



Relationship between Balance Ability and Ankle Function in Patients with Diabetes Mellitus and Peripheral Neuropathy

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ABSTRACT

Introduction: Peripheral neuropathy is the main complication resulting in ankle muscle weakness in patients with diabetes mellitus. The dysfunction leads to impair balance control and increase risk of falls in these individuals. Recently, there is limited evidence regarding the correlation between balance ability and ankle function in patients with diabetes mellitus and peripheral neuropathy (DMPN).

Objective: A cross-sectional study to investigate the correlation between balance ability and ankle muscle function in patients with DMPN.

Methods: 34-DMPN participants were evaluated for balance ability using one-leg stance test (OLST) with eye-open and eye-close conditions. Then, they were assessed ankle muscle strength using a hand-held dynamometer (HHD) in 4 muscle groups. The relationship was investigated using Spearman's Rank Correlation Coefficient.

Results: The average age of DMPN participants was 62.64 ± 5.21 years old, and the score of peripheral neuropathy using 5.07 monofilament was 4.11 ± 2.68 points. The findings found a significant correlation between both OLST and the ankle plantar flexor muscle group (0.439, $p=0.009$ for OLST eye-open, 0.491, $p=0.003$ for OLST eye-close). In addition, a significant correlation was found in OLST eye-close condition for the ankle invertor muscle group (0.439, $p=0.009$) and evetor muscle group (0.449, $p=0.008$).

Conclusion: The findings showed the importance of ankle muscle function to balance control in DMPT. However, further studies should compare the result with a healthy in order to confirm the relationship between peripheral neuropathy and muscle activation in DMPN.

Keywords: *Peripheral neuropathy; ankle strength; ankle function; balance control*