Physical Therapy Department for Obstetrics and Gynaecology and Its Surgery

Doctoral Degree
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Title	**:**	**Effect of whole body vibration on walking pattern of postmenopausal osteopenic women.**
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Abstract	**:**	

This study was conducted to determine changes in the gait of postmenopausal osteopenic women compared with normal counterparts and to show the effects of whole body vibration (WBV) on gait parameters as well as, bone mineral density (BMD). Fifteen postmenopausal women with normal BMD and fourteen osteopenic women were selected from Nasser Institute. Bone density was measured using DEXA and gait parameters were evaluated by Qualysis Gait Analysis System at baseline and after six months intervention. Results showed statistically significant differences (P<0.05) in maximum hip flexion angle, hip extensor moment, hip flexor moment, knee extensor moment, ankle planterflexor moment, 1st and 2nd peaks of vertical GRF of osteopenic women compared with their normal counterparts, while there was a non-significant difference in hip abductor moment (P>0.05). Also, results showed that WBV induces a significant increase (P<0.05) in hip flexor, hip abductor, knee extensor and ankle planterflexor moments, maximum hip flexion angle, 1st and 2nd peaks of GRF as well as, femoral neck BMD and, there was a highly significant increase (P<0.001) in hip extensor moment, while there was a non-significant change (P>0.05) in lumbar BMD and body mass index (BMI). It can be concluded that postmenopausal osteopenic women have less joint moments and less propulsion than their normal counterparts which may increase the risk of falling and feeling of fatigue. Also, it was found that WBV improves kinematics and kinetics characteristics (moments & vertical GRF) of the osteopenic women resulting in efficient walking and increasing hip BMD.

Key words	**1.**	**Osteopenia.**
	2.	**WBV.**
	3.	**Walking pattern.**
	4.	**Motion analysis.**
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