# FALL RISK PREVENTION IN ELDERLY WITH PHYSICAL EXERCISE : A SYSTEMATIC REVIEW

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Abstract: Background: Increasing the number of elderly and life expectancy in Indonesia has a major impact on public health, especially with changes experienced by the elderly. The most visible changes are the decline and physical decreased that can cause health problems in elderly, one of them is fall risk. It reduces their ability to conduct daily living and their quality of life. One of the prevention for the elderly is physical exercise.The programs will affect elderly's physicology and psychological. Methods: Literature keywoard searches are performed in major databases such as Sagepub, Ebsco host, Proquest, Sciencedirect, and Google Scholar with time limits used from 2010 to 2017. Results: Fall prevention that is physical exercise such as walking, daily physical exercise, and ballroom dancing give affect to reduce fall risk in elderly. From the fifteen researches selected respondents as a random sample of research. Conclusion: The result of systematic review of physical exercise to reduce and prevent the risk of falling in the elderly those are walking, daily physical exercise, and ballroom dancing, it can be concluded that the method can be applied to elderly.

## 1 BACKGROUND

Increasing the number of elderly and life expectancy in Indonesia has a major impact on public health, especially with changes experienced by the elderly. The most visible changes are the decline and physical deterioration that can lead to elderly prone to problems, one of them is fall risk. Falling that occurs in the elderly is quite common and causes considerable morbidity. Various factors can affect falling in the elderly (Campbell AJ, et al., 1989). In addition, the tendency of older adults to fall increases with age, more than doubling between 70 and 80 years. Fall-related injuries also increase with age, with an increased risk of fracture, which in more than half of cases occurs in the hip. In addition, quarrels may also cause falling risks, avoid or limit daily activities, loss of autonomy, reduce social activity, depression and deterioration of quality of life (Joseph M. Rimland, et al., 2016). It reduces their ability to daily life activities and ultimately degrades their quality of life (Hill & Schwarz, 2004). Occupational therapy can be performed for fall-prevention interventions such as *assertiveness training*, *exercise programmes*, *home evaluations and modification*, *functional assessments*, *assistive device training*, and *risk-reduction* (Caldeira & Reitz,2009).

The most common prevention method for the elderly is exercise. Fall prevention sports education programs will affect physiologically such as flexibility, balance, endurance, coordination, gaits, and reaction time, as well as psychological such as anxiety, depression, life satisfaction, self esteem, and a sense of success against falling.

As many as 30% of women and men over age 65 have fallen at least one elderly per year with falling frequency increasing and reaching over 50% at age 90. About two-thirds of patients who have fallen once, will fall another time in the next 12 months. 15% to 20% of fallen elderly people require medical attention and about 5% cause fractures. Injuries such as hip fracture or femur are often accompanied by complications of immobilization, such as pneumonia and thrombembolism, resulting in additional

morbidity and mortality and have considerable economic impact. Falling not only has psychological consequences but physiological is important too. More than 70% of people who experience a fall can lead to a loss of confidence, avoid physical activity and increase the risk of further falls.

With the impact of falling on the elderly that can interfere the health and welfare of the elderly, it is necessary to make efforts or ways to prevent and reduce the risk of falling in the elderly in order to improve the quality of life of the elderly. The efforts that can be done is to perform physical activity or physical exercise so as to increase bone and muscle strength in the elderly, which ultimately can prevent and reduce the risk of falling in the elderly.

The purpose of this study was to conduct a systematic review to prevent and reduce the risk of falling in the elderly. This study is expected to give the idea of further research in the provision of interventions to prevent and reduce the risk of falling in the elderly and can be used as a reference in an effort to prevent and reduce the risk of falling in the elderly.

## 2 METHOD

Study search strategies relevant to topics conducted using ScienceDirect, Proquest and SagePub databases are limited from 2010 to 2017. The keywords are "physical exercise", "prevent / reduce fall", "elderly", fulltext and abstract articles in review to select studies that fit the criteria. The inclusion criteria in this review are physical exercise in the elderly. Journal search using the above keywords get 15 journals and articles that fit inclusion criteria there are 10 journals.

## 3 RESULT

The journal reviewed in this study is a research journal that uses the treatment group and the control group of the study respondents. The number of articles obtained in this review is 10 journals and overall using randomized controlled trial and cross sectional. The method used is physical exercise in the form of walking, general physical activity when inferred aims to prevent and reduce the incidence of fall in the elderly.

The research parameters used to measure the success rate of interventions provided are varied and comprehensive, the outcome forms to be achieved from each study. However, almost all of the studies focused on the assessment of the decline in the incidence of falls in the elderly and the well-being and quality of life of the elderly.

The duration of the study used in these studies varied between 4 weeks to 6 months, the longer the study time and the frequency of giving the average treatment give good result to the incidence rate fall in elderly.

The sampling method is used randomly. Randomized or random sampling is important so that research results can be generalized to the population and suppress bias in the study. The inclusion and exclusion criteria should be considered in sample selection, as in Barboza's study (2014) mentioned inclusion criteria aged 80-95 years. Exclusion criteria are also important to rule out bias factors. But there are some studies that do not detail the inclusion criteria (age). Age range should also be considered will affect the activity, the level of dependence of the elderly itself and other comorbidities suffered by the elderly. The forms of the intervention model throughout the study are desperately needed to obtain ethical clearance.

From 10 studies, showed that the prevention of fall in the form of physical exercise performed continuously shows significant changes in prevention efforts fall in the elderly. However, in the research conducted by the development of the form or model of intervention, it is necessary to produce an optimal outcome so that it needs to be modified in the interventions, it can be a combination of therapy and in terms of time of intervention and outcome parameters to be achieved.

## 4 DISCUSSION

Kapan, et al. (2017) said that physical exercise and nutrition, can increase physical activity and physical appearance so it can reduce the fall as much as 10%. Barbosa, et al. (2014) conducted a whole blood vibration exercise (WBV) study for 8 weeks and the results were effectively used to reduce fall risk and quality of life in elderly. Almost of the research shows that physical exercise can reduce fall risk in elderly.

The studies that have been examined indicate a form of method in an effort or strategy to prevent and reduce the risk of falling in the elderly. The method used is physical exercise, although not all studies produce significant changes but physical exercise is quite effective in elderly. Nurses can perform this method in conducting continuous

nursing care in the elderly. Nurses can participate in this type of physical exercise because it is included in the therapy modalities in nursing that can optimize the patient's health. In addition, nurses need to understand the concept of physical exercise first before doing it in the elderly. In addition to the intervention in the form of physical exercise, there is a need to be considered by the nurse in providing additional intervention that is supplement or vitamin D which must be done together with other health workers.

## 5 CONCLUSION

The result of systematic review of research on physical exercise to reduce and prevent the risk of falling in the elderly in the form of walking out, daily exercise, ballroom dancing, etc. can be concluded that the method can be applied to the elderly in Indonesia as well as attention to aspects of community cultural background and based on the study the most effective method is physical exercise performed with a combination of vitamin D and calcium.

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