Exercise slows functional decline in nursing home residents with Alzheimer’s disease

Synopsis


Question: Does a regular exercise program improve the ability of nursing home residents with Alzheimer’s disease to perform activities of daily living (ADL)? Design: Randomised, controlled trial with concealed allocation and blinded outcome assessment. Setting: Five nursing homes in France. Participants: Nursing home residents with Alzheimer’s disease who were able to transfer from a chair and walk six metres without assistance. Vascular dementia, Parkinson’s disease, and cardiac conditions contraindicating exercise were exclusion criteria. Randomisation of 134 participants allotted 67 to an exercise training group and 67 to a control group. Interventions: Both groups received routine management, including nursing, physiotherapy and medical care. In addition, the exercise training group participated in a one-hour group exercise session twice per week for one year. At least half of each session consisted of walking at an intensity intended to induce moderate breathlessness. The walking course passed the room of each member of the exercise group. The remainder of the session included strength, flexibility, and balance training. The control group received no exercise or behaviour management training. Outcome measures: The primary outcome was the change in Katz ADL score at the end of the 12-month training period. The Katz ADL score is the sum of scores for six activities, each scored as 0 for requiring complete help, 0.5 for requiring little help, and 1 for independent. Secondary outcome measures were the Katz ADL score at 6 months, 6-metre walking speed, the get-up-and-go test, the one-leg balance test, and indices of nutrition, behavioural disturbance, and depression. Results: One hundred and ten participants completed the study. At the end of the one-year training period, the deterioration in Katz ADL score was significantly less in the exercise group, by 0.4 (95% CI 0.1 to 0.7). At 6 months, the ADL scores did not differ significantly. Walking speed improved significantly more in the exercising than in the control group at 6 months (by 0.04 m/sec) (95% CI 0.01 to 0.07) and at 12 months (by 0.05 m/sec) (95% CI 0.02 to 0.08). The groups did not differ significantly on the remaining secondary outcomes. Conclusion: As an adjunct to standard care, a one-year exercise program significantly slows the decline in the ability of nursing home residents with Alzheimer’s disease to perform ADLs independently.

[95% CIs calculated by the CAP Co-ordinator]

Commentary

This study adds to a growing literature on the role of physical activity in the management of patients with dementia. A recent meta-analysis (Heyn et al 2004) of randomised, controlled trials reported beneficial effect sizes (ES) of physical activity on (physical) function (ES = 0.59), cognitive function (ES = 0.57), and behavioural outcomes (ES = 0.54) in adults with dementia. This literature is notable for randomised trials which, like that of Rolland et al, find beneficial effects at relatively low doses of physical activity. For example, a randomised trial by Teri et al (2003) in community-living adults with dementia prescribed at least 150 minutes of physical activity each week, but at 3 months follow-up just 56% of participants exercised more than 60 minutes per week. Even so, the study reported that physical activity had beneficial effects on physical function and depression. The meta-analysis by Heyn also showed that even though some studies use relatively low doses of exercise, adults with dementia show measurable improvements in fitness with exercise (Heyn 2004). Of course, it can be challenging to engage adults with dementia in regular exercise, and exercise has risks. Most risks relate to injuries which can impair physical function. Hence the results of this study and the results of the meta-analysis are reassuring – not just to the feasibility of exercise in adults with dementia, but also to the risk benefit ratio. Whatever injuries might occur with exercise to impair function, the net effect of exercise on function and disability appears to be beneficial.

The broader context of the study by Rolland et al is the growing evidence that physical activity has beneficial effects on cognition in humans, as recently summarised in a review by Kramer et al (2006). My analysis of this literature is that public health guidelines for physical activity already recommend physical activity at the levels associated with improved brain health. Clinicians should emphasise the importance of regular physical activity to their patients for many reasons, including the probable beneficial effect of physical activity on brain health.

David M Buchner
Division of Nutrition, Physical Activity, and Obesity
Centers for Disease Control and Prevention, Atlanta, USA

[The opinions expressed in this article are those of the author and do not necessarily represent positions or policies of the Centers for Disease Control and Prevention.]

References