
Treadmill training and/or body weight support may not improve walking ability following stroke

Synopsis

Summary of Moseley AM, Stark A, Cameron ID and Pollock A (2003): Treadmill training and body weight support for walking after stroke. The Cochrane Library, Issue 3. Oxford: Update Software. [Prepared by Gro Jamtvedt and Kåre Birger Hagen, Norwegian Directorate for Health and Social Welfare.]

Question: Does treadmill training and/or body weight support improve walking ability in people who have suffered a stroke? **Design:** Systematic review of randomised, quasi-randomised or controlled trials. **Setting/population:** Adults who had suffered a stroke and exhibited an abnormal gait pattern. **Interventions:** Treadmill training involving walking on a standard treadmill, assistance, feedback or guidance provided by a health professional (usually a physiotherapist). Some of the patient's body weight may be supported during this training using a harness attached to an overhead support system. Alternately, this type of body weight support can be used without a treadmill. **Outcomes:** Ability to walk indoors (with or without a gait aid) without personal assistance or supervision (scored as yes/no), data from functional scales or parts of functional scales relating to walking, and independent walking speed and walking endurance. **Results:** 11 studies (458 participants) were included. The mean quality score was 6 out of 10 on the PEDro scale (range from 4 to 8). There were no statistically significant differences between treadmill training, with or without body weight support, and other interventions for walking speed or dependence. There was a small trend toward the effectiveness of treadmill training for speed with body weight support for participants who could walk independently (weighted mean difference: 0.24 m/sec, 95% CI 0.19 to 0.66 for speed; random effects). The one trial which compared treadmill training with and without body weight support showed benefit at the end of follow-up (weighted mean difference 0.22 m/sec, 95% CI 0.05 to 0.39). Adverse events occurred slightly more frequently in participants receiving treadmill training, although statistically there were no differences. **Conclusion:** Overall, no statistically significant effect of treadmill training and body weight support was detected. However, among people who could walk independently, treadmill training with body weight support appeared to be more effective than other interventions at improving walking speed, but this conclusion was not robust.

Commentary

Walking on treadmill using a harness connected to an overhead support system or walking unsupported are gait training methods that have become increasingly popular. These interventions are costly in terms of equipment and human resources, and research highlighting the effect of treadmill training is therefore welcome. The systematic review concludes that treadmill training is at least as effective as other gait interventions but that more research is needed to determine whether this training is more efficient than other gait training. The analyses are performed conservatively, where improvements that did not lead to free walking during the intervention were not regarded as improvement.

Treadmill training may have limitations. Walking on a treadmill is different from over ground walking, which was how walking was assessed, and this may explain why the effect of treadmill training was not better than other gait training. Walking on a treadmill with a harness probably does not improve the balance component of walking. Thus, when balance limits walking ability, it is likely that supported walking is not optimal training.

Despite the non-conclusive results, there may be reasons to use treadmill training in the clinic. Higher dosage of training is possible for persons with limited walking function. The review did not assess the gains of supported treadmill training for persons with severe sequelae after stroke or head injury when subjects are not able to walk even with support from walking aids or from other persons. For these people supported treadmill walking may be the only alternative, and may also be important for preventing cardiovascular and musculoskeletal complications due to inactivity.

Until more robust evidence is available, treadmill training may be seen as a supplement to gait training for some groups of patients for whom over ground walking is restricted by their walking ability.

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