

# Effect of whole body vibration exercise on muscle strength and proprioception in females with knee osteoarthritis

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## Abstract

The purpose of this study was to assess the effect of whole body vibration (WBV) exercise on muscle strength and proprioception in female patients with osteoarthritis in the knee (knee-OA). A single blinded, randomised, controlled trial was performed in an outpatient clinic on 52 female patients diagnosed with knee-OA (mean age 60.4 years $\pm$ 9.6). They were randomly assigned to one of 3 groups: 1. WBV-exercise on a stable platform (VibM;  $n=17$  (mean age, 61.5 $\pm$ 9.2)), WBV-exercise on a balance board (VibF;  $n=18$  (mean age, 58.7 $\pm$ 11.0)), or control group (Con;  $n=18$  (mean age, 61.1 $\pm$ 8.5)).

The WBV groups trained twice a week for 8 weeks, with a progressively increasing intensity. The WBV groups performed unloaded static WBV exercise.

The following were measured: knee muscle strength (extension/flexion) and proprioception (threshold for detection of passive movement (TDPM)). Self-reported disease status was measured using WOMAC.

It was found that muscle strength increased significantly ( $p<0.001$ ) in VibM compared to Con. Isometric knee-extension significantly increased ( $p=0.021$ ) in VibM compared to Con. TDPM was significantly improved ( $p=0.033$ ) in VibF compared to Con, while there was a tendency ( $p=0.051$ ) for VibM to perform better compared to Con. There were no effects in the self-reported disease status measures.

This study showed that the WBV-exercise regime on a stable platform (VibM) yielded increased muscle strength, while the WBV-exercise on a balance board (VibF) showed improved TDPM. The WBV-exercise is a time-saving and safe method for rehabilitation of women with knee-OA.

**Keywords:** [Osteoarthritis](#), [Whole body vibration](#), [Muscle strength](#), [Proprioception](#), [Knee](#)