A Comparison of Leg Ergometry, Treadmill Exercises and TENS for Improving Functional Capacity in Patients with Peripheral Arterial Disease

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Introduction: Although recent studies have proved the efficiency of an organized program of graded exercise therapy in increasing walking ability in patients with peripheral arterial disease (PAD), it is not applicable to all patients. Transcutaneous electric nerve stimulation (TENS) has been suggested to improve limb blood flow in patients with circulatory deficits. Aims: This study was designed to investigate and compare the influence of leg ergometry, treadmill training and burst-mode TENS on exercise testing parameters: pain free walking time, maximum walking time, maximum walking distance (PFWT, MWT, MWD) and on hemodynamic measurement: ankle brachial index (ABI) at rest. Material and Methods: Sixty PAD patients volunteered for 3 times weekly sessions for 12 weeks. Twenty patients were trained by leg ergometry with intensity 60-75% of peak heart rate, 20 patients were trained by treadmill walking with the same intensity and 20 patients received burst-mode TENS at 125% of motor threshold. Results: However the 3 methods were significantly effective in improving functional capacity, MWD, PFWT, and MWT were longer on the treadmill group than on ergometry and TENS groups. The average percentage of improvement of MWD, PFWT and MWT in ergometry group were 7.6%, 13.5% and 28% respectively, in treadmill group were 102.3%, 108.7% and 105.6% respectively while in TENS group were 41.95%, 47.21% and 41.09%. Conclusion: This study showed that treadmill walking exercise is an effective nonpharmacologic treatment for patients with PAD. It also supports the benefits of treadmill walking, leg ergometry exercise and the usage of burst-mode TENS to increase the mobility of these patients, thus improving quality of life.