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±12.6 kg, and 24.5±2.96 kg/m^2), 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.

O12 PREDICTION OF RECURRENT INJURY FOLLOWING RETURN-TO-PLAY FROM AN ANKLE SPRAIN

[1]RS McCann, [1]KB Kosik, [2]M Terada, [1]PA Gribble. [1]*Department of Rehabilitation Sciences, University of Kentucky, Lexington, KY, USA*; [2]*College of Sport and Health Sciences, Ritsumeikan University, Kusatsu, Shiga, Japan*

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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 of daily living (FAAM-ADL) and sport (FAAM-S) subscales. Anthropometric outcomes included height, mass, and body mass index (BMI). After RTP, athletic trainers documented recurrent ankle sprains during the same competitive season.

Results Patients with (n=8) and without (n=52) recurrent ankle sprains did not differ in involved-limb pain (12.8 ±16.1 vs 9.8±13.7, p=0.58), swelling (56.7±4.1 vs 54.4 ±5.1 cm, p=0.23), dorsiflexion ROM (7.6±4.1 vs 6.9 ±3.6 cm, p=0.58), FAAM-ADL (85.1±9.1 vs 86.4%±10.8%, p=0.73), and FAAM-S (70.3±10.0 vs 64.8%±19.8%, p=0.44) at RTP. Anterior drawer (p=0.64) and talar tilt (p=0.25) laxity (+/-) 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/m^2, 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.

O13 EXAMINING Y-BALANCE TEST SCORES AND RISK OF SUBSEQUENT ANKLE SPRAINS IN A COHORT OF COLLEGIATE ATHLETES

BA Wisthoff, TW Kaminski. *Athletic Training Research Laboratory, Department of Kinesiology and Applied Physiology, University of Delaware, USA*

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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), posteromedial (PM), and posterolateral (PL). Differences between limbs in each direction (ANTdiff, PMdiff, PLdiff) and the composite scores (COMPdiff), relative to limb length, were calculated. Our independent variable was group (AS vs. C) and the dependent variables included ANTdiff, PMdiff, PLdiff, and COMPdiff. Separate independent T-test analyses were performed to determine differences between means.

Results There was a significant difference in COMPdiff 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.

O14 PREDICTING CHRONIC ANKLE INSTABILITY FOLLOWING A FIRST-TIME LATERAL ANKLE SPRAIN USING CLINICAL ASSESSMENT: A PROSPECTIVE COHORT ANALYSIS

[1]C Doherty, [2]C Bleakley, [3]J Hertel, [1]B Caulfield, [4]J Ryan, [3,5]E Delahunt. [1]*Insight Centre for Data Analytics, University College Dublin, Dublin Ireland*; [2]*Institute for Sport and Health, University College Dublin, Dublin, Ireland*; [3]*Sport and Exercise Sciences Research Institute, Ulster Sports Academy, University of Ulster, Newtownabbey, Co. Antrim, UK*; [4]*Department of Kinesiology, University of Virginia, Charlottesville, VA, USA*; [5]*School of Public Health, Physiotherapy and Sport Science, University College Dublin, Dublin, Ireland*; [6]*St. Vincent's University Hospital, Dublin, Ireland*

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Study Design Cohort study.
Objectives To investigate whether a clinical test battery conducted within 2 weeks of a first-time lateral ankle sprain (LAS) can be used to predict outcome (Chronic Ankle Instability [CAI] vs LAS 'coper') 12 months later.
Background No prospective analysis is currently available which has sought to identify whether clinical assessment tools can be used to predict long-term recovery following a first-time LAS.
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 [figure8] for swelling (m), knee-to-wall (m) 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 heterogenous sample of individuals (perhaps within 48 hours of injury) would improve their predictive value.

O15 TIBIAL NERVE MORPHOLOGY DOES NOT EXPLAIN NEUROMOTOR DEFICITS ASSOCIATED WITH CHRONIC ANKLE INSTABILITY

CA Mignogna, KK Hogan, BD Baker, MC Hoch. *School of Physical Therapy and Athletic Training, Old Dominion University, Norfolk, VA, USA*

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Study Design Case-control.
Objectives Compare tibial nerve cross-sectional area (CSA), plantar cutaneous sensation, isokinetic ankle strength, and single-limb postural control in people with and without chronic ankle instability (CAI).
Background Patients with CAI exhibit a range of neuromotor impairments. These impairments include deficits in postural control and ankle strength which may be related to altered somatosensation following repetitive joint trauma. However, it is unclear if tibial nerve injury or entrapment may be an underlying contributing factor to many of these impairments.
Methods and Measures Twelve people with CAI (age: 21.25 ±2.80, height: 165.96±8.34 cm, weight: 72.01±14.19 kg) were compared to 12 people without CAI (age: 21.75±1.96, height: 166.47±6.97 cm, weight: 67.84±12.92 kg). Tibial nerve CSA was measured at two sites; 5 cm and 1 cm proximal to the distal pole of medial malleolus, using diagnostic ultrasound. Plantar cutaneous detection thresholds were assessed at the 1st metatarsal head using monofilaments applied through a staircase algorithm. Static postural control was tested during eyes open and closed single-leg balance on a force plate. Centre of pressure variables included x-range, y-range, velocity, and area 95% eclipse. Normalised peak torque was assessed during a concentric/concentric isokinetic strength protocol for dorsiflexion/plantarflexion at 60°/s. Group differences were assessed through a combination of independent t-tests and Mann-Whitney U tests ($p\leq0.05$).
Results The CAI group demonstrated decreased sensation (CAI: 3.65±0.34, Healthy: 3.21±0.43; p=0.02), greater eyes closed area 95% eclipse (CAI: 24.50±7.80 cm^2, Healthy: 18.65±4.75 cm^2; p=0.04), and lower plantarflexion peak torque (CAI: 55.02±32.60°/s, Healthy: 85.13±29.08°/s; p=0.03). There were no significant group differences for any other measures.
Conclusions Individuals with CAI exhibited deficits in sensory acuity, postural control, and strength, however, no morphological changes were identified in the tibial nerve based on CSA. These findings suggest several of the neuromotor impairments associated with CAI may be related to central nervous system alterations rather than peripheral nerve injury or entrapment.

O16 THE ACL OF THE ANKLE: A CLINICAL COMMENTARY

[1]JM Medina McKeon, [1]PO McKeon, [2]MC Hoch. [1]*School of Health Sciences and Human Performance, Ithaca College, USA*; [2]*School of Physical Therapy and Athletic Training Old Dominion University, USA*

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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 and