Exercise programs for people with dementia (Review)

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This is a reprint of a Cochrane review, prepared and maintained by The Cochrane Collaboration and published in *The Cochrane Library* 2013, Issue 12

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[Intervention Review]

Exercise programs for people with dementia

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Editorial group: Cochrane Dementia and Cognitive Improvement Group.
Publication status and date: New search for studies and content updated (conclusions changed), published in Issue 12, 2013.
Review content assessed as up-to-date: 13 August 2012.

Citation: Forbes D, Thiessen EJ, Blake CM, Forbes SC, Forbes S. Exercise programs for people with dementia. *Cochrane Database of Systematic Reviews* 2013, Issue 12. Art. No.: CD006489. DOI: 10.1002/14651858.CD006489.pub3.

ABSTRACT

Background

This is an update of our previous 2008 review. Several recent trials and systematic reviews of the impact of exercise on people with dementia are reporting promising findings.

Objectives

Primary: Do exercise programs for older people with dementia improve cognition, activities of daily living (ADLs), challenging behaviour, depression, and mortality in older people with dementia?

Secondary: Do exercise programs for older people with dementia have an indirect impact on family caregivers' burden, quality of life, and mortality?

Do exercise programs for older people with dementia reduce the use of healthcare services (e.g. visits to the emergency department) by participants and their family caregivers?

Search methods

We identified trials for inclusion in the review by searching ALOIS (www.medicine.ox.ac.uk/alois), the Cochrane Dementia and Cognitive Improvement Group's Specialised Register, on 4 September 2011, and again on 13 August 2012. The search terms used were: 'physical activity' OR exercise OR cycling OR swim* OR gym* OR walk* OR danc* OR yoga OR 'tai chi'.

Selection criteria

In this review, we included randomized controlled trials in which older people, diagnosed with dementia, were allocated either to exercise programs or to control groups (usual care or social contact/activities) with the aim of improving cognition, ADLs, behaviour, depression, and mortality. Secondary outcomes related to the family caregiver(s) and included caregiver burden, quality of life, mortality, and use of healthcare services.

Data collection and analysis

Independently, at least two authors assessed the retrieved articles for inclusion, assessed methodological quality, and extracted data. Data were analysed for summary effects using RevMan 5.1 software. We calculated mean differences or standardized mean difference (SMD) for continuous data, and synthesized data for each outcome using a fixed-effect model, unless there was substantial heterogeneity between studies, when we used a random-effects model. We planned to explore heterogeneity in relation to severity and type of dementia, and type, frequency, and duration of exercise program. We also evaluated adverse events.

Main results

Sixteen trials with 937 participants met the inclusion criteria. However, the required data from three trials and some of the data from a fourth trial were not published and not made available. The included trials were highly heterogeneous in terms of subtype and severity of participants' dementia, and type, duration and frequency of exercise. Only two trials included participants living at home. Our meta-analysis suggested that exercise programs might have a significant impact on improving cognitive functioning (eight trials, 329 participants; SMD 0.55, 95% confidence interval (CI) 0.02 to 1.09). However, there was substantial heterogeneity between trials (I^2 value 80%), most of which we were unable to explain. We repeated the analysis omitting one trial, an outlier, that included only participants with moderate or severe dementia. This reduced the heterogeneity somewhat (I^2 value 68%), and produced a result that was no longer significant (seven trials, 308 participants; SMD 0.31, 95% CI -0.11 to 0.74). We found a significant effect of exercise programs on the ability of people with dementia to perform ADLs (six studies, 289 participants; SMD 0.68, 95% CI 0.08 to 1.27). However, again we observed considerable unexplained statistical heterogeneity (I^2 value 77%) in this meta-analysis. This means that there is a need for caution in interpreting these findings. In further analyses, we found that the burden experienced by informal caregivers providing care in the home may be reduced when they supervise the participation of the family member with dementia in an exercise program (one study, 40 participants; MD -15.30, 95% CI -24.73 to -5.87), but we found no significant effect of exercise on challenging behaviours (one study, 110 participants; MD -0.60, 95% CI -4.22 to 3.02), or depression (six studies, 341 participants; MD -0.14, 95% CI -0.36 to 0.07) . We could not examine the remaining outcomes, quality of life, mortality, and healthcare costs, as either the appropriate data were not reported, or we did not retrieve trials that examined these outcomes.

Authors' conclusions

There is promising evidence that exercise programs can have a significant impact in improving ability to perform ADLs and possibly in improving cognition in people with dementia, although some caution is advised in interpreting these findings. The programs revealed no significant effect on challenging behaviours or depression. There was little or no evidence regarding the remaining outcomes of interest.

PLAIN LANGUAGE SUMMARY

Exercise programs for people with dementia

Background

In future, as the population ages, the number of people in our communities suffering with dementia will rise dramatically. This will not only affect the quality of life of people with dementia but also increase the burden on family caregivers, community care, and residential care services. Exercise one lifestyle factor identified as a potential means of reducing or delaying progression of the symptoms of dementia.

Study Charateristics

This review evaluated the results of 16 trials (search date August 2012), including 937 participants, that tested whether exercise programs could improve cognition, activities of daily living, behaviour, depression, and mortality in older people with dementia or benefit their family caregivers.

Key Findings

There was promising evidence that exercise programs can significantly improve the cognitive functioning of people with dementia and their ability to perform daily activities, but there was a lot of variation between trial results that we were not able to explain. The studies showed no significant effect of exercise on mood. There was little or no evidence regarding the other outcomes listed above. Further well-designed research is required to examine these outcomes and to determine the best type of exercise program for people with different types and severity of dementia.

Quality of Evidence

Twelve additional trials were included in this updated review compared with the four included in the previous version of the review. As a result the number of participants increased to 937 at baseline and 798 (85.2%) completed the trials, compared with 280 at baseline and 208 (74%) completing the trials in our previous review. These are encouraging results. The number and quality of included trials were sufficient to address the first three objectives relating to the effect of exercise on cognition, ADLs, and depression. However, only one trial was included in the analyses of the effect of exercise on challenging behaviours and caregiver burden, and no analyses were completed for the following outcomes: mortality in people with dementia, caregiver quality of life, caregiver mortality, and use of healthcare services.

The authors have no conflicts of interest.