

**P39 THE EFFECTS OF CHRONIC ANKLE INSTABILITY ON KINETICS AND KINEMATICS DURING DYNAMIC MOVEMENT TASKS: A SYSTEMATIC REVIEW**

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10.1136/bjsports-2017-anklesymp.71

**Study Design** Systematic Review.

**Objectives** To determine if individuals with chronic ankle instability (CAI) exhibit maladaptive kinematic and kinetic patterns during dynamic movement tasks.

**Background** Research suggests that high rates of recurrent lateral ankle sprain and the development of CAI may be attributable to maladaptive movement patterns that develop following the initial injury. A systematic analysis of these maladaptive movement strategies during dynamic and functional tasks may assist in the development and design of specific rehabilitation programmes.

**Methods and Measures** We searched Pubmed, Embase, CINAHL, SPORTDiscus and Web of Science from origin to December 2016 using the combination of key words including: chronic ankle instability, lower limb, biomechanics and movement or landing. Kinetic and kinematic variables were identified from dynamic movement tasks and grouped into categories including: change of direction, dynamic stability, locomotive and landing tasks.

**Results** Sixty-six articles were included in this review. Despite some contradicting reports, there is clear evidence that measurable differences in kinematic and kinetic variables exist during change of direction, dynamic stability, locomotive and landing tasks in those with CAI.

**Conclusion** Individuals with CAI exhibit aberrant movement profiles when completing dynamic movement tasks; some which may increase their risk of re-injury. As most research focuses on locomotive and landing tasks, future research should include tasks that are more representative of athletic function. Understanding the implications of CAI at this end of the sensorimotor spectrum may help develop a more robust understanding of CAI and improved rehabilitation programmes.

**P40 REDUCING VISUAL INFORMATION VIA STROBOSCOPIC EYEWEAR IMPAIRS STATIC POSTURAL CONTROL**

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10.1136/bjsports-2017-anklesymp.72

**Study Design** Repeated Measures.

**Objectives** To determine if limiting visual information by using stroboscopic eyewear alters spatial and temporal measures of static postural control.

**Background** Multiple musculoskeletal injuries alter sensory organisation strategies by increasing an individual's reliance on visual information. Balance training exercises on unstable platforms (e.g. wobble boards) also promote using visual information. Eyes closed exercises force individuals to rely more heavily on somatosensory information but the static nature of the exercises limits the exercises functionality during

rehabilitation. Stroboscopic eyewear limits visual information by introducing a stroboscopic visual effect while the participant undergoes dynamic movements. Using stroboscopic eyewear to occlude visual information may improve functionality by emphasising available somatosensory information. The impact on sensorimotor function under this clinical research paradigm remains unclear.

**Methods and Measures** Ten subjects (five controls; five with self-reported CAI) participated. CAI was defined in accordance with the International Ankle Consortium guidelines. Three 10 s single limb balance trials quantified centre of pressure velocity (COPV) and the 95% confidence ellipse (CE95) under four visual conditions: eyes open (EO), eyes open with low stroboscopic interference (EOLS), eyes open with high stroboscopic interference (EOHS), and eyes closed (EC).

**Results** For COPV, the EO trials ( $4.00 \pm 0.90$  cm/s) were significantly better than the other conditions ( $EC = 9.45 \pm 1.88$  cm/s;  $EOLS = 8.33 \pm 1.91$  cm/s;  $EOHS = 6.41 \pm 1.52$  cm/s;  $p < 0.001$ ). The EOHS condition also demonstrated better COPV than the EOLS ( $p = 0.044$ ) and the EC condition ( $p < 0.001$ ). For CE95, the EC ( $0.63 \pm 0.06$  cm<sup>2</sup>) and both stroboscopic interference conditions ( $EOLS = 0.65 \pm 0.06$  cm<sup>2</sup>;  $EOHS = 0.65 \pm 0.06$  cm<sup>2</sup>) were different ( $p < 0.001$ ) from the EO condition ( $0.66 \pm 0.07$  cm<sup>2</sup>). The EOHS condition was also different from the EC condition ( $p = 0.035$ ) for CE95.

**Conclusion** Stroboscopic eyewear impaired postural control in our study to the same extent as completely removing visual information (eyes closed). Stroboscopic interference could reduce visual information and promote appropriate sensory organisation strategies during functional dynamic rehabilitation.

**P41 CORRELATION BETWEEN ANALGESICS & LONG TERM FUNCTION (CALF) STUDY FOLLOWING LATERAL ANKLE SPRAINS STUDY**

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10.1136/bjsports-2017-anklesymp.73

**Study Design** Pragmatic randomised controlled trial.

**Objectives** To determine the effect of adding analgesics to a standardised rehabilitation program following lateral ankle sprain (LAS) on long-term outcome measures.

**Background** Recent guidelines report strong evidence that a short course of certain analgesics may decrease pain and improve function following lateral ankle sprain (LAS). However, reports of swelling and static instability in subjects receiving non-steroidal anti-inflammatories (NSAIDs) following LAS have led to concerns of adverse healing and have been criticised for short-term follow-ups and limited outcome measures.

**Methods and Measures** All Canadian Armed Forces (CAF) members reporting to Garrison Petawawa with an acute grade I/II LAS were invited to participate. Eligible subjects were provided a standardised rehabilitation program and randomised to receive either; no medication or a 7 day course of: acetaminophen 500 mg four times/day, celecoxib 100 mg twice/day, or naproxen 500 mg twice/day. In order to determine a statistically significant difference between groups in the Activities of Daily Living subscale of the Foot and Ankle Abilities Measure, using a two-sided significance set at 0.05, a power of 80%, and an estimated attrition rate of 25%, 40 subjects/group