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

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