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A comparative study of whole body vibration training and conventional training on knee proprioception and postural stability after anterior cruciate ligament reconstruction

[Original article]

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Abstract

Objective: To compare the effect of a whole body vibration training (WBVT) programme with a conventional training (CT) programme on knee proprioception and postural stability after anterior cruciate ligament (ACL) reconstruction.

Methods: Twenty athletes with unilateral ACL reconstruction were randomly assigned to the WBVT or CT group; all participants received 12 sessions of WBVT or conventional training. Absolute error in joint repositioning for two target angles (30° and 60°) was measured with the Biodex dynamometer; bilateral dynamic postural stability (anteroposterior, mediolateral and overall stability indices) was measured with the Biodex Stability System pre-intervention and post-intervention.

Results: The improvement in postural stability in the WBVT group was significantly greater than that in the CT group ($p \leq 0.05$). The p values of the changing scores of open overall, open anteroposterior, open mediolateral, closed overall, closed anteroposterior and closed mediolateral stability indices were 0.002, 0.010, 0.0001, 0.001, 0.0001 and 0.046, respectively. In addition, there were significant differences in all averages of absolute angular error at 60° and 30° between the WBVT and CT groups in both knees ($p = 0.001$ in healthy knees and $p = 0.001$ and $p = 0.0001$ in reconstructed knees), apart from the healthy knees at the 30° target position, which was not significant ($p = 0.131$).

Conclusions: Whole body vibration training improved proprioception and balance in athletes with reconstructed ACL.

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