estimates, hazard ratios (HR) and 95% confidence intervals (CIs) were calculated by foot structure. 

Results Complete data for foot structure were available on 1090 subjects or 2180 feet (18.5±1.1 years, 1.76±0.80 m, 76.1±2.6 kg, and 24.5±2.96 kg/m²), of which 174 (16%) were female. In univariate models, subjects with neutral foot structure were at the greatest risk for incident ankle injury followed by planus foot structure during the follow-up period. Individuals with cavus foot structure were 52% less likely (HR=0.48; 95% CI=0.21, 1.12) to sustain an ankle injury during follow-up when compared to those with neutral foot structure. Results were similar in multivariable models controlling for sex and BMI for both sitting and standing measures of foot structure. 

Conclusions These data suggest that cavus foot structure may be associated with reduced risk of ankle injury in young and active military populations.

012 PREDICTION OF RECURRENT INJURY FOLLOWING RETURN-TO-PLAY FROM AN ANKLE SPRAIN

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Study Design Prospective cohort study.

Objectives Determine the ability of clinical outcomes and anthropometrics to predict recurrent injuries in athletes during the same competitive season following return-to-play (RTP) from an ankle sprain.

Background Prediction of recurrent injury may be a valuable step towards minimising long-term consequences of ankle sprains. Limited investigation has predicted single-season recurrent ankle sprains in competitive athletes.

Methods and Measures We evaluated 60 high school and collegiate athletes at RTP following an ankle sprain (F:17; M:43; 17.9±3.3 years; 178.6±10.8 cm; 85.0±24.8 kg). Clinical outcomes included pain (100 mm visual analogue scale), swelling (figure-of-eight girth measurement), dorsiflexion ROM (weight-bearing lunge test), ligamentous laxity (anterior drawer and talar tilt tests), and the Foot and Ankle Ability Measure activity (+/-) was not associated with recurrent injury status. Patients with recurrent ankle sprains had greater height (185.7±9.9 vs 177.5±10.6 cm, p=0.04), mass (104.7±29.7 vs 81.9±22.8 kg, p=0.01), and BMI (30.1±6.7 vs 25.7±5.5 kg/m², p=0.05) than patients without recurrent ankle sprains. Area under receiver operating characteristic curves (AUROC) and diagnostic odds ratios (DOR) exhibited predictive value for height (AUROC=0.71, DOR=4.93), mass (AUROC=0.75, DOR=12.21) and BMI (AUROC=0.71, DOR=9.48).

Conclusions Athletic patients with greater height, mass, and BMI demonstrated greater odds of recurrent ankle sprains in the same competitive season following RTP. Taller and heavier patients may benefit from weight-management education before RTP to prevent recurrent ankle sprains.

013 EXAMINING Y-BALANCE TEST SCORES AND RISK OF SUBSEQUENT ANKLE SPRAINS IN A COHORT OF COLLEGIATE ATHLETES

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Study Design Research report- retrospective cohort.

Objectives To determine if differences in Y-Balance Test (YBT) scores exist between those that have sustained an ankle sprain (AS) and those that have not (C).

Background Ankle sprains are one of the most common injuries occurring in an athletic population. Many factors may contribute to the occurrence of an ankle sprain, including poor movement strategies and deficits in dynamic postural control.

Methods and Measures Thirty-six (30 male, 6 female) university student-athletes (age=18.4±0.7 years, height=178.2±6.8 cm, mass=88.6±20.8 kg); with AS (n=18) and C (n=18) participated. Single-limb reach distance was tested using the YBT in three reach directions; anterior (ANT), posterior-medial (PM), and posterolateral (PL). Differences between limbs in each direction (ANTdiff, PMdiff, PLdiff) and the composite scores (COMPhdiff) relative to limb length, were calculated. Our independent variable was group (AS vs. C) and the dependent variables included ANTDiff, PMdiff, PLdiff, and COMPhdiff. Separate independent T-test analyses were performed to determine differences between means.

Results There was a significant difference in COMPhdiff between AS (3.67%±2.51%) and C (2.35%±1.11%, p=0.05, t=3.57) and a moderate effect size (Cohen’s d=0.68). There were no significant differences in ANTDiff, PMdiff, or PLdiff.

Conclusions The difference in percentages between the two groups demonstrates the asymmetry present between the limbs. We can conclude that student-athletes with larger asymmetries in composite YBT scores may have sensorimotor impairments prior to an ankle sprain, leading to a difference in dynamic balance between their limbs. Unequal dynamic balance during activity may lead to the potential of further injury. This finding has a meaningful impact to clinicians that may implement this easy-to-use tool to determine the potential of developing a subsequent ankle sprain.

014 PREDICTING CHRONIC ANKLE INSTABILITY FOLLOWING A FIRST-TIME LATERAL ANKLE SPRAIN USING CLINICAL ASSESSMENT: A PROSPECTIVE COHORT ANALYSIS

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Study Design A prospective cohort study.

Objectives To assess the capacity of the composite YBT scores to predict chronic ankle instability following a first-time lateral ankle sprain.

Methods and Measures One-hundred and thirty-five (88 male, 47 female) student-athletes (age=18.7±1.6 years, height=178.7±10.9 cm, mass=89.4±20.5 kg) with and without chronic ankle instability (CAI) (n=68 and 67, respectively) were tested. Subjects were divided into groups based on CAI status (n=68 and 67, respectively). The composite YBT scores exist between those that have sustained an ankle sprain (AS) and those that have not (C).

Results There was a significant difference in the composite YBT scores between those that have sustained an ankle sprain (AS) and those that have not (C) (p=0.05), but no significant differences were observed between the groups with and without CAI.

Conclusions The composite YBT scores may be a valuable tool in predicting chronic ankle instability following a first-time lateral ankle sprain. This finding has a meaningful impact to clinicians that may implement this easy-to-use tool to determine the potential of developing a subsequent ankle sprain.
TIBIAL NERVE MORPHOLOGY DOES NOT EXPLAIN NEUROMOTOR DEFICITS ASSOCIATED WITH CHRONIC ANKLE INSTABILITY

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015

Abstracts

Study Design Cohort study.

Objectives To investigate whether a clinical test battery conducted within two weeks of a first-time lateral ankle sprain (LAS) can be used to predict outcome (Chronic Ankle Instability [CAI] vs LAS ‘copers’) 12 months later.

Methods and Measures Eighty-two individuals with first-time LAS were assessed using a clinical test battery within two-weeks of incurring a first-time LAS. These participants were classified 12 months later as having CAI or as being LAS ‘copers’ using the Cumberland Ankle Instability Tool (CAIT).

Outcome measures Scores on the ‘talar-glide’ (deg), anterior-drawer, talar-tilt, figure-of-eight [figure]8 for swelling (mm), knee-to-wall (mm) and hand-held goniometric range-of-motion [inversion; eversion; plantar-flexion (in degrees)] tests within two weeks of a first-time LAS, and scores on the CAIT 12 months later.

Results Seventy (85%) of the original 82 injured participants completed the 12 month follow-up. Of the final seventy, 28 (40%) were designated as having CAI with 42 (60%) being designated as LAS copers. A logistic regression analysis revealed that a combined model using scores from the talar-glide, talar-tilt and anterior-drawer tests in addition to plantar-flexion ROM was statistically significant (p<0.01) and correctly classified 68.8% of cases. The final model had a sensitivity of 64% and a specificity of 72%.

Conclusions This is the first analysis in which the predictive value of a clinical test battery for ankle sprain injury for determining CAI has been investigated. While our results showed that some of these clinical tests demonstrate predictive value, the accuracy at which they identify individuals at risk of developing CAI is moderate. Further research is required to determine whether performing these tests in a less heterogeneous sample of individuals (perhaps within 48 hours of injury) would improve their predictive value.

THE ACL OF THE ANKLE: A CLINICAL COMMENTARY

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016

Copious research exists regarding ankle instability, yet lateral ankle sprains (LAS) persist among the most common recurrent musculoskeletal injuries. Key anatomical structures, necessary to subtalar joint (STJ) stability, have been potentially overlooked. The functional STJ complex is comprised of 2 compartments – the talocalcaneal joint (posteriorly) and the talocalcaneonavicular joint (anteriorly). Stability is provided by extrinsic ligaments (calcaneofibular and deltoid ligaments) and a series of broad intrinsic ligaments situated in the tarsal canal. These intrinsic ligaments, separating the 2 compartments, are a crucial source of mechanical stability and proprioceptive information. The specific stabilising direction of the STJ complex is controversial; there is likely a multiplanar function, similar to the ACL. Damage to the STJ complex occurs in approximately 25%–80% all LAS injuries, especially when the lateral ligaments are also involved. STJ complex disruption allows non-physiologic anterolateral rotary displacement, especially in weight-bearing. Patients with STJ instability present similarly to those with chronic ankle instability (CAI), including a history of acute LAS, recurrent ‘giving way’ episodes, insecurity on unstable surfaces, recurrent swelling, stiffness, and diffuse hindfoot pain that is aggravated by activity or uneven ground. Persistent pain over the sinus tarsi is common. Few special tests for STJ instability exist. Imaging with stress radiograph, diagnostic ultrasound, and MRI all have varying degrees of effectiveness of visualising soft tissue damage within the STJ complex. Laboratory-oriented evidence supports the vital role of ankle intrinsic ligaments for ankle instability, yet clinically-relevant research on evaluating...