In patients with Diabetic Peripheral Neuropathy does balance training vs. no intervention improve balance outcomes and reduce falls?

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Abstract

Background and Purpose: People with Diabetic Peripheral Neuropathy (DPN) have altered balance and are typically at an increased risk of falling. Despite this, few studies have investigated the effect of balance training on fall rates. This case study and evidence-based analysis aims to determine if balance training is more effective than no intervention in improving balance and reducing falls in patients with Diabetic Peripheral Neuropathy (DPN).

Case Description: Patient is a 60-year-old male referred to physical therapy due to a recent history of falls. Secondary diagnoses are Diabetes Mellitus Type II (DM II), DPN, hypertension (HTN), Benign Prostatic Hyperplasia (BPH), osteopenia, tachycardia and arrhythmias. The physical therapy plan for this patient included balance and gait training, strengthening, endurance training and neuromuscular re-education.

Outcomes: A review of current literature revealed that balance training is effective at improving balance outcomes without increasing falls compared to no intervention. Integrating results into the case study was impossible secondary to patient only observed at evaluation.

Discussion: Overall, the majority of high quality studies fail to isolate DPN from peripheral neuropathy of other origins. However, there are several Randomized Controlled Trials (RCTs) that focus on DPN subjects. Seven out of the eight studies analyzed, demonstrated that balance training in subjects with DPN leads to improvements in balance outcomes. The only two studies that addressed falls as an outcome measure, identified no increase in number of falls. However, future studies need to specifically address address reduction in fall rates and its long-term effect.

Methods

The majority of current evidence on the topic of balance in DPN subjects does not address its impact on fall frequency or fall risk. Although there is a great deal of high level evidence on exercise and peripheral neuropathy, there is not enough high level evidence addressing balance intervention and its effects on number of falls and balance outcomes on DPN subjects.

Most of the studies reviewed showed statistically significant improvements in balance outcomes in patients with DPN. In addition, in the two studies that addressed falls, there was no increase in the number of falls reported; however the long-term effect in fall reduction is not addressed. Few studies addressed peripheral neuropathy scores, and while the patients were able to demonstrate improvement in balance outcome measures, there was no change on neuropathy scores.

Conclusion

By participating in a balance intervention, subjects with DPN can improve their balance without an increase in falls. More research needs to be done to address number of falls as an outcome measure and address DPN subjects at a high risk of falling.

References