

Interview meaning units grouped in qualitative feedback from end users reporting main themes regarding demand (n=29), acceptability (n=138), and practicality (n=28) coincide with exercise professionals support for the tool. For example, "I like that the tool covers a lot of depth and breadth, I like the idea of a one stop shop". Open-ended questions throughout interviews identified notable emergent themes, confidentiality and development or behaviour considerations.

**Discussion:** The consensus amongst exercise professionals, young people and parents/guardians suggests the PSS-YP is feasible and fulfils an identified need for safe exercise participation for young people. Importantly, the PSS-YP tool seems to be taken on positively by most exercise professionals regardless of background, age, experience, and career.

**Conflict of interest statement:** My co-authors and I acknowledge that we have no conflict of interest of relevance to the submission of this abstract.

<http://dx.doi.org/10.1016/j.jsams.2021.09.090>

### S189

#### Is there an association between daughters'/fathers' gender-stereotyped beliefs and girls' perceived movement skill competence?

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**Background:** Girls have lower perceived movement skill competence (PMSC) than boys, and this can negatively affect their physical activity participation. Fathers play a significant role in shaping their children's attitudes and behaviours towards physical activity. Fathers with stereotypical gender schemas may induce similar schemas in their children. The aim was to examine if there was an association between girls' PMSC and fathers'/daughter's gender-stereotyped attitudes and beliefs.

**Methods:** In 2019, 68 Australian girls (Mage=8.9yrs, SD=1.7) and their fathers were recruited. The pictorial PMSC scale was used to assess girls' perception of competence in object control (e.g., catching), locomotor (e.g., running), and active play (e.g., swimming) skills. The Occupation, Activity and Trait – Attitude and Personal Measure (OAT) tool was used to assess gender-stereotyped attitudes and beliefs in fathers, and in girls (Children's-OAT/COAT). Items within the C/OAT are categorised as either stereotypically feminine (e.g., occupation–florist), masculine (e.g., activity–fishing), or neutral (e.g., trait–creative). Attitudes were determined by asking whether 'only male'/'only female'/'both' should do/have certain occupations/activities/traits. To determine beliefs, fathers/daughters rated how much they would like to do/have each of the occupations/activities/traits using a 4-point scale. Correlations were used to investigate associations between fathers'/daughters' gender-stereotype beliefs/attitudes and daughters' PMSC. Variables that correlated at  $p \leq .2$  were further investigated using general linear regressions adjusted for girls' age and fathers' education.

**Results:** Daughters' gender-stereotypical attitudes negatively correlated with overall PMSC and object control skills ( $p < .01$ ). Small non-significant correlations were found between girls' attitudes/beliefs (masculine) and perceived locomotor/active play skills ( $p < .2$ ); and

fathers' beliefs towards feminine attributes with girls' perceived object control skills, active play skills, and overall PMSC ( $p < .1$ ). The adjusted linear regressions showed a statistically significant negative association between girls' gender-stereotyped attitudes and their perceived object control ( $B = -2.42$ , 95%CI [-4.45, -.40];  $p = .020$ ) and overall PMSC ( $B = -6.24$ , 95%CI [-10.92, -1.57];  $p = .010$ ). The association between girls' attitudes and active play approached significance ( $B = -1.55$ , 95%CI [-3.18, .07],  $p = .061$ ). There were no other significant associations in these models.

**Discussion:** Girls' gender-stereotypical attitudes appear important in relation to their skill perceptions, whereas father's gender-stereotypical attitudes/beliefs did not. Although, fathers' gender-stereotypical attitudes and beliefs may be related to girls' perception with small effects and require appropriately powered investigation. Future research should investigate the effects of interventions targeting girls' gender-stereotyped social norms on their skill perception and physical activity.

**Conflict of interest statement:** My co-authors and I acknowledge no conflict of interest of relevance to the submission of this abstract.

<http://dx.doi.org/10.1016/j.jsams.2021.09.091>

### S191

#### Effects of Multimodal Physical and Cognitive Fitness Training on Subjective Well-being, Burnout and Resilience in a Military Cohort

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**Background:** The Resilient Mind Program (RMP) is an intervention aimed at improving cognitive fitness. RMP utilises Acceptance Commitment Therapy, mindfulness and cognitive reframing techniques, combined with physical 'rituals' involving exercise, cold showers and sleep hygiene. It employs a blended delivery methodology, with 3 hours of face to face delivery augmented with a 4-week mobile application-based program with embedded gamification techniques designed to help participants form healthy habits. The mobile application contains educational videos, workouts, guided breathing and meditation sessions, a 'Ritual Board' for checking off suggested actions, leader boards and a social feed.

**Methods:** In a block randomized design, 78 members of a RAN Air Squadron volunteered for the 4-week RMP. Experimental group (n = 40) completed a standard RMP combined with self-paced Functional Imagery (FI) practice. Control group (n=38) completed the same 4-week RMP but without FI. Self-reported burnout, resilience and mental wellbeing were measured at baseline and immediately after the 4-week intervention, with the Malash Burnout Inventory-General Survey (MBI-GS, including Exhaustion, Cynicism and Professional Efficacy subscales), Brief Resilience Scale (BRS) and World Health Organisation's WHO-5 Well-Being Index (WHO-5), respectively.

**Results:** Participant engagement, measured as time spent interacting with the mobile application, was significantly higher in the FI group and varied from a few minutes (typically just checking off rituals), to over an hour per week for those revisiting video-instruction and the workouts. Repeated measures ANOVA revealed significant main effects of the RMP intervention, with both groups reporting improved mental well-being ( $F(1,70) = 41.86$ ,  $P < .001$  for WHO-5), resilience ( $F(1,70) = 13.08$ ,  $P < .001$  for BRS) and self-efficacy ( $F(1,70) = 6.25$ ,  $p < .02$  for the burnout subscale of professional efficacy), as well as reduced burnout symptoms of cynicism ( $F(1,70) = 8.80$ ,  $p < .005$ ) and emotional exhaustion ( $F(1,70) = 31.84$ ,  $p < .001$ ). No main effect of Functional Imagery or interaction between time (pre- to post-training) and FI was observed on any of the outcome measures, indicating that the addition of FI practice produced no significant improvement over

the RMP-only condition.

**Discussion:** Our results show the RMP intervention to be effective in reducing burnout symptoms in a cohort of serving Navy aviators, while improving their self-reported mental well-being and resilience. While additional FI practice did not enhance this effect, it improved participant engagement – thus making it worth further investigation. The findings confirm the efficacy of a combined, multi-modal approach to cognitive fitness training. Further research is required to validate its utility in demanding performance conditions.

**Conflict of interest statement:** “Taylor has a financial interest in the Resilient Mind Program, but Aidman and Heathcote have no conflict of interest of relevance to the submission of this abstract”.

<http://dx.doi.org/10.1016/j.jsams.2021.09.092>

### S193

#### Prospective 2-year biomechanical analysis during rehabilitation of a severe knee injury in an elite gymnast: a case study

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**Introduction:** Anterior cruciate ligament (ACL) injuries are one of the most common and debilitating sports injuries. Strength deficits due to neuromuscular impairments are common following ACL injuries and may lead to functional deficits. Regaining of symmetrical movement following ACL injury can take longer than 9 months and may have implications for athlete rehabilitation, return to performance and risk of subsequent injury. In this case report we present biomechanical analysis of various functional movements of a 24-year-old elite gymnast who sustained an ACL rupture, extensive lateral meniscus tear and lateral femoral condyle (LFC) impaction fracture during a competition and attended AIS Intensive Rehabilitation (AISIR), a multi-disciplinary rehabilitation program.

**Methods:** The athlete began the AISIR program 2-weeks post-injury, and at 6-weeks post-injury he underwent an ACL reconstruction, lateral meniscectomy and LFC chondroplasty. Biomechanical testing was performed at 3-, 6-, 9-, 17- and 21-months post-injury using force plate analysis, high speed cameras and VICON motion capture cameras. Initial simple movement analysis (e.g. walking, submaximal running) progressed to complex skills (e.g. landings from height, repeated hop for distance) later in the rehabilitation. Ground reaction forces, joint angles, and joint moments around multiple axes for both legs were analyzed with statistical parametric mapping (SPM) and used by the AISIR team to inform the rehabilitation plan and skill progression.

**Results:** The rehabilitation process was uncomplicated except for a 2-month venue shutdown due to the SARS-CoV-2 pandemic. The athlete exhibited statistically significant ( $p < 0.05$ ) between-leg asymmetries through the walking gait cycle in both joint kinetics and kinematics of the lower limb early in rehabilitation. The ankle plantarflexion/extension was asymmetrical through 89% of stride ( $p < 0.05$ ), with peak right ankle dorsiflexion  $18.6 \pm 1.4^\circ$  vs left  $15.5 \pm 2.7^\circ$  during stance. Asymmetries of pelvic rotation during walking persisted until the 21-month analysis. Some between leg asymmetries continued up to the 21-month analysis of more complex skills (e.g. maximal sprinting braking ground reaction force asymmetry through 86% of stance, peak braking force  $244.2 \pm 56.8\text{N}$  on right vs  $343.4 \pm 79.5\text{N}$  on left), though the athlete had returned to unrestricted training and performed symmetrically on a battery of hopping, strength and functional tests at this time.

**Discussion:** Similar to existing evidence, we found that return to symmetrical performance of functional movements takes longer than 9- to 12-months, which is often taken to return an ACL-injured athlete to

training and competition. Returning to knee-strenuous sporting activities before achieving symmetrical knee function may increase the risk of subsequent injury.

**Conflict of interest statement:** My co-authors and I are employed at the AIS.

<http://dx.doi.org/10.1016/j.jsams.2021.09.093>

### S194

#### A coaching intervention improves physical activity and sedentary behaviour for non-admitted hospital patients: the Healthy4U-2 randomised controlled trial

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**Introduction:** Non-admitted secondary care hospital clinics are important settings to target high-risk individuals to facilitate changes in physical activity (PA). Patients are likely to accept doctors' advice and instigate behaviour change contemplation. Surgeons can identify physically inactive patients, and refer them into coaching interventions as a pathway to promote PA behaviour change. The aim of this study was to determine if a PA coaching intervention could result in changes in PA and sedentary behaviours (SB) in physically inactive non-admitted patients referred by consulting hospital surgeons.

**Methods:** We recruited 120 physically inactive adults from a non-admitted hospital clinic. Recruitment involved consulting surgeons providing patients with brief advice to engage in PA coaching and research flier that was sequentially numbered. The intervention group received an education session and five 20-min telephone sessions of PA coaching comprised of integrated motivational interviewing and cognitive behaviour therapy. The control group received the education session only. Participants wore accelerometers (ActiGraph GT3X) for 7 days at baseline, post-intervention (3 months) and follow-up (9 months) with cut points by Freedson used to classify each minute epoch as sedentary, light, or moderate or vigorous intensity. We used mixed-model ANOVAs (within: time; between: intervention) to assess the effects of the intervention on each of the outcome variables separately.

**Results:** Over the recruitment period, surgeons provided 2076 individuals with the research flier, and the recommendation to engage with PA coaching. We were subsequently contacted by 682 individuals (33%). Mixed-model ANOVAs indicated that changes in moderate to vigorous physical activity (MVPA) over time significantly differed between the groups ( $F(2,236) = 28.76, p < 0.001$ ). The intervention group increased MVPA over time, undertaking 22 min/day (95%CI: 20 to 25 min/day) at follow-up. The control group decreased MVPA over the same period, completing 10 min/day (95%CI: 8 to 13 min/day) at follow-up. A significant group by time interaction was found for proportion of time spent in SB ( $F(2,236) = 16.98, p < 0.001$ ). Compared with control, the intervention group decreased proportion of time spent in SB by 7% at follow-up.

**Discussion:** The low contact PA coaching intervention led to significant changes in PA and SB in physically inactive non-admitted patients referred by consulting hospital surgeons. The beneficial changes were maintained to 9 months, including a 6-month non-intervention window, which indicates a maintenance effect of the intervention. This PA coaching intervention implemented in secondary care can contribute to positive changes in clinically important health-related outcomes.