

recurrence. However, due to the cross-sectional nature of existing research, it remains unknown if the disruption in neural representations are driven by pain, or other factors. We explored whether experimentally-induced posterior thigh pain is associated with impairments in tasks that are thought to interrogate neural representations. If so, this may spark new investigations into potential mechanisms underlying hamstring injury recurrence.

**Methods:** Healthy participants were recruited and attended two experimental sessions (Days 0 and 2). On Day 0, all participants performed an eccentric hamstring exercise protocol to induce delayed onset muscle soreness. Tactile neural representations were assessed using two-point discrimination (TPD) and accuracy of tactile localisation, proprioceptive neural representations were assessed using a motor imagery task (left/right body part judgement task), and spatial processing was assessed using an auditory detection task. These outcomes were recorded before the exercise protocol on Day 0 and after on Day 2. Pain-free control group data (concentric exercise) is currently being collected and will be included in the final presentation.

**Results:** 20 participants completed the protocol and all participants developed posterior thigh pain on Day 2 (mean  $\pm$  SD VAS: 6.6 $\pm$ 1.8). TPD thresholds, tactile localisation, and accuracy in detecting auditory stimuli did not differ between baseline and Day 2 ( $p > 0.6$ ). Participants were quicker and more accurate to judge whether an image of a foot was a left or right sided body part when the image corresponded to their leg (irrespective of side), but unaffected when they were asked to judge hand images (left/right hand judgement task  $p > 0.3$ ).

**Discussion:** Experimentally-induced posterior thigh pain appears to improve the response time and accuracy of left-right discrimination, but did not impact tactile or auditory detection performance. These findings raise the possibility that hamstring pain may alter proprioceptive neural representations. Comparison with the concentric group will assist in revealing whether these results are due to pain or learning. Understanding the implications of these findings on the recovery, and risk of recurrence, following a hamstring injury appears warranted.

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## S135

### Clinical management of acute low back pain in elite and sub-elite rowers. A Delphi study of experienced & expert clinicians

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**Background:** The lumbar spine is the most frequently reported site of pain in elite and sub-elite rowing populations with 12-month Low Back Pain (LBP) prevalence of 32-53%. LBP results in significant performance cost through lost training and competition time. There are no studies to date on LBP assessment or management in this population. Collection of insights and development of consensus-derived statements are particularly useful where evidence-based

clinical practice guidelines are yet to be established. The aim of this study was to establish assessment and management behaviours and beliefs of experienced and expert clinicians when elite and sub-elite rowers present with an acute episode of LBP; secondly, to investigate how LBP management differs for developing and masters rowers.

**Methods:** A three round Delphi survey method was used. National rowing federation clinicians participated in an internet-based survey (round one), answering open ended questions about assessment and management of rowing related LBP. Statements were generated from the survey for expert clinicians to rate (round two) and re-rate (round three). Consensus was gained when agreement reached a mean of seven out of ten and disagreement was two standard deviations or less.

**Results:** Thirty-one experienced clinicians participated in round one. Thirteen of 20 invited expert clinicians responded to round two (response rate 65%) and 12 of the 13 participated in round three (response rate 92%). One hundred and fifty nine of 221 statements (72%) relating to the management of LBP in elite and sub-elite rowers acquired consensus status. Four of six statements (67%) concerning the developing rower and two of four (50%) concerning masters rowers acquired consensus status.

**Discussion:** This Delphi survey presents consensus-derived statements to guide clinical assessment and management of LBP in elite and sub-elite rowers from first presentation to return to sport (RTS). Results concur with evidence for adult LBP management: education and remaining active are recommended with less emphasis on imaging, pharmacological interventions and surgery. Initial priorities are; identification of red & yellow flags, pain control, keeping active with cross-training, regaining rowing-specific movement patterns and education of rower and coach. Rehabilitation priorities are; increasing on-water training with concomitant reduction in cross-training, multidisciplinary RTS planning and addressing modifiable risk factors. There are different management considerations for LBP in developing and masters rowers. The findings of this study are a representation of current clinical expertise.

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## S137

### Patient knowledge of rotator cuff related shoulder pain condition and treatment and validation of a patient-reported knowledge questionnaire

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**Introduction:** Rotator Cuff Related Shoulder Pain (RCRSP) knowledge is an important contributor to patient adherence and providing high-quality guideline-recommended care. There are no validated instruments for measuring health literacy levels among people with RCRSP. This study aimed to design a valid and reliable instrument to measure RCRSP health literacy that could be used to evaluate health literacy in research and clinical settings.

**Methods:** 38 RCRSP patients and 33 patients with other types of shoulder pain, who were predominantly females in their early 50's, having pain for 30+ weeks were recruited through social media. The patient knowledge questionnaire (PKQ-RCRSP) development occurred in three phases. Phase 1 was developed based on available literature and input from expert clinicians, researchers, and patients. Face validity, pilot testing and readability assessment were also undertaken. In phase 2, internal consistency and predictive validity were assessed in people with RCRSP and other shoulder pain diagnoses. Phase 3 included RCRSP health literacy assessment.

**Results:** Face validity was acceptable and pilot testing identified minor accuracy issues that were corrected. Literacy level was rated as 'difficult to read' which reflects the medical terminology within the questionnaire. Internal consistency was very good and 81% of questions demonstrated acceptable predictive validity. Health literacy was heterogeneous depending on the question with less than 40% of respondents answering correctly for questions related to the indications, process, and the known benefits of RCRSP surgery.

**Discussion:** The PKQ-RCRSP demonstrated acceptable face validity, predictive validity and reliability (internal consistency) in assessing RCRSP health literacy. Health literacy among our small sample was poor for questions related to surgery for RCRSP. Our findings suggest that these aspects of RCRSP knowledge are not intuitive and may require specific education so that people avoid potentially unnecessary surgery.

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### S138

#### Are physical activity or body mass index associated with subsequent knee injuries in young female athletes?

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**Introduction:** Anterior cruciate ligament (ACL) injuries are devastating for young, active individuals, with up to 50% developing osteoarthritis (OA) before aged 40 years. Subsequent knee injury rates are high and lead to even poorer long-term joint health. At 2-3 years after ACL reconstruction (ACLR), the relationships between known modifiable OA risk factors [e.g. moderate and vigorous physical activity (MVPA), body mass index (BMI)] and subsequent knee injury is unknown. The objective of this study was to determine the odds of subsequent (new or recurrent) traumatic knee injury in a cohort of young females with ACLR 2-3 years post-surgery compared with healthy matched-controls. Secondary objectives were to (i) explore the relationships of MVPA and BMI with traumatic knee injury; (ii) document self-reported MVPA satisfaction and beliefs about future OA.

**Methods:** Fifty-one females (aged 14-22 years) with prior (1-2 years) sport-related unilateral ACLR and 51 age-and-sport-matched controls underwent assessment of MVPA (GT3X accelerometers) and BMI. One year later, participants self-reported subsequent (new or recurrent knee injuries), return to sport, MVPA satisfaction, and beliefs about OA risk. Bivariable conditional logistic regression explored the association of knee injury with (i) group (injury/control), (ii) MVPA and

(iii) BMI. Beliefs about MVPA satisfaction and OA risk was reported descriptively.

**Results:** At 1 year follow-up (n=101), 19.6% of injured cohort and 6.0% of control participants sustained subsequent knee injuries. The odds of traumatic knee injury for the injury group increased 7-fold over controls [OR=7.00 (95% CI=0.86,56.90)]. Odds ratios (OR) for MVPA and BMI were 0.98 (95%CI= 0.93,1.03) and 1.24 (95%CI=0.85,1.82) respectively. Just over half (55%) of injury participants and 66% of controls were satisfied with their MVPA, while 82% of injury participants believed they had increased knee OA risk compared to someone who had never had a knee injury.

**Discussion:** In the 2-3 years following ACLR, one in five young females had a subsequent traumatic knee injury. Based on the point estimate, injured participants were more likely to suffer a traumatic knee injury than matched controls. BMI was not associated with increased odds of a subsequent traumatic knee injury. Given participation in MVPA did not increase odds of knee injury and the high level of dissatisfaction with MVPA reported in this cohort, in-depth conversations between clinicians and patients who have had ACLR regarding enjoyable and sustainable MVPA participation are encouraged to promote long term joint health.

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### S139

#### Characterising Anterior Cruciate Ligament (ACL) Injury Situations in the Women's Australian Football League (AFLW)

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**Background:** An early trend from the Women's Australian Football League (AFLW) is the high rate of anterior cruciate ligament (ACL) injuries. AFLW players are up to nine times more likely to suffer an ACL injury compared to male Australian Football League players. Considering the significant short- and long- term consequences following ACL injuries the alarming rate of these injuries must be addressed in the AFLW. Understanding injuries within their sporting context is important to develop effective injury prevention strategies, yet there is currently little knowledge of how ACL injuries occur to AFLW players. This study determined the common scenarios and characteristics of ACL injuries in the AFLW.

**Methods:** A video analysis of 21 ACL injuries from the 2017 to 2020 AFLW seasons was performed. The analysis examined the match situation, and the player's movements and body postures surrounding the injury. The frequency (i.e.n) and relative proportions (i.e.%) were determined for each characteristic. Relative odds (RO) were calculated to determine the relative probabilities of ACL injuries occurring with specific characteristics.

**Results:** Non-contact ACL injuries were frequently observed (n=13, 61.9%). The most common match situation was direct defence (i.e. defending an opponent in possession) (n=14, 66.7%). Sidestep cutting was the most common manoeuvre (n=11, 52.4%), with this commonly paired with applying defensive pressure (n=6 of 11, 54.6%). An extended knee (n=18, 85.7%) and valgus collapse (n=17, 81.0%) were present in nearly all injuries. ACL injuries were more likely to occur with a unilateral compared to bilateral asymmetric landing (RO=5.3 [1.7, 12.9 95% CI's] and a rear- compared to a mid- or fore-foot footfall (RO=4.5 [1.4, 10.9 95% CI's]; RO=8.52 [1.80, 23.60 95% CI's]).

**Discussion:** Sidestep cutting manoeuvres when applying defensive pressure was the most common ACL injury scenario observed. Consistent with existing research, an extended knee and valgus collapse were