

**Open Access** 

# Targeted Multiple Physical therapy Interventions to Improve Functional Capacity for Elderly Residing at Old Age Home

## Senthilkumar Thiyagarajan\*

Department of Physiotherapy, Faculty of Therapeutic Sciences, Asia Metropolitan University, Malaysia

#### Abstract

Background: Population ageing remains a global phenomenon in this new millennium and is poised to become a major issue in developing countries. Malaysia, an upper middle income country, with a population of 28 million is no exception. Life expectancy among Malaysian has also risen to 71.7 years for men and 76.5 years for women in 2007. By the end of 2009 63.8% of the total population will be aged between 15 and 64, mean while those above 64 will increase to 4.7%. Increased longevity is not only a triumph for a society but a huge challenge for health systems. This study aims to determine the effectiveness of targeted multiple physical therapy interventions to enhance functional capacity of elderly people livelihood in residential care facilities. The total number of 21elderly individuals ranged from 65 to 97 years (mean age 79 years, 12 men and 9 women) selected by purposive random sampling method at three old age homes in Malaysia. The participants selected with impaired functional performance with various disabilities in orthopaedic, neurological, cardio respiratory and other conditions due to aging, which of them physiotherapy was indicated. The various structured physiotherapy interventions like pain relief, specific muscle strengthening, aerobic exercise, pacing, stretching, group therapy, CPT, gait training were applied for every day continuously 2 months of duration. The outcomes were assessed by the use of (BI) and (MRMI). Results: A non parametric Wilcoxon Singed Rank test used to analyse the data from collected samples. Study results shows continuous home based physiotherapy intervention was effective to improve functional capacity of the elder people living in residential care facilities.

#### Keywords: Chest physical therapy

**Abbreviations:** Modified Rivermead Mobility Index (MRMI); Barthel Index (BI)

## Introduction

In comparison to Australia, a developed country with 22 million populations, 13.3% of its populace is aged 65 years and over [1]. The modern advancement in health care system protects the human from numerous diseases. The chronological age of 60 years and above seems young in the developed world, but for a developing country such as Malaysia where gains in life expectancy have not yet matched the developed world [2]. Geriatrics is a branch medicine deals with health and care of elder. Its ageing population of 60 years and above is rising steadily from 5.7% in 1990 to 6.3% in 2000 and is expected to be 9.8% in 2020 [3]. The main aim is to promote health by preventing, treating the diseases and disabilities for the elderly. Life expectancy among Malaysians has also risen to 71.7 years for men and 76.5 years for women in 2007 [4,5]. This technical advance in the field of modern medicine adds life to the human. Our aim is not only adding the days also to improve the quality elderly life. Geriatrics physical therapy occupies important role even though numerous subspecialties available in the field of geriatrics medicine.

The term geriatrics was proposed in 1909 by Dr. Ignatz Leo Nascher [6], former chief of clinic in the Mount Sinai Hospital outpatient department in the New York City. He is the one called as "Father" of geriatrics [6]. Day by day increasing geriatrics population is the biggest task for the physiotherapist to provide disease free life. It is a challenging thing to give hospitalisation and management to all those falls in senility diseases. Physiotherapy techniques can be a good support and brings pain free life for them. Pain free environment is the peaceful life for them in later stages, because this painful environment mostly brings up other serious complications and also psychological issues in these stages. Wear and tear is the unavoidable process, antiaging medications and food now a day's available to eliminate the aging process, but how much it will be successful in future is a big question mark. Long life is a sign of good health.

The ageing of the world's population in developing and developed countries is an indicator of improving global health. By 2050, the "greying" population is forecast to reach 2 billion reported by WHO [1,7]. Physiotherapist we should know our significant role in the geriatric rehabilitation. This study deals with improving functional capacity of elderly people residing in old age homes with serious geriatric illness.

### Purpose of this Study

Therapies designed to augment the quality of life of the elderly are a collective effort. Geriatricians, physiotherapists, occupational therapists, nutritionists, psychologists, podiatrists, sociologists, biokineticists and exercise scientists all have an important role to play. The role of each person within the multidisciplinary care team for the older adult is full of opportunity [8]. This study is to find out the efficacy of multiple physical therapy interventions to improve functional capacity in the elderly who are residing in the old age home, the multiple physical therapy tasks is to mainly concentrate to improve the bed mobility and general debility. The benefits of a planned

\*Corresponding author: Senthilkumar Thiyagarajan, Lecturer, Department of Physiotherapy, Faculty of Therapeutic sciences, Asia Metropolitan University, Malaysia, E-mail: senphysio1981@gmail.com

Received October 27, 2012; Accepted November 24, 2012; Published November 26, 2012

**Citation:** Thiyagarajan S (2012) Targeted Multiple Physical therapy Interventions to Improve Functional Capacity for Elderly Residing at Old Age Home. J Yoga Phys Ther 2:126. doi:10.4172/2157-7595.1000126

**Copyright:** © 2012 Thiyagarajan S. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

exercise program with specific goals positively affect certain aspects of the biology of ageing, mainly the musculoskeletal, cardiovascular and nervous systems [8]. This means multi oriented physical therapy interventions targeted to improve the better quality of life in the elderly people also many number of research supporting this study. Study which has been done mainly to find out the effectiveness of planned multiple physical therapy interventions to improve functional capacity in the elderly those who are being in the residential home care set ups.

## Methodology

The total number of 21 elderly individuals ranged from 65 to 97 years are selected for this study to find out the effectiveness of targeted multiple physiotherapy interventions to improve better quality of life in elderly residing at old age homes in Malaysia. Group of elderly people has been selected by purposive random sampling method with due inclusion and exclusion criteria. Among 21 subjects, 12 are males and 9 are females. Those subjects were taken from different old age homes with management consent. In the initial period of study a total of 25 subjects were selected. During the application of physiotherapy interventions 4 subjects were died due to general complications includes respiratory failure and heart attacks and 3 of them were discharged from old age home by effective physiotherapy treatment which reports 70% of successful independent life. Mobility is not only transportation of the body from one place to other place its gives weight bearing, improves general body blood circulations. Like this general factors helpful to avoid various other complications induced by senility.

This study was mainly deals with how to make the patient mobility also to maintain the level mobility as much as possible with maximum tolerance level. In later stages of life, prevention can be very effective to improve functional capacity and to avoid further complications related with others diseases. The participants selected with impaired functional performance with various disabilities in orthopaedic, neurological, cardio respiratory and other conditions due to aging, advised to physiotherapy treatment. A selected subject has to be managed very carefully with follow up by regular medical follow up along with local medical officer working in old age homes. Physician checks the subjects two times a day with necessary medications vital signs are well managed and maintained.

The various individualised physiotherapy interventions like pain relief, specific muscle strengthening, aerobic exercise, pacing, stretching, group therapy, chest physiotherapy, gait training were applied every day which continues for 2 months. Physiotherapy treatment starts regularly in the early morning after subjects finish their tea break. Every session extends more than 45 minutes to 1 hour. Treatments are given by physiotherapy students under supervisions of qualified physiotherapist. During the treatment session patients feels too tired when physiotherapy interventions are stopped immediately. Physiotherapy treatment starts regularly in the early morning after subjects finish their tea break. The exercise session are carried out by group therapy such as aerobic exercise, general body muscle stretching, pacing and breathing exercise.

Group therapy session shows more positive results in the means of cooperation and improvement of general body fatigue. Usually gait training progressed before exercise session starts. Our physiotherapy team feels that subjects are not cooperative if exercise session starts first. Every day therapeutic session begins with gait training. Later, physiotherapy team continues the targeted multiple physiotherapy interventions.

## **Data Dnalysis and Interpretation**

The outcomes were assessed by the use of Barthel Index (BI) and Modified Rivermead Mobility Index (RMI). The Study was done with purposive random sampling method with sample taken from local old age home in Malaysia. Samples are selected with complete fulfilment of inclusion and exclusion criteria. The total number of 21 elderly women and men utilised in these study with informed consent. Some of them cooperated well during this targeted multiple physiotherapy tasks. Data were collected and analysed before and after physiotherapy interventions.

### Discussion

Solange Czerniewicz et.al [7] emphasized role of the physiotherapist, biokineticist and exercise scientist with regard to health protection, health enhancement, functional assessment and promotion of an independent life. To illustrate these possibilities, the prevention and treatment of falls and the value of exercise therapy for mobility risk reduction are discussed. This approach improves functional status, delays the onset and manifestation of chronic diseases and specifically increases the exercise or physical activity dose for the elderly client [9]. Selected subject were treated with targeted multiple physiotherapy interventions such as pain relief, specific muscle strengthening, aerobic exercise, pacing, stretching, chest physiotherapy and gait training. These physiotherapy interventions are mainly focused to prevent the bedridden complications. Physical therapy that can prevent, delay, or reverse functional decline can serve to prolong the independence of older people [10].

Mulrow CD, Gerety MB et.al [9] Subjects randomized to the intervention group receive one-on-one physical therapy sessions three times weekly for 4 months, while control group subjects receive structured social visits three times weekly to control for potential Hawthorne effects. Physical therapy sessions generally last 30 minutes and consist of functional activity and general conditioning exercises; these exercises are individually tailored to the subject's level of physical and functional disability [11]. Many number of elderly modality disturbed due to bedridden complication. 85 percentage causes death due to lack of mobility.

These results support the use of the MRMI, which is reliable, valid, simple, and quick; more importantly the MRMI targets items that are





relevant to the aims of therapists working in stroke rehabilitation. All of these factors are critical in determining whether a scale will gain widespread clinical acceptance [12,13]. Prevention of falls is the important task for the physiotherapist those who practicing in the geriatrics physical therapy area [14,15].

Falls mainly caused by weakness/wasting in the muscles. General body muscles weakness or multiple muscle atrophy in the body causes poor balance and equilibrium. This physiological changes cause biomechanical modifications in the elderly. Once normal biomechanics has been disturbed makes those to frequent fall [16]. When they feel imbalance and failure in equilibrium general body mobility and debility will be affected very seriously. The aim of this study is to determine whether physiotherapy would enhance functional capacity and overall quality of life in elderly people those who are living in residential care facilities.

This result indicates that 2 months intensive physiotherapy program (2hr X 5 TIMES / WEEK) could have positive effects on quality of life and functional level in elderly. And also intensive physiotherapy training could improve the quality of life with functional components like Lying to sitting, standing from chair, turning in bed, getting in and out of bed, standing unsupported, walking inside with aid. Physical therapy could prevent delay or reverse functional decline can serve to prolong the independence of elder people. The results of this study justify testing the effectiveness of physical therapy for improving functional performance in elderly individuals. This mobility component helps to prevent them from many diseases like bedsores, chest infections and DVT. The effectiveness of this physical therapy for older people living in residential care facilities has important implications.

Further study is recommended to test the effectiveness of physical therapy for improving functional performance in elderly. The number of subjects included in this study is very minimal. To know accurate result of targeted multiple physical therapy interventions study to be continued with large sample size. A third limitation of study was the time lag between initial assessment and initiation of physical therapy. The parameters used here are not very strongly related to general body mobility of the elderly.

## Results

Statistical analysis was done using non parametric Wilcox on Singed Rank test. Pre and post test measures of Barthel index and Modified Rivermead mobility index scales were measured for the target population. There was a significant (p<0.01) improvement in the functional capacity and overall quality of life in the participants. The effectiveness of this targeted multiple physical therapy interventions for older people living in residential care facilities has significant role. Independent living capabilities usually promotes a higher functional capacity and quality of life in elderly [17,18].

# Conclusion

The hospital environment, a tertiary care setting has focused on medically managing illness states not improving elderly people functional activity. The results of this study show that intensive home based physiotherapy intervention is effective to improve functional capacity for elderly individuals residing at old age home. Further research is required to determine whether this approach can reduce the need for hospital admission.

#### Acknowledgment

I would like to acknowledge and extend my heartfelt gratitude to those who are participated in this study. I am most grateful to my mam, dad and my wife. I owe many thanks to my close friend Mr. Johnson Christopher for supporting my research activities always.

#### References

- 1. Australian Bureau of Statistics: Australian Demographic Statistics. ABS cat no.3101.0.
- Ong FS: Ageing in Malaysia: a review of national policies and programmes. Ageing and Long Term Care: The International Development Research Centre (IRDC); 2001.
- Nazileh R (2001) Senario Penuaan di Malaysia: Kesannya kepada Negara. Seminar on "kea Arah Hari Tua yang Gemilan".
- Nikolaus T, Bach M, Oster P, Schlierf G (1996) Prospective value of self-report and performance based test of functional status for 18 month outcome in elderly patients. Ageing 8: 271-276.
- 5. Arokiyasamy JT (1997) Malaysa's Ageing Issues. Med J Malaysia 52: 197-201.
- 6. Ignatz Leo Nascher (1909) Geriatrics, Ney York Medical Journal.
- Solange Czerniewicz, Clarie M Nicholson, Physio D (2004) Exercise Hale And Hearty — The Benefits Of Exercise In The Affecting The Elderly. 22: 629–635.
- Harada N, Chiu V, Fowler E, Lee M, Reuben DB (1995) Physical Therapy to improve functioning of older people in residential care facilities. Phys Ther 75: 830-838.
- Mulrow CD, Gerety MB, Kanten D, DeNino LA, Cornell JE (1993) Effects of physical therapy on functional status of nursing home residents. J Am Geriatr Soc 41: 326–328.
- Lennon S, Johnson L (2000) The modified rivermead mobility index: validity and reliability. Disabil Rehabil 22: 833–839.
- Wright J, Cross J, Lamb s (1998) Physiotherapy outcome measures for rehabilitation of elderly people: responsiveness to change of the Rivermead Mobility Index and Barthel index. Physiotherapy 84: 216-221.
- Yousefi B, Tadibi V, Khoei AF, Montazeri A (2009) Exercise therapy, quality of life, and activities of daily living in patients with Parkinson disease: a small scale quasi-randomised trial. Trials 11: 67.
- 13. Sari Vaapio (2007) Effects of risk-based multifactorial fall prevention of health related quality of life among the community-dwelling aged.
- VM Pomeroy (1993) The effect of physiotherapy input on mobility skills of elderly people with severe dementing illness. Clin Rehabil 7: 163-170.
- Stott DJ, Buttery AK, Bowman A, Agnew R, Burrow K, et al. (2006) comprehensive geriatric assessment and home based rehabilitation for elderly people with a history of recurrent non elective hospital admissions. Age and ageing 35: 487-491.
- 16. Ambigga KS, Ramli AS, Suthahar A, Tauhid N, Clearihan L, et al. (2011) Bridging the gap in ageing: Translating policies into practice in Malaysian Primary Care. Asia Pac Fam Med 10: 2.

Citation: Thiyagarajan S (2012) Targeted Multiple Physical therapy Interventions to Improve Functional Capacity for Elderly Residing at Old Age Home. J Yoga Phys Ther 2:126. doi:10.4172/2157-7595.1000126

Page 4 of 4

17. Department of Statistics Malaysia: 2010.

18. World Health Organisation - Western Pacific Region: Malaysia - country context.