



EFFECT OF ELDERLY GYMNASTICS ON PHYSICAL FITNESS MEASURED BY VITAL SIGNS EXAMINATION IN ELDERLY IN NURSING HOME KARYA KASIH IN MEDAN

Sunny Puspita¹, Adnan Akbar Lubis¹, Meldawati², Yeni Puspawani²

¹Faculty of Medicine, Medical Study Program, University of Prima Indonesia, Medan,
Indonesia. Email: sunny_puspita@hotmail.com

²Department of Medicine, Faculty of Medicine, University of Prima Indonesia, Medan, Indonesia.
Email: drso.melda@gmail.com

Abstract

A well physical fitness is crucial to support working activities, especially to elderly. To maintain and improve physical fitness, a regular exercise with a frequency of 3-5 times per week for at least 15 to 25 minutes can be conducted. The type of exercise for the elderly to achieve endurance with the most appropriate fitness is gymnastics accompanied by strength exercises plus balance and stretching movements. The purpose of this study is to determine the effect of exercise on physical fitness measured by vital sign examinations at the nursing home KaryaKasih in Medan. This study was an experimental study with the post-test only control group design. The subjects were all elderly at the nursing home KaryaKasih in Medan who were in a healthy state and were able to perform gymnastics. The results exhibited that the majority of subjects were aged 61-70 years old. Female were found predominant based on sex. The analysis test results exhibited p value of 0.001, implying a significant effect of exercise on physical fitness measured by vital sign examinations in elderly living in nursing home KaryaKasih in Medan.

Keywords: Physical fitness, elderly gymnastics

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INTRODUCTION

In developing countries, elderly population in 2013 was estimated at 554 million out of 7200 million people in the world. This number will increase by 2050, which is estimated to be around 1600 million elderly from 9600 million people of the world population (Ministry of Health of Indonesia, 2014). Indonesia is among the top five countries with the highest number of elderly in the world. In 2014, the number of elderly population in Indonesia was 18.781 million people and it is estimated that in 2025 the number will reach 36 million (Ministry of Health, Republic of Indonesia, 2015). In terms of health, the elderly group will experience a decrease in the level of health both naturally and due to disease (Ministry of Health, Republic of Indonesia, 2014). The total population of North Sumatra in 2018 will reach 14.42 million. Based on data from the Central Statistics Bureau (BPS), the number consists of 7.19 million men and 7.22 million women (BPS, 2019).

A prolonged increase in blood pressure will damage the blood vessels in most parts of the body. Diseases that are often experienced by elderly such as heart failure, myocardial infarction, kidney failure, stroke, and vision problems are complications due to uncontrolled hypertension (Santoso, 2010). Degenerative diseases are a health condition in which the organ or tissue associated with the condition continues to decline its physiological function over time. The diseases occur due to changes in body cells that ultimately affect overall organ function. Several attempts can be conducted to reduce blood pressure in the elderly, include a regular exercise. Gymnastics is one form of exercise that is suitable for the elderly. Gymnastics for elderly is a mild exercise that is easy to be performed by the elderly (Widianti and Proverawati, 2010). Regular physical activity such as gymnastics in elderly can reduce high blood pressure. This is because physical activity will reduce body fat that is associated with high blood pressure (Fatmah, 2010).

In elderly, the bodies can no longer function adequately, hence most elderly required assistances in daily life activities. Not to mention the various diseases affecting the elderly that also require extra attention from the people around them. Exercise will help the body to stay fit and fresh because it keeps the bones strong, encourages the heart to work optimally, and helps eliminate free radicals in the body, in other words favorable physical

fitness is resulted from favorable heart and blood circulation that support the whole body to function in a long time (Ismaryati, 2009).

Physical fitness is said to be the ability to keep conducting activities without experiencing significant fatigue. It acts to support the quality of the activities. Based on its function, according to Ismaryati (2009), physical fitness is classified into two, namely general and specific physical fitness. The general function is to develop the strength, ability, capability, creativity and endurance of every human being to enhance physical power. Specific functions are depend on to the specific occupation (for example: athletes, students, office workers), circumstances (for example: pregnant women) and age (for example: for children to stimulate growth and for the elderly to enhance endurance (Ismaryati, 2009).

Favorable physical fitness is crucial to support work activities, especially for elderly. To maintain and improve physical fitness, a regular exercise with a frequency of 3-5 times per week for at least 15 to 25 minutes can be performed. The type of exercise for the elderly to achieve endurance with the most adequate fitness is gymnastics accompanied by strength exercises plus balance and stretching movements. Carrying out regular exercise is a beneficial activity to increase and maintain cardiorespiratory endurance, lead to the increase in lungs efficiency and heart performance (cardiorespiratory circulation) (Muohir et al, 2004).

The definition of health according to WHO is a favorable condition both physically, mentally, and socially and not only free from disease or weakness. The Center for Disease Control and Prevention and the Agency for Healthcare Research and Quality consider that physical and mental health supervision is necessary to understand quality of life related to health issues (health-related quality of life / HRQOL) and its effect on improving quality and longevity. The high level of heart-lung fitness (cardiorespiratory fitness / CRF) is associated with high levels of HRQOL in the elderly population and with chronic disease, but this association is not yet clearly defined in young people (Sloan et al, 2009).

The level of physical fitness is a benchmark of a person's quality of life. Healthy Heart Club was established to help running a program to maintain heart fitness with healthy heart exercises. A person's fitness level can be determined by physical fitness tests

including heart-lung endurance test. The test is important to measure the ability of large muscles at moderate to severe intensity levels in a sufficiently long duration. The best fitness test result is the one measured by VO₂max. Many factors may affect the level of physical fitness, including socio-demographics such as age, gender, and occupation, hence health assessments may be evaluated from the history of diseases and vital signs. Several factors have been shown to affect physical fitness both negatively and positively, however various studies exhibited distinguish relationship between one factor and another (Harmani et al, 2013).

According to background elaborated above, this study aims to investigate the effect of exercise on fitness measured by vital sign examinations in elderly at the nursing home Karya Kasihin Medan.

METHOD

This study is a quasi-experimental study, pretest-posttest without control group. In this study, a subjected elderly to assess their fitness through vital sign examination.

RESULTS AND DISCUSSION

Distribution of Age Prevalence of Elderly in Nursing Home Karya Kasihin in Medan

Table 1. Distribution of Age Prevalence

Age (year)	Frequency	Percentage
50-60	18	23.1
61-70	31	39.7
71-80	22	28.2
>80	7	9
Total	78	100

Table 1 indicated that the majority of the elderly, 31 (39.7%) elderly, were 61-70 years old, 22 elderly (28%) were aged 71-80 years, 18 (23%) elderly were aged 50-60 years and 7 (9%) elderly were aged at least > 80 years old.

Distribution of Gender Prevalence of the Elderly in Nursing Home Karya Kasihin in Medan

Table 2. Distribution of Gender Prevalence in the Elderly in Medan Kasih Nursing Home

Sex	Frequency	Percentage
Male	30	38.4
Female	48	61.6
Total	78	100

Based on table 2, majority of the elderly in the Nursing Home were female, 48 (61%) elderly and male were 30 (38%) elderly.

The Effects of Elderly Gymnastics on Fitness measured by Vital Sign Examination in Elderly in Nursing Home KaryaKasih, Medan

Table 3. Effects of Elderly Gymnastics on Fitness measured by Vital Sign Examination in Elderly in Nursing Home KaryaKasih, Medan

Fitness	Pretest	Post test	n	P value
Blood Pressure (BP)	1.40	1.85	78	0,001
Heart Rate (HR)	1.35	1.76	78	
Respiratory Rate (RR)	1.82	1.93	78	

Table 3 indicated that vital signs exhibited changes between before and after elderly gymnastics. The test before gymnastics exhibited BP of 1.40, HR of 1.35 and RR of 1.82. After gymnastics, the examinations exhibited BP of 1.85, HR of 1.76 and RR of 1.93. P value of 0.001 was obtained, indicating a significant effect of exercise on physical fitness measured by vital sign examination in elderly in Nursing Home KaryaKasih, Medan.

This study showed that the majority of subjects were 61-70 years old and were predominantly female. The existence of this advanced age requires maintenance efforts and increased quality of life, the elderly experience a decrease in fitness due to the reduced number of cells in the body. One way to maintain the physical fitness of the elderly include physical exercise / sports, such as elderly gymnastics. Elderly fitness acts to support the ability and capability to enhance productivity, especially for daily life activities supported by cardio-repression, muscle strength, muscle endurance, muscle flexibility and balanced body composition (Suhardo, 2001).

This condition can be achieved with fitness activities to help maintain bodily functions, especially the heart (Sherwood, 2001). Type of exercise that can improve and maintain one's fitness is an exercise that contains elements of motion as a component of fitness, the duration of exercise every time it is done in a certain time. The intensity of the workout meets enough exercise frequency every week. Gymnastics with low-moderate intensity is the right type of exercise for the elderly to achieve fitness (Irianto, 2004).

Sports or exercise is very important to avoid adverse changes in the elderly. The type of exercise that suitable for elderly is elderly gymnastics. One type of exercise recommended for the elderly is elderly gymnastics, with duration of 20-50 minutes and frequency of 3 times a week. Gymnastics for elderly may increase flexibility and physical fitness hence the elderly will capable of performing physical and daily activities.

This can occur because when the muscle is contracting, the synthesis of muscle contractile proteins takes place much faster than the rate of destruction, thus producing progressively increasing actin and myosin filaments in myofibrils. Myofibril will break down in each muscle fiber to form a new myofibril. An increase in the number of additional myofibrils causes muscle fibers to become hypertrophy. Hypertrophic muscle fibers have an increase in the components of the phosphagen metabolic system, including ATP and phosphocreatin. This results in an increase in the ability of the aerobic and anaerobic metabolic system that may increase energy and muscle strength. Increased muscle strength is what makes the elderly stronger in supporting the body (Guyton and Hall, 2006).

Elderly gymnastics or exercise increase muscle strength and increase balance in the elderly (Kusnanto et al., 2007). Elderly gymnastics increase joint strength, endurance, and flexibility, so that it can improve the decreased functions of musculoskeletal system (Herawati and Wahyuni, 2004). Balance is related to the attitude of maintaining a balanced state during standing or moving. Elderly who have physical fitness are expected to be independent, and are expected to still be able to stand up and walk well (Sumintarsih, 2006).

Changes that occur in the elderly affect the activity and muscle strength, positively or negatively. In negative changes the elderly experience weakness or decreased muscle strength and feel weak or decreased muscle strength. Such conditions require the elderly to

prevent negative changes by exercising. One of the actions that can be taken to train fitness is the implementation of elderly gymnastics. Elderly gymnastics aims to improve muscle strength, and also improve the fitness and health conditions of the elderly. Elderly who exercise regularly will be able to maintain bone and muscle strength, joint flexibility and endurance.

CONCLUSION

Majority of the elderly in nursing home KaryaKasih were 61-70 years old and were predominantly female. The analysis test result exhibited p value of 0.001, indicating a significant effect of elderly gymnastics on physical fitness measured by vital sign examinations in elderly at the nursing home KaryaKasih in Medan.

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