). Football Fans in Training (FFIT): a randomised controlled trial of a gender-sensitised weight loss and healthy living programme for men-end of study report. *Public Health Research, 3*(2), 1-129. doi:NBK273998

Young, M., Morgan, P., Plotnikoff, R., Callister, R., & Collins, C. (2012). Effectiveness of male-only weight loss and weight loss maintenance interventions: a systematic review with meta-analysis. *Obesity Reviews, 13*(5), 393-408.

Yousaf, O., Grunfeld, E. A., & Hunter, M. S. (2015). A systematic review of the factors associated with delays in medical and psychological help-seeking among men. *Health psychology review, 9*(2), 264-276.

Zamboni, K., Schellenberg, J., Hanson, C., Betran, A. P., & Dumont, A. (2019). Assessing scalability of an intervention: why, how and who? *Health policy and planning, 34*(7), 544-552.