

Effect of a whole-body vibration session on knee stability.

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The aim of the study was to investigate the effect of WBV on stretch reflexes involved in knee joint control. We evoked stretch reflexes of the hamstring muscles by inducing an anterior tibial translation during standing in 23 healthy subjects which were divided into a control and an intervention group. WBV with a frequency of 30 Hz and a vertical amplitude of 4 mm was induced by a uniformly oscillating platform. The WBV session lasted 60 seconds and was repeated twice. Short (SLR) and medium latency responses (MLR) of the hamstring muscles and maximum tibia translation were assessed using surface EMG and linear potentiometers. While there were no significant changes in latency, the size of the lateral and medial hamstring SLR was significantly increased after WBV ($p = 0.039$ and $p = 0.043$, respectively). No significant differences were found for the hamstring MLR size after WBV. Maximum tibial translation was significantly decreased after WBV ($p = 0.031$). Our results suggest that single WBV exposure has a positive effect on knee joint stability as a short-term adaptation on neuromuscular level. This appears to be directly associated with an increase of hamstring SLR size in response to the anterior tibial movement which may cause the decrease in anterior tibial translation.

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