

TUI UNIVERSITY

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Aging and Health Education

The Role of Physical Activity in the Health Status of Older Adults

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Thank you very much for celebrating this milestone with me. I would like to share one of my favorite papers I wrote for my Master's program.

Here's to your Health!

Sincerely,



The natural aging process is accompanied by a multisystem loss of physiologic reserve capacity (Wong H.C., Wong S.F., Weng S.P., Azizah M., Dass, M., 2003). Consequently, the symptoms are noticed by the loss of balance (cognitive or neurological capacity); loss of bone strength, joint flexibility, and muscle strength (musculoskeletal capacity); loss of cardiopulmonary function (aerobic capacity); and the loss of nutritional capacity (Wong H.C., Wong S.F., Weng S.P., Azizah M., Dass, M., 2003). In previous decades, it was accepted that the loss of physiologic reserve capacity was a part of aging however recent studies support that elders can continue to have an independent lifestyle that is free of falls and disease by means of physical activity or exercise (Wong H.C., Wong S.F., Weng S.P., Azizah M., Dass, M., 2003). Physical activity is defined as many movements of the body that are produced by skeletal muscle contractions, which cause energy expenditure (Wong H.C., Wong S.F., Weng S.P., Azizah M., Dass, M., 2003). Exercise is defined as a subset of physical activity, as it is planned, structured with repetitive movements specifically for improving or maintaining physical fitness (Wong H.C., Wong S.F., Weng S.P., Azizah M., Dass, M., 2003). Physical activity and exercise can be used interchangeably. This said, recent studies state that despite knowing the benefits of physical activity, at least 80% of older American do not get the recommended amount of physical activity and 50% of older Americans are sedentary with no intention of changing (Resnick, B., 2002).

In most recent decades, studies found that it is not only the process of aging that brings upon physiologic change rather it is the lack of physical activity in elders that affects physiologic reserve capacity. The common term “use it or lose it” has been proven to be true in sedentary elders as opposed to active elders. A great example is the WALC intervention (Walk; Address pain, fear, fatigue during exercise; Learn about exercise; Cue by self-modeling), which proved significant change in sedentary elders who followed a physical activity promotion program for six months. The intervention program followed the Social Cognitive Theory as a model and was divided into a treatment group (incorporating physical activity) and a control group (receiving routine care absent of physical activity) (Resnick, B., 2002). The treatment group showed significant changes in several variables whereas the control group showed no change in variables (Resnick, B., 2002). It is a fact that elders that are inactive:

- Partially lose strength and stamina due to lack of physical activity.
- Inactivity increases by age and by the time elders are 75 years of age; one in three men and one in two women are inactive.
- Inactive elders are more susceptible to falls and fractured bones.
- Inactive elders are more susceptible to coronary heart disease, developing high blood pressure, Type 2 Diabetes, colon cancer, depression, and suffer with arthritis pain (CDC, 1999).

There is supporting evidence that physical activity can slow the biological changes of aging and increase longevity and prevent common chronic diseases (Singh M., 2002). Physical activity can improve: maximal aerobic capacity; muscle strength, power, endurance; motor coordination; neural reaction time; oxidative and glycolytic enzyme capacity; mitochondrial volume density; gait speed, step length and gait stability; maximal cardiac output; endothelial reactivity; maximal skeletal muscle blood flow; capillary density; arterial distensibility; vascular insulin sensitivity; plasma volume; total energy expenditure; thermic effect of meals; total body water; total body potassium, nitrogen, and calcium; protein synthesis rate, amino acid uptake into skeletal muscle, nitrogen retention, and protein turnover; gastrointestinal transit time; glycogen storage capacity; lipoprotein lipase activity; REM and slow wave sleep duration; Heat and cold tolerance and temperature regulatory ability; and attention span (Singh, M., 2002). All of the above are decreased through the biological changes of aging (Singh, M., 2002). There is also clear evidence that suggests an inverse, linear doseresponse relationship between the volume of physical activity reported in epidemiological studies (Singh, M., 2002). These studies have followed cohorts of men and women, younger and older than 60 years of age. Consequently, results have demonstrated that energy expenditure of at least 1000kcal per week reduces mortality by approximately 30% and 2000kcal per week reduces mortality by approximately 50% (Singh, M., 2002). Physical activity that combines aerobic and resistance training can prevent chronic diseases such as arthritis, insomnia, obstructive pulmonary disease, renal failure, heart disease, arterial disease, hypertension, depression, obesity, osteoporosis, peripheral vascular disease, venous stasis disease, and Type 2 diabetes (Singh, M., 2002).

Older adults can benefit a great deal from physical activity. It is a myth to believe that as we age the quality of life must diminish. Many studies have proven that better quality,

independence, and longevity can be greatly influenced by a physically active lifestyle, not to forget to mention nutrition also plays an important role. It is also a myth to believe that once a chronic disease is established there is no hope. Physical activity has positive affects on arthritis, chronic insomnia, chronic obstructive pulmonary disease, chronic renal failure, congestive heart disease, coronary arterial disease, hypertension, depression, obesity, osteoporosis, peripheral vascular disease, venous stasis disease, and Type 2 diabetes (Singh, M., 2002). It is also a myth that physical activity has to be intensive for long periods of time. Physical activity can be obtained in moderate short intervals of 5 to 10 minutes, gradually building up to the optimal amount (CDC, 1999). It is recommended for optimal health that older adults partake in cardiovascular endurance training for 3-7 days per week for 20 to 60 minutes per session; Resistance training for 2-3 days per week of 1-3 sets with 8-12 repetitions, 8-10 major muscle groups; Flexibility training 1-7 days per week of all major muscle groups; and balance training 1-7 days per week, 1-2 sets of 4-10 different exercises that emphasize dynamic postures (Singh, M., 2002). Elders that follow optimal physical activity recommendations can prevent a life that is dependent on doctors, hospitals, medications, and assisted living. Physical activity is the path to freedom and independence!

References:

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