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[Intervention Review]

Physical fitness training for stroke patients

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ABSTRACT

Background

Physical fitness is low after stroke. It is unknown whether improving physical fitness after stroke reduces disability.

Objectives

To determine whether fitness training (cardiorespiratory or strength, or both) after stroke reduces death, dependence and disability. The secondary aims were to determine the effects of fitness training on physical fitness, mobility, physical function, health status and quality of life, mood and incidence of adverse events.

Search strategy

We searched the Cochrane Stroke Group Trials Register (last searched March 2009), the Cochrane Central Register of Controlled Trials (*The Cochrane Library* Issue 1, 2007), MEDLINE (1966 to March 2007), EMBASE (1980 to March 2007), CINAHL (1982 to March 2007), and six additional databases to March 2007. We handsearched relevant journals and conference proceedings, and screened bibliographies. We searched trials registers and contacted experts in the field.

Selection criteria

We included randomised controlled trials if the aim of the intervention was to improve muscle strength or cardiorespiratory fitness, or both, and if the control groups comprised either no intervention, usual care or a non-exercise intervention.

Data collection and analysis

Two review authors determined trial eligibility and quality. One review author extracted outcome data at end of intervention and follow-up scores, or as change from baseline scores. Diverse outcome measures limited the intended analysis.

Main results

We included 24 trials, involving 1147 participants, comprising cardiorespiratory (11 trials, 692 participants), strength (four trials, 158 participants) and mixed training interventions (nine trials, 360 participants). Death was infrequent at the end of the intervention (1/1147) and follow up (8/627). No dependence data were reported. Diverse disability measures made meta-analysis difficult; the majority of effect sizes were not significant. Cardiorespiratory training involving walking, improved maximum walking speed (mean difference (MD) 6.47 metres per minute, 95% confidence interval (CI) 2.37 to 10.57), walking endurance (MD 38.9 metres per six minutes, 95% CI 14.3 to 63.5), and reduced dependence during walking (Functional Ambulation Categories MD 0.72, 95% CI 0.46 to 0.98). Current data include few strength training trials, and lack non-exercise attention controls, long-term training and follow up.

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Authors' conclusions

The effects of training on death, dependence and disability after stroke are unclear. There is sufficient evidence to incorporate cardiorespiratory training, involving walking, within post-stroke rehabilitation in order to improve speed, tolerance and independence during walking. Further trials are needed to determine the optimal exercise prescription after stroke and identify any long-term benefits.

PLAIN LANGUAGE SUMMARY**Physical fitness training for stroke patients**

Little is known about whether fitness training is beneficial for stroke patients. Physical fitness is important for the performance of everyday activities. The physical fitness of stroke patients is impaired after their stroke and this may reduce their ability to perform everyday activities and exacerbate any stroke-related disability. This review of 24 trials involving 1147 participants found that cardiorespiratory fitness training after stroke can improve walking performance. There are too few data for other reliable conclusions to be drawn.