

THE EFFECTS OF AEROBIC AND RESISTANCE EXERCISE ON THE COGNITIVE AND PHYSICAL FUNCTION OF PATIENTS WITH DEMENTIA

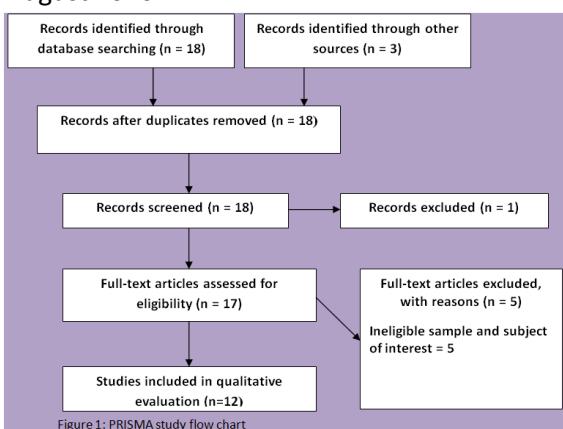


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Background and aims: Dementia is a chronic neurodegenerative disorder characterized by decreased cognitive function. The role of exercise in dementia seems to be of particular interest. The aim of the study is to investigate through the literature review, the effect of aerobic and resistance exercise on cognitive and physical function of patients with dementia.

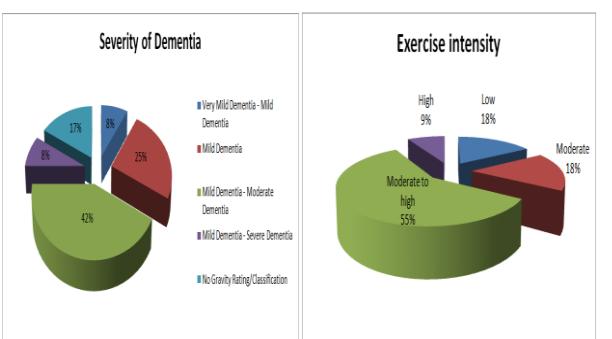
Methods: This is a study (hybrid narrative review), which includes almost all the steps of a systematic research but it is not included meta-analysis. The articles were selected through various sources such as PubMed / Medline, Scopus and Google Scholar and according to the following criteria: Date of publication from 01 January 2015 until 31 August 2020.



Keywords: Dementia, cognitive function, physical function, aerobic exercise, resistance exercise. Relevance of the article to the topic. Language: English. Only randomized control trial articles. Article in full text format. In addition, duplicate registrations were excluded.

Figure 1 shows a flow chart describing the steps followed according to the PRISMA checklist method [1-2].

Results: The study included twelve trials with two (2) types of exercise (aerobic and resistance exercise). The twelve studies that were examined concern a population of 1116 people with an average age of 77.



The patients who participated had different degree of dementia (Fig.2) while the intensity of exercise in the intervention programs varies as shown in Figure 3.

Author	Time Of Publication	Exercise		Effects on		Relative weight (%)
		Aerobic	Resistance	Cognitive function	Physical function	
1. Si-Yu Yang	2015	✓		✓		2,62
2. José M. Cancela	2015	✓		✓	✓	9,91
3. Willem J.R. Bosscher	2015	✓		✓	✓	5,72
4. Laura H.P. Eggemont	2016	✓		✓		5,09
5. Nanna A. Sobol	2016	✓			✓	10,49
6. Kristine Hoffmann	2016	✓		✓		10,49
7. Matheus U. Chupel	2017		✓	✓	✓	1,73
8. Eric D. Vidoni	2017	✓			✓	3,41
9. Jonathan B. Harris	2017	✓		✓	✓	0,84
10. Nanna A. Sobol	2018	✓		✓	✓	2,88
11. Kristian S. Frederiksen	2018	✓		✓	✓	2,15
12. I-Ting Liu	2020	✓	✓	✓	✓	3,20

Figure 4: Results of the effect of exercise along with the weight of each study depending on the sample

There is a relationship between a study's precision and that study's weight in the analysis. Since precision is driven primarily by sample size, we present the studies as being weighted by sample size. Studies with relatively good precision (2,5 and 6) are assigned more weight while studies with relatively poor precision (7,9 and 11) are assigned less weight and should be taken into account in the final conclusions respectively (Fig. 4).

▪ Patients with dementia participating in aerobic exercise improved their aerobic ability [3] and it seems to be related to changes in cognitive and neuropsychiatric symptoms [4-5]. There are proved to be benefits of aerobic exercise in memory and instrumental activities of daily life [6]. Also aerobic exercise improved the speed in gait [7].

The moderate exercise intensity improved significantly ($P<0.05$) cognitive function in patients with mild Alzheimer's disease [8].

▪ Through strength training, an increase in the cognitive profile and an improvement in fitness are observed ($p = 0.001$) [9].

A four-week intensive exercise program showed a significant improvement in patient's cognitive function and Barthel index in the strength training group but showed no statistically significant difference between the two groups (resistance exercise and aerobic exercise) [10].

Conclusions: The aerobic and resistance exercise may help maintain or improve cognitive and physical function in patients with dementia but additional study is needed to clarify optimal intervention and established guidelines.

Conflict of interest: No