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Effectiveness of Fall Prevention in Individuals with Dementia

Jeana Smith and Madison Kowalewski

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CASE

Betty is an 82 year old woman living with dementia. She is beginning to experience impaired balance and deviated gait. She was recently hospitalized with fall related injuries. Since her impaired balance is progressing, her occupational therapist plans to implement fall prevention into her treatment plan.



1 Ask: Research Question

Is fall prevention effective for individuals with dementia?

2a Acquire: Search Terms

Databases: Clinical Key, PubMed, Google Scholar, Scopus

Search Terms: Dementia, Alzheimer's, Falls, Falling, Fall Prevention

2b Acquire: Selected Articles

Lipardo, Aseron, Kwan, & Tsang (2017): A systematic review examining the effects of exercise and cognitive training related to falls in individuals with cognitive impairment.

Robalino, Nyakang'o, Beyer, Fox, & Allan (2018): A systematic review examining the effectiveness of physical and psychological outcomes pertaining to injuries associated with falling in individuals with dementia.

Lam, Huang, Liao, Chung, Kwok & Pang (2018): A systematic review examining how physical exercise improves strength, balance, mobility, and endurance in individuals with cognitive impairment and dementia.

3a Appraise: Study Quality

Lipardo et al. (2017):

Level 1

Strengths include: N=1,679. All studies included were RCTs
Limitations include: outcome measures were not standardized, only indirect measures of falls were reported, and none reported direct effect on fall rate.

Robalino et al. (2018):

Level 1

Strengths include: N=1,061. Six RCTs and one quasi-experimental study.
Limitations include: Majority of interventions were aimed at clients with hip fracture along with dementia. Interventions regarding fall prevention lacked consistency throughout different studies, therefore firm conclusions were not made.

Lam et al. (2018):

Level 1

Strengths include: N=3,988. 43 randomized trial articles were reviewed. Sensitivity analysis was included.
Limitations include: cost effectiveness of interventions was not analyzed. No differentiation was determined between the effect of training in controlled environments vs. under real-world conditions.

3b Appraise: Study Results

Lipardo et al. (2017): No significant improvement was associated with cognitive training. A study included in this systematic review indicated a significant improvement in balance after following a 12-month combined exercise and cognitive training program.

Robalino et al. (2018):

Three studies reported recurrent falls post intervention. One of these studies reported a reduction in in-patient falls in the treatment group compared to control group (p=0.006).

Lam et al. (2018):

Meta-analysis of 3 trials (191 participants) determined that exercise did not reduce the number of fallers compared to controls (OR 0.98, 95% CI 0.49 to 1.95). The exercise group did not differ from the controls in cumulative falls, fall rate, fall risk score, and time to first fall.

4 Apply: Conclusions for Practice

The benefits of physical exercise for the reduction of falls in people with dementia remains uncertain. However, physical exercise improves strength, balance, mobility, and endurance. Evidence does not support the use of cognitive training associated with reduced risk of falling in this population.

While evidence to support reduction of falls in the dementia population is limited, our research indicated that physical and cognitive training improved other components related to falls. Studies conducted including minority and/or low-income populations, as well as standardized outcome measures directly addressing falls is recommended for future research.

References:

Lam, F. M., Huang, M., Liao, L., Chung, R. C., Kwok, T. C., & Pang, M. Y. (2018). Physical exercise improves strength, balance, mobility, and endurance in people with cognitive impairment and dementia: A systematic review. *Journal of Physiotherapy*, 64(1), 4-15. doi:10.1016/j.jphys.2017.12.001

Lipardo, D. S., Aseron, A. M., Kwan, M. M., & Tsang, W. W. (2017). Effect of exercise and cognitive training on falls and fall-related factors in older adults with mild cognitive impairment: A systematic review. *Archives of Physical Medicine and Rehabilitation*, 98(10), 2079-2096. doi:10.1016/j.apmr.2017.04.021

Robalino, S., Nyakang'o, S.B., Beyer, F.R., Fox, C., & Allan, L.M. (2018). Effectiveness of interventions aimed at improving physical and psychological outcomes of fall-related Injuries in people with dementia: A systematic review. *Systematic Reviews*, 7(1), 1-11. doi:10.1186/s13643-018-0697-6

Physical exercise enhances strength, balance, mobility, and endurance in persons with dementia, but its causal relationship to fall reduction remains unknown.

