Ankle Questionnaires Poorly Correlate with Dynamic Postural Stability in Subjects with Functional Ankle Instability

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Context: Subjects with functional ankle instability (FAI) exhibit impaired dynamic postural stability (DPS). Questionnaires have been developed to determine the presence of FAI; however, the relationship between questionnaires and specific functional deficits FAI subjects possess, DPS, is largely unknown. **Objective**: To determine if DPS deficits exist in FAI subjects and to identify the relationship between questionnaires and DPS in recreationally active male subjects with FAI. **Design**: Cross-sectional study. **Setting**: Research laboratory. **Participants**: Data were collected on 12 subjects with FAI (age=21.2±1.4 years, height=182.2±5.7 cm, mass=84.9±7.8 kg) and 12 control subjects (age=22.2±1.1 years, height=178.6±6.5 cm, mass=77.9±8.7 kg). Inclusion criteria for the FAI group were a history of at least 2 lateral ankle sprains and episodes of the ankle feeling unstable in the previous year. Inclusion criteria for controls were no previous ankle sprains or feelings of instability. **Interventions**: The questionnaires consisted of the Foot and Ankle Disability Index-Sport (FADI-S), Ankle Instability Instrument (AII), Ankle Joint Functional Assessment Tool (AJFAT), and the Cumberland Ankle Instability Tool (CAIT). Singe-leg jump landings in the anterior and lateral directions were utilized to assess DPS. Subjects were positioned 40% and 33% of their height from the edge of a force plate and a 30cm and 15cm hurdle placed at the midpoint, respectively. Subjects were instructed to land in the middle of the force plate, stabilize as quickly as possible, and remain motionless for 5 seconds. Three trials were collected in each direction. Independent t-tests were used to assess group differences in DPS and questionnaire scores. Pearson's correlation coefficients were calculated to determine the relationship between questionnaires and DPS. Statistical significance was set at $p<0.05$ *a priori*. **Main Outcome Measures**: Each questionnaire was scored according to its instructions. Stability indices in the three principal directions (anterior-posterior [APSI], medial-lateral [MLSI], and vertical [VSI]) and the Dynamic Postural Stability Index (DPSI) were calculated to quantify DPS. **Results**: Significant differences existed between groups for the FADI-S (FAI=87.0±14.1, Control=94.2±3.2, p=0.015), AII (FAI=4.3±1.6, Control=0.0±0.0, p<0.001), AJFAT (FAI =17.7±4.2, Control=26.2±0.4, p<0.001), and CAIT (FAI=23.0±3.8, Control=29.6±0.8, p<0.001). Significant differences were noted for the VSI (FAI=0.37±0.03, Control=0.33±0.04, p=0.003) and DPSI (FAI=0.40±0.03, Control=0.35±0.04, p=0.004) during the anterior jump. Similar results were seen for the VSI (FAI=0.35±0.03, Control=0.31±0.06, p=0.029) and DPSI (FAI=0.37±0.03, Control= 0.33±0.05, p=0.025) during the lateral jump. Significant correlations were observed between the MLSI and the AJFAT (r=0.61, p=0.035) and CAIT (r=0.73, p=0.006) during the lateral jump. **Conclusions**: Subjects with FAI demonstrate impaired DPS compared to controls. Moderate to good correlations were observed between the AJFAT and CAIT and the MLSI during the lateral jump. The questionnaires were able to detect differences between groups but overall poorly

correlated with DPS suggesting the questionnaires may be inadequate at detecting specific functional deficits in FAI subjects. **<u>Word Count</u>**: 449