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Review Article

Adherence support strategies for exercise interventions in people with mild cognitive impairment and dementia: A systematic review

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ABSTRACT

Exercise-based therapy may improve health status for people with Mild Cognitive Impairment (MCI) or dementia but cannot work without adherence, which has proven difficult. This review aimed to evaluate strategies to support adherence among people with MCI or Dementia and was completed in Nottingham/UK in 2017. A narrative synthesis was used to investigate the effectiveness or usefulness of adherence support strategies. Fifteen adherence support strategies were used including theoretical underpinning (programmes based on behavior change theories), individual tailoring, worksheets and exercise booklets, goal setting, phone calls or reminders, newsletters, support to overcome exercise barriers, information, adaptation periods, individual supervision, support for clinicians, group setting, music, accelerometers/pedometers and emphasis on enjoyable activities. Music was the only strategy that was investigated in a comparative design but was found to be effective only for those who were generally interested in participating in activities. A wide range of adherence support strategies are being included in exercise interventions for people with MCI or dementia, but the evidence regarding their effectiveness is limited.

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1. Introduction

Dementia is a syndrome caused by a variety of brain diseases leading to progressive impairments in memory, communication, planning and other cognitive functions. Mild Cognitive Impairment (MCI) is defined by measurable problems in cognition without significant impact on daily activities, and which may or may not progress to diagnosable dementia. Maintaining health and wellbeing among people living with dementia is an increasing priority, especially in the earlier stages when many are active and key abilities are still retained. Physical exercise interventions have been shown to be beneficial in improving function, mobility, cognition and mood (Hernandez et al., 2015; Rao et al., 2014; Forbes et al., 2015; Brett et al., 2016; Bossers et al., 2014; Barreto Pde et al., 2015). For people with MCI, a recent review (Rodakowski et al., 2015) reported beneficial effects of exercise on cognition but the benefits for functional abilities were unclear.

Adherence to the intervention is essential for a meaningful outcome (Rao et al., 2014). Adherence in this context refers to the degree to which behavior responds to the agreed recommendation according to the therapy protocol (Bollen et al., 2014). Adherence to exercise and physical activity interventions can be affected by fixed factors such as exercise history, ill health, education or environment and modifiable factors such as prompts, which can be supported through strategies included in the design of an intervention (Rhodes et al., 1999; Schutzer and Graves, 2004). For the purpose of this review, these adherence support strategies can encompass delivery modes, involvement of others, practical support, theoretical foundations or any other design features, which the study used to support adherence. We define adherence support strategies as plans included in the design of a study to achieve a high degree of behavior corresponding to the agreed study protocol. Therefore adherence support strategies need to be planned carefully to maximize the adherence with the intervention protocol.

Adherence to exercise and physical activity interventions in people with MCI and dementia varies widely between studies. For example, in a randomized controlled trial (RCT) including people with mild to moderate dementia adherence was 91% for a resistance and functional training programme twice a week for three months in a rehabilitation setting (Schwenk et al., 2014). In a three month home-based exercise programme, adherence was 72% to 79% (Steinberg et al., 2009), but only 33% in a 12 month exercise programme for nursing home residents (Rolland et al., 2007).

Several effective strategies to support adherence have been identified in the general older population including peer, family and physician support, interventions based on behavior change theories, prompts and music (Rhodes et al., 1999; Schutzer and Graves, 2004; French et al., 2014). However, for people with dementia, it is unclear which, if any, adherence support strategies are effective.

The aim of this review is to evaluate strategies implemented in the intervention design of exercise studies to support adherence.

2. Method

2.1. Protocol

The systematic review was based on a pre-defined protocol (PROS-PERO registration no. CRD42015016507) to search and identify relevant research articles.

2.2. Eligibility

2.2.1. Inclusion

Articles reporting original research regarding adherence strategies for exercise studies for people with MCI or dementia; no specific criteria for MCI or dementia diagnosis were required. We included studies with people with dementia and MCI as more than 40% of people diagnosed with this condition go on to develop dementia within 5 years (Roberts et al., 2014). Studies that assessed the effectiveness of adherence support strategies explicitly, as well as studies that included interviews or surveys asking participants to judge the usefulness of the adherence support were eligible. Both quantitative and qualitative studies were considered for inclusion.

2.2.2. Exclusion

Studies reporting research regarding adherence in people with Parkinson's or Huntington's disease, musculoskeletal diseases, other neurodegenerative diseases (including Multiple Sclerosis), stroke, diabetes, obesity and learning disabilities were excluded even if these studies included some participants with MCI and dementia. Any studies including children and adolescents (under 18 years of age) or using pharmacological or neurological (e.g. using neuro-imagining) interventions were excluded. Literature reviews, editorials, discussion papers, comments and study protocols were also ineligible.

2.3. Information sources

The search was completed in CINAHL, EMBASE, MEDLINE, PsycINFO, and Web of Science.

2.4. Search

The search took place in May 2014 and was updated in August 2016. The search was limited to publications in the English language and to human subjects. No date limits were set. The search terms included older adults OR ageing OR elderly AND dementia OR cogn* AND exercise AND adherence OR motivators OR compliance OR support OR self-efficacy. The search term 'exercise' has been chosen as it is a Medical Subject Heading (MeSH) term including the entry terms for a wide range of exercises (acute exercise, aerobic exercise, exercise training, isometric exercise, physical exercise and physical activity). The truncation cogn* has been used to include the terms cognition, cognitive and cognitively. The search terms were entered as keywords or as multi-purpose (.mp) terms when selections were required for the OVID database platform.

2.5. Selection

Duplicates were removed. Once the electronic searches were completed by the first author, all abstracts and titles were screened in Endnote according to inclusion and exclusion criteria. Full texts for all potentially eligible articles were obtained, and assessed on the basis of the inclusion/exclusion criteria by independent reviewers (research assistants and research fellow). When there was uncertainty or no consensus after a discussion between reviewers, or from contacting the original author for clarification, a third reviewer assessed the publication in question and made the final decision (Fig. Fig. 1).

2.6. Data collection

As most studies included the evaluation of the adherence support strategy as a sub-study, main study design, sample characteristics (size, setting, mean age, sex and cognitive impairment), intervention, main outcome for the intervention were extracted and tabulated to present the context for the use of the adherence support evaluation. Adherence, method of evaluation to determine the effectiveness or usefulness of the adherence support strategy and the results of the evaluation were extracted and tabulated to enable an analysis of the strategies (see Table 1).

2.7. Analysis

Methods sections of papers were examined to identify the adherence support strategies. All features that were explicitly mentioned in