May 2019

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

Matthew P. Brancaleone  
*The Ohio State University, matthew.brancaleone@osumc.edu*

Maria K. Talarcio  
*The Ohio State University*

Laura C. Boucher  
*The Ohio State University*

James A. Onate  
*The Ohio State University*

Follow this and additional works at: [https://scholarworks.bgsu.edu/jsmahs](https://scholarworks.bgsu.edu/jsmahs)

Part of the Biomechanics Commons, Exercise Science Commons, Motor Control Commons, Other Kinesiology Commons, Rehabilitation and Therapy Commons, Sports Medicine Commons, and the Sports Sciences Commons

Recommended Citation

DOI: 10.25035/jsmahs.05.01.01
Available at: [https://scholarworks.bgsu.edu/jsmahs/vol5/iss1/1](https://scholarworks.bgsu.edu/jsmahs/vol5/iss1/1)

This Professional/Faculty Abstract is brought to you for free and open access by the Journals at ScholarWorks@BGSU. It has been accepted for inclusion in Journal of Sports Medicine and Allied Health Sciences: Official Journal of the Ohio Athletic Trainers Association by an authorized editor of ScholarWorks@BGSU.
Differences in Static Postural Control Performance Between Athletes who are Hearing and Athletes who are Deaf or Hard-of-Hearing

Matthew P. Brancaleone, PT, DPT, SCS, AT, CSCS*; Maria K. Talarico, MS†; Laura C. Boucher, PhD; AT, ATC*†; James A. Onate, PhD AT, ATC, FNATA*†

*The Ohio State University, School of Health and Rehabilitation Sciences; † The Ohio State University Department of Biomedical Engineering; ‡The Ohio State University Wexner Medical Center, Sports Medicine Research Institute

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