

Meaning of Physical Activities for the Elderly: A Review

Wangui Anthony Muchiri, Oloo Micky Olutende*, Issah W. Kweyu, Esther Vurigwa

Department of Health Promotion and Sport Science, School of Public Health, Biomedical Sciences and Technology,
Masinde Muliro University of Science and Technology, Kakamega, Kenya

*Corresponding author: micky.oloo.mf@gmail.com

Received July 07, 2018; Revised August 23, 2018; Accepted September 11, 2018

Abstract Aging is a process of inherent change that has separate or joint effects on the individual identity. Aging brings about physiological, psychological and other kinds of changes to the human body. The frail elderly people present a clinical syndrome which comprises of unintentional body weight loss, muscle weakness, slow walking, self-reported exhaustion and low level of physical activity among the elderly people who are over the age of 65. When these changes occur the health benefits of fitness are retained and regress slowly. It is of importance to note that although some of the changes brought by aging can't be controlled some can be controlled feasible in many of the body organs through exercise. The increasing use of preventive care, better medical management of mobility and changing lifestyles in older persons, exercise has beneficial effects on health and longevity. Psychological care plays useful part in coping with these situations. It also boosts self-esteem, self-confidence and self-worthy and therefore the purpose of this paper is to explore the importance of exercise to the aging persons and how the same helps reduce the effects of aging. This will be done by elaborating how exercise affects different body systems with age. In conclusion, the findings of this paper provide empirical evidence for the importance of supportive environments for the elderly people to continue performing meaningful occupations outdoors

Keywords: *physical activity, elderly, health promotion, exercise*

Cite This Article: Wangui Anthony Muchiri, Oloo Micky Olutende, Issah W. Kweyu, and Esther Vurigwa, "Meaning of Physical Activities for the Elderly: A Review." *American Journal of Sports Science and Medicine*, vol. 6, no. 3 (2018): 79-83. doi: 10.12691/ajssm-6-3-3.

1. Introduction

People worldwide exercise every day in order to keep healthy. Selected studies suggest that physically active older adults benefit from maintained physical health by having fewer cardiovascular diseases, better physical functioning [1,2], mental health, lower depression, better cognitive functioning [3]. World Health Organization [4] recommends at least 150 min of moderate or 75 min of vigorous aerobic physical activity for individuals aged 65 years and above (or an equivalent combination). Few researches have targeted effects of exercise on old people. Daily movement or activities reduces with advance in age however this does not mean that it is not necessary for old people to do exercise.

Exercise for elderly comprises the daily living activities, interests or hobbies and living demands they must fulfil each day [5]. The term "active living" as mentioned in a study by Collette et al, [6]. Actively living involves walking to the supermarket, walking up and down the stairs rather than use of the elevator; wash some small items of clothes instead of using washing machine, cook food rather than eating in a restaurant. For elderly people, it can also include dress and bathing, brush their teeth, comb their hair and eat instead of being fed by others. [5,6]

There is often a radical break with the working lifestyle among the elderly. This ends up eliminating activities that require physical exertion thus leading to a progressive sedentary lifestyle. It is therefore necessary to stimulate the corporal movement to combat idleness by engaging the individual more physically engaging leisure activities [7].

According to Taylor and Johnson [5], activities that older adults engage in will depend on their interests, physical abilities, and living situations. For instance, interacting with grandchildren can be an excellent form of exercise. This can include rocking and stroking the baby, playing tickle or carry the baby. This is because such activities require good balance, upper and lower body strength. These fun activities are beneficial to both physical health and mental health because they provide emotional feedback through affectionate interaction and laughter [5].

Exercise is generally divided into four major groups: Flexibility exercise includes stretching as much as one can without discomfort or strain aids to improve the range of motion in muscles and joints such e.g. tilt the head, bend the waist, twist ankle or wrist, making circle using hand, foot, and hip, etc. [8]. Older adults are recommended to enroll in a flexibility and strength training for a minimum of two sessions in a week [9]. Aerobic exercise includes cycling, swimming, walking, rowing, hiking or playing tennis. It focuses on increasing cardiovascular endurance.

Regular participation in physical activity that involves rhythmic movements of your large muscles has the potential to increase aerobic fitness [10].

On the contrary anaerobic exercise comprises of activities that require high energy consumption. It is therefore not recommended for the elderly unless carefully considered. This is because of its increased risk of injuries [5]. Exercise for Balance helps maintain the body balance thus improving independence and confidence by preventing falls. Activities that keep participants on their feet and moving, e.g. walking, can enable one maintain good balance i.e. stand up without using hands, stand on one leg, raise the heel, stand against a wall as close as possible, etc. [11]

Apart from physical exercise, mental exercise is considered beneficial to prevention of Alzheimer's disease and dementia. Common examples of mental exercise are solving puzzles, playing board games, card games. Using one's memory is a form of mental exercise. Attempting to memorize a grocery list before someone goes to the store is easy and beneficial for the brain. Studies show that playing Bingo is an example of mental exercise for the elderly [12].

2. Methods and Material

Literature review method was chosen which is very good way to get an overview of information and educational awareness services offered for caregivers in elderly home or institutional settings and which ways can information and educational services on the meaning of outdoor physical activities for the elderly people. The writer is interested to first analyze what has been concluded by other researchers on the chosen topic. A literature review is a guideline of the topic information in a particular topic area. A literature search was made that determine what has been done and synthesize or pull together those elements which are similar or most pertinent to this thesis topic. This literature review will provide a solid overview of the chosen research topic. Literature reviews are often of critical sections of scholarly research materials, and are sometimes material on their own. Literature reviews are most often written by researchers in the sciences and social sciences who report on lab or empirical research. Aveyard, H. [13]

3. Benefits of Exercise to the Elderly

Different types of exercise bring about different changes to elderly. Moderate intensity physical activities such as stretching, swimming, brisk walking or water exercises are of great advantage to elderly people. They improve their balance, flexibility, coordination, endurance, mental health, cognitive function and muscle tone. This greatly enhances their functional independence [14].

Physical benefits include significant reduction of body fat which lowers the probability of obesity. Regular exercise also decreases blood pressure; improves lipid profile hence reduced risk of hypertension [5]. Weight-bearing exercise as one of the most popular physical activity creates stronger skeleton and reduce the risk of hip fractures in later life. Some programs which include exercises to improve strength and balance are tailored for

elderly [5]. Ball exercise has been recommended as a suitable exercise in a fall prevention program for the elderly [15].

Aerobic exercise, such as walking, jogging or swimming is remarkably beneficial; they can maintain and improve cardiovascular fitness while remaining an effective therapy for various chronic and acute diseases ranging from cardiovascular disease to thrombi-embolic stroke, hypertension, type 2 diabetes mellitus, osteoporosis, obesity, colon cancer, breast cancer, anxiety and depression.

Lobo [7] has shown that aerobic exercise can reduce the inactivity-induced loss of strength, mobility, balance, and endurance which are the vital factors for the safety and daily performance of the elderly. Other recent studies have also shown a strong relationship between exercise and improvements in balance, strength, and flexibility in a positive way [16]. In another study by Fábio et al, [17] showed after 3 months of training the metabolic parameters related with insulin resistance improved. The training is very popular for its weight loss effects. It triggers an increase in the aerobic capacity, fat oxidation by the skeletal muscle and a reduction of total cholesterol hence improvement of serum lipid profile.

Research has shown that exercise can slow down the psychological aging clock. Leisure activities help elderly relax maintain a good mood and improve psychological wellbeing [18]. Hospitalized elderly people experience an improvement of mood and psychological health via leisure activities such as watching TV, playing cards, doing craft and listening to music [18,19,20,21].

Tai Chi is a traditional Chinese martial art exercise popular around the world. It brings about physical and psychological wellbeing to elderly [22]. In study, Li et al., [22] examined impact of Tai Chi exercise program on older adult's psychological well-being. The results indicated that individuals who participated in a six month Tai Chi exercise program improved perceptions to health, life satisfaction, positive affect, and well-being while reducing levels of depression, negative affect, and psychological distress.

Nonaka [23] reported that after an exercise program, the brain cognitive functions improve. They include attention, delayed memory, and verbal fluency. Other studies also showed that aerobic exercise improved the delayed recall function in elderly individuals. Nonaka [23] Physical exercise has been regarded as a useful non-pharmacological intervention strategy, capable of improving memory functions in older people with mild cognitive impairment. Exercise could modify the risk factors of pathological mechanisms associated with cognitive impairment and it might even delay its onset. Exercise-induced hypertrophy of the hippocampus (which would protect from neuronal degeneration), and exercise-induced production of growth factors (which would enhance neurogenesis) seem to be responsible for the preceding mentioned positive effects [24].

Participating in exercise groups, ballroom dancing clubs or walking are all ways to get the physical and social benefits of exercise for the elderly [25]. This is important because as people age, they become more reclusive. This is bad for them physically, emotionally and mentally. As the emotional health and self-esteem improves, the social relations may also improve. The older people are more likely to reach out to others due to increased self-confidence. Participation in a team sport or group physical

activity will present them with a chance to meet new people. Meeting the new friends may be the first step toward establishing new friendships and developing a support network [26].

4. Differences Between the Elderly and Adult Recommended Activity

Aerobic intensity activity is defined as the terms, for example the moderate intensity comprises 3.0 to 6.0 metabolic equivalents of task activities. Another form of definition of aerobic intensity is appropriate for the elderly people, because their fitness levels can be low. For example, the process of performing 3.0 to 6.0 metabolic equivalents of task activities either requires relatively the vigorous effort or it can be impossible for the elderly with very low fitness. Aerobic intensity for the elderly people recommendation is relatively about their fitness to perform in the prescribed exercise. Judge O. James [27] says that Franklin et al. [28] found that according (to the American College of Sports Medicine), the recommended target of intensity exercise for the elderly is about 50-85% of oxygen uptake reserve, a range which includes both the moderate and vigorous exercise. When the oxygen that is reserve is measured on a 10 points scale, then the moderate intensity will begin at around 5 (50%) and then the range of the vigorous intensity does not quite reach the range of 9 (90%). By telling or suggesting to the elderly people that their perceived effort during activity should be 5-6 or 7-8, on a 10-point scale may not achieve the desired level of effort but not linearly [23]. When there are concerns that the elderly will not have the motive to engage in activity at the desired intensity, a period of which supervised exercise can help the elderly learn the desired and recommended level of effort. [27]

Muscle strengthening activities

The specific purpose and recommendation of intensity (level of effort) activities is to maintain and increase the muscle strength. James O. Judge [27] says that the American College of Sports Medicine (ACSM) recommended a general resistance training of moderate intensity for the elderly. The high resistance training is an option for the elderly to take part in but elderly with sufficient fitness, experience, and knowledge of the resistance exercise can take part in the high intensity training with supervised settings. Historically, people have increased and maintained their strength through the usual physical activity, such as the manual labor in garden or farm. In the modern world, the elderly people will commonly have to engage in the muscle strengthening recommendation through the exercise programs which are weigh bearing calisthenics or the progressive weigh training. America College of Sports Medicine recommended performing resistance exercise for at least one set of repetitions for about 8-10 exercise which is focused on the major muscle groups and this exercise should occur on two or three nonconsecutive days each week on each muscle groups. Other research expert recommends between 10-15 (as opposed to 8-12) repetitions per set for the elderly [27].

Flexibility activities

Flexibility activity is vital and required to maintain the range of motion which is important and necessary for

daily activity and physical activity. James O. Judge [27] says that Thacker et al. [29] the specific health benefits of flexibility activities are very unclear compare to aerobic and muscle strengthening activities. For example, research has not shown if flexibility activities could or can reduce risk of exercise related injury. In addition, James Judge [27] says that King et al. [30] found that only few research studies have documented the age-related loss of range of motion in health of the elderly people, but however, research has proved that flexibility exercises is beneficial in at least one randomized trial and it is recommended in the management of several common diseases in the elderly people. It is recommended that at least 10 minutes for flexibility activities which is based upon the time required for a general stretch routine that involved the major muscle and tendon groups with 10-30 s for a static stretching and about 3-4 repetitions for each stretch. Preferable, to be performed at same days that aerobic or muscle strengthening activity is performed [27].

Balance exercise

James judge [27] says that the American Geriatrics Society [31] found that the recommendation for balance exercise is consistent with a clinical practice guideline that is published in 2001. The elderly at risk of fall in the community living (e.g. example, with frequent falls or mobility problems); there are multi component interventions which include regular physical activity that are effective in preventing falls. Regular physical activity can or may reduce falls and fall injuries as much as 35-54%, because most research has recommended and concentrated on balance exercise rather than balance activity (e.g. dancing). The most preferred types, frequency, and duration of balance training are very unclear and they are not specified in the clinical guideline. James O. Judge [27] says Robert M. [32] that, balance exercise three times a week is one option, as this approach was effective in a number of four fall prevention studies. The recommendation for balance exercises applies only within the community dwelling of the elderly people because of insufficient data in long term care settings and hospital settings. According to the guideline for prevention of falls, there are no any specification of an age cutoff, but there are few data on the effects of physical activity on falls in the elderly people less than 65 years old.

5. Exercise Guidelines and Recommendations for the Elderly

The American College of Sports Medicine (ACSM) Position Stand has long been the gold standard for exercise recommendations. In 2007, the ACSM and the American Heart Association (AHA) released updated physical activity guidelines for older adults. a mix of moderate and vigorous aerobic activity every week. For example, two 30-minute runs plus 30 minutes of brisk walking equates to 150 minutes of moderate aerobic activity. Strength exercises on two or more days a week that work all the major muscles (legs, hips, back, abdomen, chest, shoulders and arms). A rule of thumb is that one minute of vigorous activity provides the same health benefits as two minutes of moderate activity. You should also try to break up long periods of sitting with light

activity, as sedentary behaviour is now considered an independent risk factor for ill health, no matter how much exercise you do. Older adults at risk of falls, such as people with weak legs, poor balance and some medical conditions, should do exercises to improve balance and co-ordination on at least two days a week. Examples include yoga and dancing.

The recommendation for older adults is 150 minutes of exercise per week (as opposed to specifying 30 minutes of moderate-intensity exercise five days per week). New research shows there is a therapeutic effect in moderate-intensity endurance exercise in as little as 10 minutes. Exercising less than 10 minutes at a time does not seem to provide the desired heart and lung benefits. When broken down into at least 10-minute segments, 150 minutes is only (approximately) 20 minutes per day, seven days per week; 30 minutes per day for five days per week; or 50 minutes per day for three days per week. Performing 10-minute exercise periods spread throughout the week is often more appealing to older adults because it seems easier to accomplish.

6. Motivating the Elderly to Initiate and Maintain Exercise

Motivation can be defined as a force which acts on or within a person to initiate a behavior. This definition was able to show the framework that includes both intrinsic and extrinsic factors. To understand the motivation is more than a resistance of an individual's personality that may help care providers efforts to encourage and motivate their elderly clients and also to provide the elderly people with the tools to empower themselves to become self-directed about exercise participation. According to Sallis et al. [33] stated that there are multiple models of motivation that have been developed in the literature, based on the complexity of the task of motivating the elderly people to exercise. But research has suggested motivational factors that are amenable to intervention, no consensus has emerged regarding a theoretical framework for activity promotion research or practice. [34]

Understanding the motivation equation

Geelen et al. [35] adapted the following equation in (Figure 1) which encompasses four subjective factors. According to Fogel et al. [36], which the subjective natures are very important because an accurate perceived prognosis by the individual is the best way to predict success. But each of these factors are modifiable and may be able to influenced through education, experience and coaching to improve motivation to adopt and maintain exercise.

motivation

$$= \frac{\text{Perceived Chance of success X Perceived Importance of the Goal}}{\text{Perceived Cost X Inclination to Remain Sedentary}}$$

Figure 1. Motivation equation

And it encompasses interrelated factors which are:

- How strongly does the elderly person believe that one determines one's own destiny, specifically on one's own health?

- How confidence does the elderly person feel regarding physical activity?
- What can the elderly person learn from the past experience?

Despite that the elderly value and clearly understand the importance and benefit of activity, but those who believe that they will fail are unlikely to initiate any exercise program. Perceived importance of the goals is also very important, which can be seen as:

- How can achieving the goal change their life?
- What are the values of the changes to them?

The denominator of the motivation equation includes the perceived costs of attempting exercises. The cost could be risk of failure, pain, and fatigue, loss of time or energy. This could also include the inclinations to remain sedentary, which are the perceived benefits and the value of avoiding activity. Elderly people decide if to adopt or reject behaviors based on the balance of their appraisal of these four factors.

7. Conclusion

Dramatic global population ageing has brought new demands to improve older people's health by adding "quality" to their extended lives. This has led to more elderly people engaging in physical activity. There's a growing knowledge and worldwide urge for the elderly to engage in Physical activity but the promotion of health benefits of exercise to the elderly are yet to be realized. Consequently, less information is the public domain of the types of exercises the elderly should indulge on and to a larger extent the prescription of exercise to the elderly. This needs to be keenly studied and developed. Physical activity programs should be initiated at an early stage to participants to achieve adequate exercise benefits for the participants. Although the health benefits of physical activity for elderly persons are well established, exercise is an underused form of health promotion, especially in the elderly population. Physicians and health care professionals must play a more active role in motivating their patients to engage in exercise. Health care professional or Careers historically have not actively promoted physical activity and sometimes have even actively discouraged activity.

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