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[Intervention Review]

Exercise programs for people with dementia

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ABSTRACT

Background

This is an update of our previous 2013 review. Several recent trials and systematic reviews of the impact of exercise on people with dementia are reporting promising findings.

Objectives

Primary objective

Do exercise programs for older people with dementia improve their cognition, activities of daily living (ADLs), neuropsychiatric symptoms, depression, and mortality?

Secondary objectives

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, on 13 August 2012, and again on 3 October 2013.

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, neuropsychiatric symptoms, 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. We analysed data for summary effects. 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

Seventeen trials with 1067 participants met the inclusion criteria. However, the required data from three included 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 revealed that there was no clear evidence of benefit from exercise on cognitive functioning. The estimated standardized mean difference between exercise and control groups was 0.43 (95% CI -0.05 to 0.92, P value 0.08; 9 studies, 409 participants). There was very substantial heterogeneity in this analysis (I^2 value 80%), most of which we were unable to explain, and we rated the quality of this evidence as very low. We found a benefit of exercise programs on the ability of people with dementia to perform ADLs in six trials with 289 participants. The estimated standardized mean difference between exercise and control groups was 0.68 (95% CI 0.08 to 1.27, P value 0.02). However, again we observed considerable unexplained heterogeneity (I^2 value 77%) in this meta-analysis, and we rated the quality of this evidence as very low. This means that there is a need for caution in interpreting these findings.

In further analyses, in one trial 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. The mean difference between exercise and control groups was -15.30 (95% CI -24.73 to -5.87; 1 trial, 40 participants; P value 0.001). There was no apparent risk of bias in this study. In addition, there was no clear evidence of benefit from exercise on neuropsychiatric symptoms (MD -0.60, 95% CI -4.22 to 3.02; 1 trial, 110 participants; P value .0.75), or depression (SMD 0.14, 95% CI -0.07 to 0.36; 5 trials, 341 participants; P value 0.16). 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 may improve the ability to perform ADLs in people with dementia, although some caution is advised in interpreting these findings. The review revealed no evidence of benefit from exercise on cognition, neuropsychiatric symptoms, or depression. There was little or no evidence regarding the remaining outcomes of interest (i.e., mortality, caregiver burden, caregiver quality of life, caregiver mortality, and use of healthcare services).

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 is one lifestyle factor that has been identified as a potential means of reducing or delaying progression of the symptoms of dementia.

Study characteristics

This review evaluated the results of 17 trials (search dates August 2012 and October 2013), including 1,067 participants, that tested whether exercise programs could improve cognition (which includes such things as memory, reasoning ability and spatial awareness), activities of daily living, behaviour and psychological symptoms (such as depression, anxiety and agitation) in older people with dementia. We also looked for effects on mortality, quality of life, caregivers' experience and use of healthcare services, and for any adverse effects of exercise.

Key findings

There was some evidence that exercise programs can improve the ability of people with dementia to perform daily activities, but there was a lot of variation among trial results that we were not able to explain. The studies showed no evidence of benefit from exercise on cognition, psychological symptoms, and depression. There was little or no evidence regarding the other outcomes listed above. There was no evidence that exercise was harmful for the participants. We judged the overall quality of evidence behind most of the results to be very low.

Conclusion

Additional well-designed trials would allow us to enhance the quality of the review by investigating the best type of exercise program for people with different types and severity of dementia and by addressing all of the outcomes.