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### INJURY SURVEILLANCE AT THE 17/U & 19/U AUSTRALIAN NATIONAL NETBALL CHAMPIONSHIPS AND THE EFFECT OF A FOOT BLISTER PREVENTION INTERVENTION

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**Background** Pre-elite athletes are at increased risk of injury/illness due to rapid increases in training load, insufficient rest and recovery, growth and a lack of support services compared to elite athletes.

**Objective** Surveillance of incidence, site, nature and mechanisms of injury/illness at the 2018 & 2019 17/U & 19/U Australian Netball National Championships (ANNC) and reduce injuries at the 2019 ANNCs.

**Design** Prospective observational cohort study.

**Setting** 2018 & 2019 17/U & 19/U ANNC's.

**Patients (or Participants)** One hundred and ninety-two pre-elite athletes were observed each year.

**Interventions (or Assessment of Risk Factors)** A foot blister prevention pack and advice regarding an injury prevention program were provided to each athlete 6 weeks prior to 2019 ANNC's.

**Main Outcome Measurements** Injuries were recorded prospectively by team physiotherapists using medical attention data collection methods at the 2018 & 2019 ANNCs.

**Results** The most frequently recorded medical attention injury diagnoses in 2018 were ankle sprain (n=14, 13.6%), foot blisters (n=11, 10.7%), and lumbar pain (n=10, 9.7%). In 2019 there were 16 (16.8%) ankle sprains, followed by 12 (12.6%) episodes of lumbar pain and 8 (8.4%) foot blisters. In 2018 there were 22 (21%) sports incapacity injuries with ankle sprain (n=4, 18.2%), anterior cruciate ligament (ACL) rupture (n=3, 13.6%) and concussion (n=3, 13.6%) recorded most frequently. In 2019, there were 12 (12.6%) sports incapacity injuries with concussion (n=5, 5.3%) recorded most frequently followed by ACL rupture (n=4, 4.2%). The blister prevention intervention reduced the number of foot blisters at the 2019 ANNCs (IRR 0.73 0.58–0.91, p=0.002).

**Conclusions** This is the first publication in recent times to articulate tournament injury rates for pre-elite netball athletes. Ankle sprains are the highest medical attention injury in pre-elite netball athletes. This has not changed over the past 30 years indicating current injury prevention interventions for ankle sprain are not effective. Blister prevention packs and advice reduced the number of foot blisters.

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### DOES MENTAL FATIGUE NEGATIVELY AFFECT FUNCTIONAL PERFORMANCE TESTS USED TO SCREEN FOR LOWER EXTREMITY INJURY RISK?

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**Background** A lot of controversy exists about how fatigue affects injury risk. Within the fatigue spectrum, mental fatigue impairs visuomotor skills, reaction time and decision-making. Recently, adaptability has been put forward as an important driver in understanding injury occurrence and injury prevention. It is hypothesised that mental fatigue decreases an athlete's adaptability by means of an increased visuomotor reaction time and diminished ability for decision-making and visuomotor skill execution.

**Objective** To assess the impact of mental fatigue on functional tests used in injury risk profiling and if mental fatigue decreases an athlete adaptability.

**Design** Randomized counterbalanced cross-over design.

**Setting** Primary prevention.

**Participants** Fourteen healthy participants (age = 22 ± 1 years; height = 176.9 ± 8.4 cm; weight = 69.7 ± 10.4 kg).

**Interventions** Mental fatigue was induced by a 90-minute 100% incongruent Stroop color word test, while the control task included watching a 90-minute documentary.

**Main Outcome Measurements** Y-balance test (YBT), Reactive balance test (RBT), Single leg hop test (SLH) and counter-movement jump (CMJ) performance was evaluated pre-post mental fatigue. Mental fatigue was evaluated using the M-VAS, Stroop and Eriksen-Flanker task performance outcomes.

**Results** Mental fatigue was successfully induced at the subjective level with a significant increase in M-VAS (p<0.001), with no decrease in performance on the Stroop and Eriksen-Flanker task. Mental fatigue did not affect YBT, SLH and the CMJ performance. However, RBT accuracy significantly decreased in mental fatigue condition (p=0.024), while the visuomotor reaction time of the RBT remained unaffected.

**Conclusions** This is the first experiment to illustrate that mental fatigue affects functional adaptability, as accuracy in response to environmental stimuli decreases. However, traditional functional test performance remains unaffected. Therefore, both neurocognitive functional tests and mental fatigue responses should be considered within injury risk profiling strategies. Prospective study designs within the injury prevention domain should include neurocognitive functional tests to investigate the possible relationship of these tests with sports injuries.

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### STRONG PREDICTIVE POWER OF MUSCLE FIBRE TYPOLOGY ON HAMSTRING STRAIN INJURY RISK IN PROFESSIONAL SOCCER

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**Background** Hamstring strain injuries (HSI) are the most prevalent injuries in team sports and occur more frequently in the fatigued phases of a match. In the search for interindividual factors determining increased muscle fatigue-and thus HSI risk-the muscle fibre type composition (fast-twitch vs slow-twitch muscle typology) is a likely candidate.

**Objective** The objective of this study was to identify whether the muscle fibre typology is a risk factor for HSI.

**Design** Prospective cohort study over 3 consecutive seasons