INTRODUCTION: Footwear affects the body’s ability to maintain balance on an unstable surface. Vibram FiveFingers (VFFs) claim to be a method of transition between athletic tennis shoes and barefoot style running. However, no research has been done using this footwear under dynamic balance conditions.

PURPOSE: The research study’s purpose was to analyze the electromyographic (EMG) activity of selected ankle and hip musculature in response to perturbations during bipedal stance with eyes closed and single leg stance with eyes open while barefoot, wearing tennis shoes, and VFFs.

METHODS: Twenty participants (18-35 years), without lower extremity injury or vestibular pathologies were tested for reactive balance conditions on the Posturomed® with eyes closed during bipedal stance, and eyes opened during single leg stance while wearing VFFs, tennis shoes, or barefoot. Three trials of 10 seconds in two directions of perturbation for each type of footwear were completed. Four repeated measures of variance with Bonferroni’s correction were used to analyze the EMG muscle activity.

RESULTS: No differences in EMG activity were found between the three types of footwear in any condition.

CONCLUSION: The results did not confirm the hypothesis that participants who are mechanically perturbed will reveal greater ankle and hip musculature activation via EMG recordings when they are barefoot, followed by VFFs, and lastly tennis shoes. Since there were no significant differences between any of the footwear conditions, this study suggests that during reactive balance activities the type of footwear has no effect on the ankle and hip muscle activation in this demographic.