Clinical reviews

Our panel of GPs review recent research papers in their specialist areas that may influence the way you practise

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Diabetes

Exercise can improve functional status in diabetic neuropathy

Physiotherapy to improve ankle strength and balance produced sustained improvements in functional status in patients with diabetic peripheral neuropathy, in a study from Singapore.

A total of 143 diabetes patients with proven neuropathy, mean age 62 years, were recruited to a single blind, parallel group randomised controlled trial. Just over half (56%) were women and more than three quarters (77%) were of South Asian ethnicity. Patients with conditions precluding exercise, or other contraindications to physiotherapy as well as those with neuropathy from other causes, were excluded.

Patients were randomised to the intervention (n = 70) or control (n = 73) arm of the study.

The intervention consisted of eight weekly exercise sessions with a physiotherapist, concentrating on ankle strength and balance.

The exercise sessions were carried out at home or at another venue selected by the patient. They included range of motion exercises, muscle strengthening movements against resistance and balance and gait interventions. The control group received normal care.

Patients from both groups were assessed at baseline, and two and six months later. The independent assessors were blinded as to which arm of the study the patients were in.

The assessments used validated scores to measure quality of life, but also objective measures of ankle strength, and overall functional ability, such as time taken to stand up from a sitting position, walk 3 metres, come back and sit down (TUG test), and time taken to sit and stand five times in a row (FTSTS test). Balance was assessed by functional reach i.e. the distance someone can reach forward while standing with the arm outstretched.

The primary outcome measure was change in health-related quality of life. The secondary outcomes were measures of physical functional improvement.

Several participants were lost during follow-up leaving 67 in each group for the intention to treat analysis.

In the intervention group there were significant improvements in the following tests:

- **TUG test** mean difference (MD) −1.14 seconds (95% CI: −2.18 to −0.10); P = 0.032)
- **FTSTS test** MD − 1.31 seconds (95% CI: −2.12 to −0.51; P = 0.001)
- **Ankle muscle strength** MD 4.18 N (95% CI: 0.4 to 7.92; P = 0.031)
- **Knee range of motion** MD 6.82° (95% CI: 2.87 to 10.78°; P = 0.001)
- **Balance confidence score** MD 6.17 (95% CI: 1.89 to 10.44; P = 0.005)

These improvements were sustained for at least four months after the end of the intervention. Although no significant improvements in the physical component summary of the quality of life score were seen improvement was noted in the general health domain although this did not reach statistical significance.

No adverse events caused by the study intervention were reported.

The authors discussed the failure of the functional benefit to translate into improved quality of life. They suggest that the relatively small sample size may have made significant changes hard to detect. Recruiting patients who were fit enough to undergo the intervention proved difficult. Many of the patients at the clinics where the study was based were suffering from foot conditions or had multiple comorbidities.

It is well known that diabetic peripheral neuropathy contributes to reduced functional performance. Those with the condition have been found to have reduced ankle mobility and range of motion and decreased muscle strength, especially in ankle and foot plantar and dorsiflexors, leading to reduced balance or postural stability and alterations in functional gait and mobility.

The study authors conclude: 'An intervention of this nature may help to preserve functional status, improve balance confidence and reduce the likelihood of falls and injuries in individuals with diabetic peripheral neuropathy.'

Recent published research supports the benefits of physical activity even into extreme old age, and this paper supports the benefits of activity in neuropathy. This positive message is helpful, as I am often asked by patients whether there is anything that can be done for the debilitating complication of neuropathy, and this intervention is one that many patients could try.

DR MATTHEW LOCKYER

Venkataraman K, Tai BC, Koo EYH et al. Short-term strength and balance training does not improve quality of life but improves functional status in individuals with diabetic peripheral neuropathy: a randomised controlled trial. *Diabetologia* 2019;62:2200-10