

On Diabetic Neuropathy

About 382 million people were diabetics in 2013 with one of the most common complications being diabetic peripheral neuropathy (DPN) which increases the falls risk fivefold due to altered gait strategies (Brown, Handsaker, Bowling, Boulton, & Reeves, 2015; Toosizadeh, Mohler, Armstrong, Talal, & Najafi, 2015; Vaz et al., 2013). Complications of DPN can affect somatic and autonomic nervous systems--including decreased sensitivity to touch, position sensing, pain, and thermal stimuli (Vaz et al., 2013).

Brown et al. (2015) studied gait tasks (stationary standing eyes open/closed, level walking, stairs up/down) in diabetics with DPN (DDPN), diabetics without DPN (D), and nondiabetics (C) using motion analysis and force plates to measure the separation between the body center of mass (CM) and center of pressure (COP).

Brown et al. (2015) found significant differences in the balance abilities during gait tasks between DDPN (distinguishably impaired) and D/C groups; they noted the correlations between DPN, instability, and severity of neuropathy via the vibration perception threshold (VPT) score. The greatest balance difference in the DDPN was in the medial-lateral plane (increased maximum and range of dynamic sway) and climbing up stairs (anterior-posterior balance impairment with increased sway in the anterior direction) (Brown et al., 2015). Brown et al. (2015) did not find significant balance differences between D and C groups. DDPN patients typically compensate by shorter step lengths, increased stance width, and using other cues (e.g. visual) for foot placement (Brown et al., 2015).

This article helped me to appreciate the somatosensory system's contribution to the sensorimotor system and movement patterns (Riemann & Lephart, 2002). Diabetes runs on my mother's side of the family, and I remember her telling me about the older relatives' and their foot issues (one uncle had a foot amputation due to DPN). Another co-worker was involved in a car accident which left her with intermittent numbness in her foot/lower leg and sciatica/back issues. She was an avid runner/hiker, and she finally decided to have back surgery to correct the issue because the foot numbness was causing her problems in her activities.

References

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