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### Development and reliability of the Physical Literacy in Children Questionnaire (PL-C Quest): a self-report scale to assess children's perceived physical literacy

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**Objective:** In 2017 Sport Australia led the development of a physical literacy definition for Australia. The associated Australian Physical Literacy Framework (APLF) (released in 2019) includes 30 elements within four domains (physical - 12 items, psychological - 7 items, social - 4 items and cognitive - 7 items), e.g. motivation is an element in the psychological domain and tactics is an element within the cognitive domain. It is important now to develop robust measurements which align with the APLF. This paper will: 1) briefly outline development of the Physical Literacy in Children Questionnaire (PL-C Quest) – a pictorial scale designed in 2020 to measure children's perceived physical literacy and 2) report on reliability values for the PL-C Quest.

**Methods:** 1) Scale development: Qualitative research methods were used to determine a) a gender and race neutral character that appealed to children and b) how children understood the images and wording designed for the PL-C Quest. Input was provided by an expert reference committee and 17 children aged 4 to 12 years. 2) In sample 2, 60 children (and their parents) aged from 6.9 to 12.4 years (mean = 9.7 years, SD = 1.5) were recruited via social media to conduct reliability analyses. Parents reported on demographics and children completed the PL-C Quest online twice. Test retest (mixed two way models for consistency) and internal consistency (polychloric alphas) were conducted.

**Results:** 1) Children preferred a 'bunny' character. Children interpreted most images as intended with some images redrawn based on feedback. 2) Parents were largely University educated (n = 52, 86.7%) and spoke English at home (n = 55, 91.7%). Children completed the survey twice 15.8 days apart (SD = 3.2). Test-retest values for the complete scale were good (ICC = 0.83) and domain values ranged from adequate to good [social: ICC = 0.67, cognitive: ICC = 0.74, psychological: ICC = 0.77 and physical: ICC = 0.80]. Internal consistency was adequate to good for the cognitive (T1=0.60, T2=0.71), social (T1=0.63, T2=0.70), and physical (T1=0.76, T2 =0.83) domains and lower for the psychological domain (T1=0.53, T2=0.47).

**Discussion:** The PL-C Quest is the first instrument designed to comprehensively measure young children's perceived physical literacy. The reliability results are promising with the next step construct validity testing in larger diverse samples. The PL-C Quest can be used with children in education and sport settings to understand how to assist children to develop their physical literacy potential.

No conflicts of interest to declare.

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### Runners with chronic mid-portion Achilles tendinopathy have greater Triceps surae intracortical inhibition than healthy controls

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**Background:** Achilles tendinopathy (AT) is an overload injury, affecting mostly runners. Persistent triceps surae muscle weakness has been reported in AT patients. Muscle force is influenced by inhibitory and excitatory circuits, and imbalances between these (e.g., increased short-interval intracortical inhibition - SICI) may negatively affect strength. Increased SICI has been observed with patella tendinopathy; however, it is unclear if this increased inhibition is present in chronic mid-portion AT patients. Thus, this study aimed to investigate the intracortical inhibitory mechanisms in runners with mid-portion AT.

**Methods:** Runners with chronic mid-portion AT (n=11; 44.1±8.4 years) and healthy controls (n=13; 33.9±4.25 years), with a running routine of at least twice weekly for more than 4 months, were recruited. All completed the VISA-A questionnaire AT (AT= 70.7±7.0) and Control (100±0). The most symptomatic leg (8 unilateral AT and 3 bilateral AT) was compared with control group dominant legs. Plantar flexor maximal voluntary isometric contraction (MVIC) torque was measured via isokinetic dynamometer (knee fully extended, ankle at 0°). Triceps surae endurance was measured with standing single leg heel raise to failure (SLHR) test. SICI was assessed using paired-pulse transcranial magnetic stimulation to the motor cortex area associated with the leg, delivering 20 paired-pulses at 0.8x (first pulse) and 1.2x (second pulse) of active motor threshold (AMT) with 3ms interval and 20 single pulse stimulation at 1.2 AMT, all during a 10% plantar flexion contraction. Two-way repeated measures ANOVA was used to compare SICI between muscles (Soleus, and Gastrocnemii) and groups. Independent t-test was used to compare SLHR and MVIC peak torque between groups.

**Results:** SICI was higher in AT group (67.4±9.0) than controls (54.0±9.0); (p=0.039,) independent of the tested muscle (no muscle vs group interaction; p =0.828). AT group performed ~28% fewer SLHR repetitions than the controls (AT, 27.5.0±6.8 and control 38.5±5.3 repetitions, p=0.004). There was no difference in MVIC peak torque corrected for body mass (N.m/Kg), (AT=1.4±0.3; Control=1.6±0.4, p=0.093).

**Discussion:** The AT group displayed greater intracortical inhibition of the triceps surae muscles and reduced SLHR endurance, without deficit in maximal isometric torque. SICI could be negatively influencing SLHR endurance in AT; thus, rehabilitation aiming to reduce intracortical inhibition should be considered for better outcomes.

**Conflict of interest:** The authors declare no conflict of interest related to the present work.

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### Accuracy of standard MRI sequences for meniscal tears and grading of chondral lesions in the knee, relative to knee arthroscopy: A prospective study of 719 cases

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**Introduction:** Musculoskeletal magnetic resonance imaging (MRI) is commonly used for diagnosis and research, but its accuracy remains unproven and its clinical usefulness is questionable. The goal of this study was to compare the accuracy of knee MRI with clinical assessment for diagnosing meniscal tears, and to determine the accuracy of MRI for grading chondral lesions, relative to knee arthroscopy.

**Methods:** Physically active patients presenting with acute / sub-acute onset of mechanical symptoms, in the absence of grade 2-3 ligament injury or true locking, that had been preventing them from taking part in their usual physical activity for at least 4 weeks, and with clinical findings that warranted a knee arthroscopy, had both a knee arthroscopy and an MRI performed. Patients were over the age