**BACKGROUND AND PURPOSE**

- Lateral ankle sprain (LAS) is the most common acute musculoskeletal injury in college athletes. LAS accounts for 15% of injuries reported to the NCAA injury surveillance database.
- Up to 50% of patients who sustain an acute LAS never fully recover pre-injury functional capabilities.
- Chronic ankle instability (CAI) appears to result from both ligament laxity and impaired neuromuscular control.
- Anterolateral rotary instability (ALRI), due to ligament laxity, is often a consequence of acute LAS.
- Posterior tibialis (PT) dysfunction has been associated with ALRI.
- Performance capabilities of the core musculature have been related to ankle biomechanics.

**METHODS**

- Horizontal trunk hold (HTH; Figure 1) and estimated mass moment of inertia (MMOI) derived from screening data.
- LAS accounts for 15% of injuries reported to the NCAA injury surveillance database.
- Ankle assessments were performed for both right and left extremities of both cases and controls.
- Up to 50% of patients who sustain an acute LAS never fully recover pre-injury functional capabilities.
- Chronic ankle instability (CAI) appears to result from both ligament laxity and impaired neuromuscular control.
- Anterolateral rotary instability (ALRI), due to ligament laxity, is often a consequence of acute LAS.
- Posterior tibialis (PT) dysfunction has been associated with ALRI.
- Performance capabilities of the core musculature have been related to ankle biomechanics.

**PARTICIPANT CHARACTERISTICS**

- 14 NCAA Division-I female athletes participated (Table 1).
  - Age (19.8 ± 1.1 years), Weight (66.6 ± 8.0 kg), Height (170.7 ± 7.1 cm), BMI (22.7 ± 1.4).
  - 7 cases had a history of multiple sprains and/or a score ≤ 24 on the Cumberland Ankle Instability Tool (CAIT).
  - 7 controls were recruited, who were matched as closely as possible to cases (sport, age, height, weight).

**RESULTS**

- 4 factors identified that demonstrated a very strong association with CAI: Odds Ratio = 15 (Table 3).
- 2-factor screening model (MMOI and HTH): both factors positive identified 5 of 7 CAI cases (Figure 7).
- Fisher’s exact one-sided p = .05; Sensitivity = 71%; Specificity = 86%; Odds Ratio = 15.
- 2-factor follow-up model (Inversion torque and PT ratio): either or both positive identified all CAI cases (Figure 8).
- Estimated Odds Ratio: 0.5 added to each cell of 2x2 table to avoid division by zero.

**REFERENCES**