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The role of physical activity in rehabilitation to modify the risk of foot problems in patients with diabetic peripheral neuropathy.

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Aims/Hypothesis: Physical activity is considered very important in the treatment of diabetes. However, little is known whether physical activity can modify some of the risk factors associated with foot ulceration in subjects with peripheral neuropathy (DPN). The aim of the present study was to investigate the effect of a physical activity program on sensory neuropathy and microcirculation, which are considered important factors associated with the risk of foot problems. **Methods:** 53 patients with DPN and without peripheral vascular diseases volunteered to participate in the study (mean age 62.85 ± 6.97). Using randomisation based on patient's preferences, 27 subjects were included in the exercise (EXE) group whereas 26 were included in the control (CON) group. Six participants dropped out from each group; therefore 21 EXE and 20 CON subjects were included in the analysis. At baseline both groups were matched on weight, age, gender and vibration perception threshold (VPT). The exercise programme consisted of twice-weekly 16 weeks of strengthening exercises (2-3 sets of 8-12 repetitions) with measure-ments PRE and POST intervention. VPT was measured with a neurothesiometer. Exercis-induced vasodilatation was measured with near infrared spectroscopy to assess micro-circulation; the percentage of change in blood flow before and after a set of controlled muscle contractions was calculated. A two-way mixed ANOVA was used to investigate the Group*Time interaction**. Results:** VPT was significantly reduced over time in the EXE group (21.52V ± 13.37V PRE vs. 18.40V ± 13.14V POST) compared to the CON group (18.77V ± 14.62V PRE vs. 20.20V ± 15.35V POST) (p=0.027). Exercise induced vaso-dilatation was increased over time in the EXE group (119.73% ± 82.87% PRE vs. 136.05%± 67.37% POST) compared to the CON group (119.18% ± 88.15% vs. 105.04% ± 55.61%). However, these differences did not reach significance (p=0.092). No adverse effects re-lated to the intervention were reported in any of the volunteers. **Conclusions:** Sixteen weeks of supervised strengthening exercises triggered beneficial changes in important factors related to foot ulceration risk. These findings support the positive role physical activity may play with respect to the progression of diabetic neuropathy and in the prevention of foot ulcers.