Differences in Static postural Control Performance Between Athletes who are Hearing and Athletes who are Deaf or Hard-of-Hearing

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**OBJECTIVE**
To determine if differences exist in static postural control performance between athletes who are hearing and athletes who are deaf or hard-of-hearing (D/HoH).

**DESIGN AND SETTING**
Cross-sectional design. Athletic training facilities.

**PARTICIPANTS**
Varsity athletes who are D/HoH (n=41, 20.56±1.90 yrs., 1.73±0.08 m., 79.29±18.67 kg.) and university club-level athletes who are hearing (n=103, 20.08±1.62 yrs., 1.76±0.09 m., 78.20±12.26 kg.) volunteered to participate in the study.

**INTERVENTION**
Participants completed static postural control assessments in double-limb stance with feet together and hands crossed over the chest under the following conditions: 1) eyes open (EO) on firm surface, 2) eyes closed (EC) on firm surface, 3) EO on foam surface, and 4) EC on foam surface.

**MAIN OUTCOME MEASURE**
Center of pressure (CoP) data were collected on a tri-axial force plate. Total, anterior-posterior (AP), and medial-lateral (ML) CoP excursion, AP and ML CoP range, AP and ML amplitude root-mean square (RMS), and sway area were calculated. Mixed-model ANOVAs were performed to test the effects of hearing status and condition on postural control. Alpha level was set *a priori* at p<0.05.

**RESULTS**
There was a main effect of condition on total, AP, and ML excursion, ML range, AP and ML RMS, and sway area (p<0.01). There was a main effect of hearing status on total (p=0.03) and ML (p=0.01) CoP excursion, ML range (p<0.01), ML RMS (p<0.01), and sway area (p<0.01). There was an interaction effect on AP range (p=0.02).

**CONCLUSION**
Athletes who are D/HoH were less stable compared to athletes who are hearing. These differences may suggest implications of sensory deficits, specifically vestibular stimuli, between athletes who are hearing and athletes who are D/HoH. Baseline assessments of static postural control performance of athletes who are D/HoH may be necessary rather than using normative data from athletes who are hearing to evaluate performance and guide return-to-play decision making following injury.

**KEY WORDS:** Balance, mCTSIB, Disability