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# *Effects of Vibration Plates on Postural Instability of Healthy Individuals*

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***OBJECTIVE***
Identify the effects of vibration plates on postural instability in healthy individuals.

***DESIGN AND SETTING***
Prospective intervention study was used to measure postural instability with and without vibration in a clinical laboratory.

***PARTICIPANTS***
A convenience sample (n=10; 4 males, 6 females) of healthy individuals, mean age 18.2±3.68 years, was recruited from a Midwestern high school and university.

***INTERVENTION***
A force plate was used to measure postural instability across time. Day 1 investigated postural instability (without vibration) in the following conditions: eyes open, eyes closed, stroboscopic vision, foam pad, and virtual reality. Day 2 was assessed at least 7 days (range=7-X) later and focused on the effects of vibration under the same testing conditions as Day 1.

***MAIN OUTCOME MEASUREMENT***
Descriptive statistics were calculated for the dependent variable (i.e., center of pressure) for each time point. A multivariate repeated measures analysis of variance (RMANOVA) was conducted for the combined dependent variables across time. Alpha level was set at $p<0.05$.

***RESULTS***
The RMANOVA was significant for condition $F_{(4,6)}=24.22$, $p=0.01$, $\eta^2=0.94$, $1-\beta=0.99$ but not time ($p=0.33$) or time*condition ($p=0.12$). For condition, the greatest significant mean differences were observed between virtual reality and eyes open (1.68 m) and virtual reality and foam pad (1.56 m), with virtual reality inducing the most postural instability. The only condition comparison that was not significant was eyes open and foam pad ($p=0.19$).

***CONCLUSION***
While the conditions applied (e.g., eyes closed, foam pad, virtual reality, etc) affected postural instability, there were no improvements in postural instability resulting from the vibration modality over time. This contradicts previous studies that suggested treatments plans with vibration modalities improve postural instability. Caution is warranted when generalizing the results of this study since participants were not representative of an injured population. Further research is necessary to investigate the effects of multiple sessions of vibration on postural instability in an injured adolescent population.

***KEY WORDS:*** *Vibration, Adolescents*