The effect of weightbearing exercise with low frequency whole body vibration on lumbosacral proprioception: A pilot study on normal subjects.

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WBV may induce improvements in lumbosacral repositioning accuracy when combined with a weight bearing exercise.

Abstract:

Patients with low back pain (LBP) often present with impaired proprioception of the lumbopelvic region. For this reason, proprioception training usually forms part of the rehabilitation protocols. New exercise equipment that produces whole body, low frequency vibration (WBV) has been developed to improve muscle function, and reportedly improves proprioception. The aim of this pilot study was to investigate whether weight bearing exercise given in conjunction with WBV would affect lumbosacral position sense in healthy individuals. For this purpose, twenty-five young individuals with no LBP were assigned randomly to an experimental or control group. The experimental group received WBV for five minutes while holding a static, semi-squat position. The control group adopted the same weight bearing position for equal time but received no vibration. A two-dimensional motion analysis system measured the repositioning accuracy of pelvic tilting in standing. The experimental (WBV) group demonstrated a significant improvement in repositioning accuracy over time (mean 0.78 degrees) representing a 39% improvement. It was concluded that WBV may induce improvements in lumbosacral repositioning accuracy when combined with a weight bearing exercise. Future studies with WBV should focus on evaluating its effects with different types of exercise, the exercise time needed for optimal outcomes, and the effects on proprioception deficits in LBP patients.

Summary:

Patients with low back pain are known to have altered motor control in the lumbopelvic region, and evidence is emerging that proprioception is also impaired. The findings of this pilot trial suggest that a five minute block of low frequency WBW induces a rapid improvement in proprioceptive ability in the lumbopelvic region, in healthy subjects.