

# Exercise for balance in the elderly | research



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## CHAPTER 1

### INTRODUCTION

The ageing process is considered as a biological reality, and which cannot be controlled by human being. It is dynamic in nature. The beginning of the old age is about 60 or 65 years and it is equivalent to retirement age. According to the developed countries, old age means at the point when the active contribution is no longer possible(Gorman et al., 2007).

As a natural part of aging, physiological and psychological changes can occur and it can affect the lifestyle and health of old age people. Most of the older adults commonly affected by the problems like osteoarthritis, osteoporosis, fractures, diabetes, hypertension, poor vision, hearing impairment, cardiovascular diseases, COPD, poor kidney function, cancers, urinary incontinence, anxiety, depression and balance problems.(Nabili, 2010)

One of the leading health concerns, in case of elderly is falling and which is related to balance Problems.(Cochrane library). Balance problems and falls are common, and falls can occur due to impaired balance among elderly. Worldwide, the number of persons over 60 years is growing faster than any other age group. In the middle of the 20<sup>th</sup> century 14 million people were in the age group of 80 years or older. By, 2050 it will be about 400 million in world wide. Approximately 28-35% of people over the age of 65 fall each year, and this proportion increases to 32-42% for those aged more than 70 years. 40% elderly people living in long term care setting experienced recurrent falls during each year and it is high as compaired to community

older adults. Falls may lead to, increased dependence, loss of autonomy, confusion, immobilization and depression.(WHO).

According to the centre for control of diseases and prevention (CDC) , one in every 3 adults over the age of 65 falls each year. Walking difficulty and poor balance are common impairments in old age group and which is the high risk for falling. In 2011 American geriatric society recommended that all adults aged 65 or older should screen for falls. (Shubert, 2011).

Falls can occur in all age groups especially in older adults. The prevalence and incidence of falls more commonly occurs after the age of 65 and (30-60) percentage in annually. As compared to men, women are more prone to get falls. A study was conducted in Cape Town of South Africa to identify the risk factors of falls. The subjects were selected randomly aged more than 65 years. Total number of samples was 837 from different groups like whites, black Africans and Indians. The study result shows that, incidence of falls was high in women and prevalence of falls was different for different groups. (Kalula, 2010)

The risk factors for falls are mainly Gait disturbance, muscle weakness, Dizziness, postural hypotension, visual Impairment, and syncope, use of an assistive device, visual deficit, arthritis, impaired activities of daily living, depression, and cognitive impairment.(WHO, 2006)

As age increases, individuals experience decreased strength and balance, which is a risk factor for falls. Balance is the ability to maintain an upright posture during dynamic and static tasks. Maintaining balance requires interactions between central and peripheral factors.(Knerl, 2009)

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Balance problems are commonly reported by elderly people. Good balance has been associated with independence in daily activities. Deterioration in balance may lead to reduced physical activities and fear of falling. Balance assessments serve several purposes, such as quantitative, description of ability, monitoring subject's progress overtime and evaluating the effectiveness of intervention.(Sihvonen, 2004)

For old age people 65 or older, in 2010 the total direct medical cost was 30 billion dollars due to fall injuries and by 2020 it is expected to be about 54.9 billion. Implementation of effective intervention could reduce the health care costs of fall related injuries.(CDC)

From the Health Day News, exercise programme means to prevent falls in the seniors, but according to new review it says that exercise programme helps to prevent injuries also. Balance training has been identified as one of the top 10 worldwide in the fitness industry. In 2008 Physical activity guidelines for Americans recommend that balance exercises for 3 days in a week was effective for active and inactive elderly aged more than 65. Gait and balance disorders are common in elderly. As a health care team, physicians or nurses have the responsibility to ask about the previous history of falls. Due to the lack of standardized measures, evidence for the effectiveness of balance training is limited. Yet the exercise and physical therapy are included in effective options for gait and balance.

#### NEED FOR THE STUDY

With the exponential growth in older population, exercise is a key target(WHO, 2002) and it is a subset of Physical activity that is planned ,  
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structural and repetitive and it is considered to be the important rehabilitation programme to improve the functional ability of old age people(Cochrane library).

Dr. Nick cavil says that “ A people get older and their bodies decline in function, physical activity helps to slow that decline. In older adults reduced balance is associated with, decreased physical functioning and increase risk of falling. This review analyses the effect of exercise on balance in older adults.(Cochrane editorial unit). In 1960’s an astronaut called John Glenn disqualified from his service, because he experienced balance problems during his working. Then after the rehabilitation programme, at the age of 77, he performed well.

As per Indiana University, exercises that speedup swaying that may help to forestall balance problems in later. For the exercise programme safe environment is recommended, for that first step, to acquire sufficient fitness and Self-confidence. Gait balance training is effective, in clinical balance outcomes in elderly. These interventions are probably safe.(Howe, 2011).

One in every 3 adults over the age of 65 falls each year . Balance is critical when it comes to avoiding falls at any age. Balance exercise improves strength and flexibility on both sides of the body, not only do they reduce the risk of sips , trips, and falls but also increases the likelihood that seniors will be able to recover balance or reduce the injuries . After 50 years of age , begins to lose 10% of our strength per decade of life , which leads to balance problems. Balance exercise help to reduce the decade of life.(CDC).

A study to evaluate the effectiveness of an enhanced balance training programme to improve the mobility of older adults with balance problems. The study was conducted in Bromley Hospitals NHS Trust general hospital; the design adopted for the study was prospective singled blind randomized controlled trial. The subjects participated in the study were 199. The interventional group received balance training programme and control group received physiotherapy. The outcome measures were Berg balance scale, Frenchay Activities Index (FAI), Falls Handicap Inventory (FHI), and European Quality of Life questionnaire were measured regularly at 6, 12 and 24 weeks. Both groups showed improvements. (Intervention: 22.5-16.5 seconds,  $P = .001$ ; control: 20.5-15.8 seconds,  $P = .054$ ). As by conclusion, the results shows that exercise programmes had an effect on balance among elderly. (Steadman, et. al 2003)

Older adults can improve their quality of life by participating in balance exercises. Their by they can improve their mobility and get fit. The researcher says that as age increases, there is a chance of losing muscle mass and strength. Exercise programme helps to improve the postural alignment in sitting and standing position. Many of the older adults, admitted to the hospitals due to decreased balance problem and it results in falls related injuries, so the investigator reveals that exercise programme helps to reduce the falls by improving balance among elderly. According to American journal of epidemiology 30% of community - dwelling seniors /citizens will experiences falls at least once a year due to balance problems. so, as a health care professionals we are responsible to make out the solution.

During clinical posting in medical and surgical ward in KMCH, the investigator came across so many persons with fall related injuries due to balance problems, and most of them were in the age group of more than 60. So in order to reduce the rate of falls and to improve the balance the researcher selected the exercise programme as an intervention for elderly people.

#### STATEMENT OF THE PROBLEM

Effectiveness of exercise program on balance among elderly in selected old age home at Coimbatore.

#### OBJECTIVES

Objectives of the study were to

- assess the balance score among elderly.
- determine the effectiveness of exercise programme in improving balance scores.
- identify the association between the balance scores with selected demographic

and clinical variables of elderly people.

#### OPERATIONAL DEFINITIONS

Balance:-Ability of an individual to maintain the line of gravity of a body within the base of support with minimal postural sway during different activities such as bending forward, transfer and closing eyes.

Exercise programme:-Systematically planned programme for the old age people to improve the balance, of 5 exercises namely sit to stand, heel to toe walk, one leg stand, sideways walking and step up.

Elderly:-Both male and female in the age group of 60-80 years.

## HYPOTHESIS

There is a significant improvement in balance following exercise programme among elderly.

## ASSUMPTIONS

Balance impairments are important risk factor for fall.

Balance impairments are higher in elderly people.

## CONCEPTUAL FRAMEWORK

A conceptual frame work in nursing is the backbone, on which the nursing research is built. A theoretical explanation of the phenomenon or problem and serves as the basis for the formulation of research hypothesis. The conceptual framework adopted for this study is wiedenbach's Theory, (1970) which is established by Ernestinewiedenbach, who was early nursing leader. Wiedenbach focuses on individualizing care for each patient. This is done by assessing the individual needs of each patient, so the nurse knows when to step in and help the patient.

Central purpose



Central purpose of this study is to improve the balance among elderly people.

### Prescription

The investigator plan the prescription that will fulfil the central purpose (improve the balance among elderly). Thus the investigator, selected the method, exercise programme for elderly people, and which is considered to be the effective measure of improving the balance.

### Realities

Agent - investigator

Recipient - elderly people with decreased balance

Goal - improvement in balance

Means - provision of exercise (make them to do)

Frame work - old age home.

### Identification

This includes identification of balance problems among old age people and also importance of exercises and its effects to improve the balance among elderly.

### Ministration

Provision of exerciseprogramme (balance exercise) for elderly with balance problem.

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## Validation

Evaluation of the effectiveness of exercise programme on balance with the use of berg balance scale