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Published Version
doi:10.1186/1757-1146-7-S1-A34

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Foot type symmetry and change of foot structures from sitting to standing conditions

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From 4th Congress of the International Foot and Ankle Biomechanics (i-FAB) Community
Busan, Korea. 8-11 April 2014

Introduction
Foot symmetry and change in foot structure as a function of weight bearing status have not been investigated in a large cohort study. The foot structure of 1,054 incoming cadets at the US Military Academy (172 female, 18.5±1.1 years, 24.5±3.0 kg/m²) was examined. Arch Height Index (AHI) was assessed in sitting and standing condition, and its value was used to classify each foot into 3 foot types as previously described [1].

Method
Based on standing AHI, 68.1%, 24.5%, and 7.5% of the study subjects' left foot was categorized into planus, neutral, and cavus foot types, respectively. An asymmetrical foot type was observed in 28.6% of subjects in sitting and 23.6% standing conditions. Foot length increased from sitting to standing conditions; this change was significantly greater in cavus and neutral foot type groups than the planus group. In contrast, arch height flexibility (AHF) was significantly greater in the planus group than both cavus and neutral foot type groups.

Results
Results of this study suggest the importance of controlling for weight bearing status when assessing foot structure or fitting footwear. Given that about a quarter of participants demonstrated an asymmetrical foot type, findings also suggest the importance of assessing both feet independently. Table 1.

Acknowledgements
Volunteers from the New York College of Podiatric Medicine, Temple University School of Podiatric Medicine, the Hospital for Special Surgery, and novel GmbH were instrumental in the collection of these data. We appreciate the study participants and support of the United States Military Academy.

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Published: 8 April 2014

Reference

doi:10.1186/1757-1146-7-S1-A34
Cite this article as: Hillstrom et al.: Foot type symmetry and change of foot structures from sitting to standing conditions. Journal of Foot and Ankle Research 2014 7(Suppl 1):A34.