## 28 - THE PHYSICAL FITNESS OF A GROUP OF ELDERLY WOMEN

OLIVEIRA, Rita de Cássia da Silva
MORESCHI, Vânia Angélica
Universidade Estadual de Ponta Grossa
Ponta Grossa - Paraná - Brazil
soliveira13@uol.com.br

The enigma of old age is still a life mystery that goes beyond human reasoning. The subject has been studied through the centuries, but these studies have been conducted through completely distinct conceptions, which vary from mere speculation to scientific objectivity.

Nowadays, the ageing phenomenon is all over the world. In Brazil, it can be corroborated by the data obtained from the census of Brazilian Geographical and Statistical Institute (2000) that indicates that Brazilian population stands currently at about 15 million, what represents 9% of population over 60, and on current projections there will be about 34 million in 2025. Thus, Brazil will be among the six nations that will have the largest number of ageing population, losing out to Sweden, France, United States, Uruguay, Argentina and China.

In the words of Oliveira (1999, p.131)

Brazilian ageing population is growing due to the great increase of life expectancy, the decrease of fecundity rate, caused by advances in modern medicine, and the considerable improvement in quality of life regarding housing, basic sanitation, transport, although there is still a lot to do.

Defining ageing, in times of changing paradigms, is a challenge since there are still people that use this word to describe someone or something that is old-fashioned, useless or unproductive. Fortunately, this conception is changing since more relevant factors have been taken into account, such as the chronological, the biological, the psychological and the social ones (OLIVEIRA, 1999).

Since everybody grows older, the chronological factors will be, some day, part of people's lives and it will leads them to a new stage of life, where the different perceptions of world will make them to look at the world in different ways.

According to Oliveira (1999), if analysed under a historical perspective, it is perfectly acceptable to consider the ageing process as a social invention, which emerges from demographic dynamic, production system, social structure, dominant ideologies and preponderance of values and cultures.

The youth and old age are not absolute conception, but interpretations of human existence, and so they can be transformed.

In Brazil, the tendency is to value what is new and to disdain what is old (OLIVEIRA, 1999, p.62). Even the education sector makes elderly people feel useless.

Besides, it is limited and superficial to consider the ageing process as a period of inactivity, where only the chronological age is taken into consideration. It is essential that individual factors are considered too. By way of illustration, there are the ones that at their fifties show symptoms of ageing and the ones that at their eighties are healthy and active.

It is known that since birth people start to get old and degenerate. However, the modern medicine, adequate food, healthy life and physical exercises can postpone the symptoms of ageing process as well as the degenerative process. Nevertheless, the best way to face the unavoidable physical changes, which are part of human nature, is to maintain the mind and body active.

Human existence consists of a remarkable variety of experiences and activities that happened through the years. Old age is a time for making a synthesis of all previous stages of life (XAVIER, 1987). Like any other stage, it is part of human evolution process and needs to be considered as a period of transition, in which people must adopt new attitudes towards the new life cycle, not be considered as a deterioration process.

Sometimes, the third age has a controversial approach since it emphasizes in one moment positive factors, the next the negative ones. Nevertheless, it is necessary to perform an analysis of the ageing process taking into consideration the common sense and the reality in which the elderly live.

Some elderly people suffer from depression and diseases, and misuse medicines to treat the anxiety and depression caused by the day after day routine. Most of time, elderly people are tolerated, but their opinions and advice are not taken into consideration by their children and grandchildren any more.

The disengagement theory, created by Elaine Cummings and Wuliam Henry in 1961 (MISHARA & RIEDEL, 1986), analyses the ageing as a process where there is an inevitable decrease in the social interaction between old and young people. This theory studies the individual as a subject that goes through biological, psychological and social deterioration. As a result, old people do not take actively part in social life and because of this the society offers them less opportunities to participate. Thus, it is established a reciprocal process of disengagement between society and old people, which has psychological and social consequences for the elderly.

Socially, it is necessary that the elderly feel integrated to society in every aspect as everybody else.

Psychologically, the individual becomes introspective, losing interest for other people and for its own life in society. As consequence, there is less interaction between old people and the younger segment of society. The interaction tends to be restricted to the family and to the carer.

The gradual seclusion of elderly people receives a considerable support from society. As consequence, young people have more space and opportunities in society by comparison with old people.

Besides that, public and social policy strengthen the potential of young people and dismiss the potential of the old ones, not valuing their creativity and fighting spirit. Also, the lack of integration between younger and older generation, the low value and the disrespect for the elderly, as a segment that made significant contributions to the society and now need to be valued as well as social recognition, contribute to the seclusion of older generation.

According to Atchley (1976) the process of disengagement is not a natural and an inevitable phenomenon. Besides, it is harmful to the elderly since it contributes to age discrimination and encourages segregation and indifference to old people needs.

On the other hand, there is the activity theory, proposed by Havighurst in 1963 (BAZO, 1990). According to this theory, activity has an inestimable value in anybody's life since lack of activity means apathy, depression and pessimism (OLIVEIRA, 1998, p.55).

The activity theory emphasises that only an active person can feel happy and satisfied. People must be productive and helpful in the environment in which they live. It embodies material, professional, physical and psychological factors.

At old age people are responsible for continuing the activities they have been participating all along their life. Also, it is a time for starting to take part in new activities in order to guarantee their happiness, self-esteem and active participation in social life.

When elderly people carry out any activity they feel satisfied and fulfilled. It improves their self-esteem and leads them to assume an active role in society.

As people get old, there are significant changes in their social roles. Sometimes, it needs a more objective definition of purpose and identity. Besides, these roles need to be replaced constantly otherwise it makes the elderly become alienated from themselves and from society.

As Oliveira (1998, p.56) remarks

Valuing the elderly, assigning them new and valued roles within society, maybe with some payment. It would, besides providing an extra money, give them the respect of society, which values profitable activities and disregards the unprofitable ones. Also, the education sector should value the elderly cultural identity as well as their activities in the industrial society, but it does not happen.

Most of time the elderly are marginalized and disrespected in Brazilian society. Because of this, it was created, after considerable discussions, the Law of the Aged (Law 10.741/03). As a result, the elderly have been getting more attention from political and civil society since this law imposes legal and practical actions on the society in order to improve the quality of life for old people.

The regular practice of physical activity is very often joined to a best quality of life of the elderly, in the same way, it is known that the sensation of personal well - being is several times related to quality of life turned to health and with the individual's functional autonomy. (DANTAS *et.al*, 2003 , p.42).

It is worth bearing in mind that the quality of life is maintained by practising physical activities regularly since it gives autonomy and independence to the elderly and show how healthy they are.

As Guiseline (2004, P.42) states, daily physical activity, physical exercise and physical conditioning contribute to health and longevity. He also remarks that physical exercise, guided by a professional and carried out regularly, must be considered as a process that contributes to the physical fitness (physical conditioning), which must be understood as a condition.

Guiseline (2004, P.42) emphasizes that a lot of people don't distinguish physical exercise of physical conditioning, they confuse them, once they are intimately related: the first one is used as a way in the development process and the second one result to be reached. They are interlaced and happen simultaneously at the moment of the elaboration of the physical conditioning program and later in the practical application, whose final goal is a lifestyle with more quality, that reflects in health and well - being.

It is worth pointing out that when physical activities are designed to maintain old people independence it helps them not to reach at a condition of inactivity.

Spirduso (2005, P.160) defines endurance muscular as the capacity of contracting continuously a muscle until it achieves sub maximal levels. He also points out that endurance muscular is measured by the period of time that an individual can maintain a specific percentage of maximum strength force until fatigue, or by recording how many times an individual can contract repeatedly a muscle to a percentage that determines individual's maximum contraction.

Thus the muscular resistance is determined measuring how many times an individual produces a strength 30% (or other sub maximal percentage) of maximum voluntary contraction.

The hind of movements that people do in their daily activities during their whole life are going to establish the amount and functional capacity that they can maintain in their muscular and osseous systems. Muscles that are never used will deteriorate by the time. Very physically active individuals who insist on training the resistance of all their groups of muscles through all their widths of movement will maintain an appropriate amount of strength during the oldness. ( SPIRDUSO, 2005, p.147).

As people grows older their muscular strength declines. For this reason, it deserves special attention since it provides more capacity and less fatigue for old people carry out their daily activities.

*Sarcopenia* is a term used to explain the significant muscular loss which makes elderly people fragile and unable to undertake all or part of their day-to-day activities (SHEPHARD, 2003, P.237).

Dutta (1997), apud Matsudo (2001, P.37) observed that *sarcopenia* is a generic term that indicates loss of muscular mass, strength and quality of skeletal muscle, and so it has a significant impact in people's health, walking pace and balance since *sarcopenia* increases the risk of fall and loss of functional and physical independence, besides contributing to the increase of chronic diseases like diabetes and osteoporosis.

It should be noted that a significant loss of muscular strength causes frequent joint problems, muscular injuries and postural problems. For these reasons, it is necessary to adopt healthy habits and practice physical activities regularly. More importantly, physical activities should be adopted as preventive measures, which would change the elderly style of life as well as improving their quality of life.

Aerobic power is the capacity of the cardiopulmonary system to provide blood and oxygen to active muscles and the capacity of these muscles to absorb the oxygen and the energetic substrates during the maximum physical effort (ASTRAND and RODAHL, 1986 apud SPIRDUSO, 2005, P.118).

Walking is one of the main activities of everyday life, contributing greatly to fulfil the daily tasks. Studies show that the muscular strength is associated to the functional limits of a walk, and so the individuals that have more muscular strength increase their walking pace.

In the words of Shephard (2003, 123), as people get old the motivation provided by the environment is gradually affected by a fall in the standard of walk, which is caused by different kinds of tremors, loss of balance and a growing vulnerability to falls.

The fall is one of the main causes of accidents involving the elderly and it is associated to lack of balance, inactivity, decrease in muscular tonus, functional independence, among other factors.

According to Spirduso (1995) APUD Matsudo (2001, p.122), physical exercise contributes to avoid falls since ir strengthens leg and back muscles, improves mobility, reflex, walking pace and motor synergy of postural reactions, maintains body weight, increases flexibility and decreases cardiovascular diseases.

The main conclusion to be drawn from this discussion is that the elderly that take regularly part in a physical activity program increase their physical fitness and preserve their dignity. The capacity to move plus an active style of life give them autonomy and independence to carry out their activities of daily living. To sum up, a healthy style of life along our lives is the best way to guarantee longevity with quality.

**OBJECTIVE**

This study aims to analyse the physical fitness of a group of elderly women taking into account the following factors: lower members resistance, which were measured by the sitting down and standing up in a chair for 30 seconds test, cardiopulmonary ability measured by 6-minutes walk test, and the balance ability measured by the static balance test.

**MATERIALS AND METHODS**

The sample consisted of 30 elderly women, in the 60-74 age range, who attended the Elderly Support Center, in Palmeira. After a detailed explanation about the research objectives, benefits and possible risks they signed a Consent Term and take voluntarily part in the data collection and assessments.

The activities of this group vary a great deal since it involves handicrafts, groups of embroidery, crochet, knitting, painting,

bingo and music, as well as a structured program of physical activity

A pre-test was carried out in April, 2006 and a post-test in September, 2006 (twenty weeks). The post-test was conducted after the group had ended the physical activity program.

The resistance of lower members was measured according to the criteria of the sitting down and standing up for thirty second test, which was formulated by Rikli and Jones (1999) and mentioned by Matsudo (2005).

The participant should be sat down in a straight-backed or reclining chair, with no support for arms. The chair was leaned against the wall for security reasons and could not be moved. The participant's back should be straight, her feet should lean against the ground and her arms should be folded in her chest. The movements of sitting down and standing up should be done for thirty seconds as many time as possible. Before the test, it was done a practical demonstration and the participant was asked to make an attempt. The total number of complete and correct movements were recorded for thirty seconds. The test was taken twice, but only the best result was considered.

The aerobic power was measured by the 6-minutes walk test created by Rikli and Jones (1999) and mentioned by MATSUDO (2005). The participant was told to walk as fast as possible for six minutes. The test was carried out in a polysportive court where marks were put in distances of 3 meters. The participants were told to walk, not to run, along the route as fast as possible. They were encouraged with motivational speeches. The result was achieved by the number of meters each participant walked in six minutes.

The balance was measured by the static balance test, which is part of the battery of tests proposed by Williams and Greene (1990) and mentioned by SPIRDUSO (1995). The participant was asked to stand up with her hands in her waist, look at a fixed point (distant two meters from the wall) and flex one of her legs to the high of her knee. The participant was told to try to stay at this position at least for thirty seconds.

The chronometer was activated by the person in charge of the assessment and stopped when the participant put her foot on the ground, even if it had happened before thirty seconds. If the participant stayed at this position for thirty seconds or more the chronometer would be immediately stopped in order to allowed the participant to rest. Three attempts were carried out and their average were calculated in seconds.

The objective was to verify if there were differences in the results of the pre-test and post-test. The average and the standard deviation of each test were analysed. It was used the T - Student test to verify if the results differ significantly, adopting a level of significance of 0,05.

**RESULTS AND DISCUSSIONS**

This study analysed the physical fitness of elderly women who took part in a structured program of physical activity. Their abilities, strength of lower members, aerobic power and balance were analysed.

The resistance of lower members was measured by the sitting down and standing up for thirty second test. A significant improvement in the ones who took part in this program was verified. The muscular strength analysed in the pre-test had an average of 12,9 repetitions and the standard deviation was 2,4. Regarding to the post-test, the average was 19,3 repetitions and the standard deviation was 3,5. Significant differences of ($p<0,05$) were found.

The aerobic power was measured by the six minutes walk test. The results suggested that there were significant differences of ($p<0, 05$). It demonstrated that the average and standard deviation, respectively, in the pre-test were 516,07 meters and 65,8, and in the post-test the average was 579,45 meters and the standard deviation was 43,5.

The balance was measured by the static balance test. Its results revealed an increase in this ability. In the pre-test was found an average of 18,1 seconds and the standard deviation was 3,7. With reference to the post-test, the results were an average of 30 seconds and the standard deviation was 0 (zero). It demonstrated significant differences of ($p<0, 05$).

**CONCLUSIONS**

The results of this study confirm the conception that the elderly physical fitness can be improved by a structured program of physical activity since it helps them to keep the aerobic resistance, strength and balance, providing them mobility, as well as reducing their falls, sedentary lifestyle and dependence

The study also revealed that the ones who participated in the program had a significant increase in their abilities, muscular resistance of lower members, aerobic power and balance.

The performance of sitting down and standing up, 6-minutes walk and static balance tests increased when the elderly take part regularly in a structured program of physical activity.

Thus, the physical fitness has an important role to the elderly since it includes fundamental elements, which are very important to the ones that want to have an active life. Besides, it reduces the risk of becoming sick because of inactivity, and increases the prospect of longevity, independence and healthy life.

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End. Rua Padre Camargo, 657 - Centro - Palmeira - PR. - Brasil
CEP.: 84.130-000
Telefone: (42) 9919 - 6719
E-mail: vaniaangelica@yahoo.com.br

**THE PHYSICAL FITNESS OF A GROUP OF ELDERLY WOMEN**
**ABSTRACT**

Nowadays, the ageing population is a widespread phenomenon. In Brazil, it stands at about 15 million and on current projections there will be about 34 million in 2025. According to the Activity Theory, the elderly must keep themselves active, participant and integrated to the society in order to maintain their quality of life. The physical activity is extremely important to guarantee longevity with quality, so it is essential to lead a healthy style of life. This article results from a research conducted in order to analyse the physical fitness of 30 elderly women, between the ages of 60 and 74, who took part in a structured program of physical activity in the Support Center of the Elderly Attention Department, in Palmeira - PR. The research results were obtained through the following tests: sitting down and standing up for 30 seconds test and the 6-minutes walk test, described by Rikli and Jones, (1999) and mentioned by Matsudo, (2004), and the static balance test, which is part of the battery of tests described by Williams and Greene, (1990) and mentioned by Spirduso, (1995). The results achieved were: in the sitting down and standing up for 30 seconds test the pre-test showed an average of 12, 9 repetitions to 19,3 repetitions in the post-test; in the 6-minutes walk test the average was 516,07 meters in the pre-test and 579,45 meters in the post-test; in the static balance test it was 18,1 seconds in the pre-test and 30 seconds in the post-test. It was used the T-Student criterion, with a level of significance of 5%, in which the differences were statistically significant in all variables, being of $p<0,05$. As a result, it is possible to conclude that a structured program of physical activity increases the physical fitness, helping the elderly to have a more active and healthy life.

Key words: elderly women, physical fitness, physical activity, gerontology.

**L' APTITUDE PHYSIQUE D'UN GROUPE DE FEMMES AGÉES.**
**RÉSUMÉ**

Actuellement, on observe le vieillissement de la population. Au Brésil, il y a presque 15 millions de personnes âgées et en 2025 la perspective est d'atteindre 34 millions. Selon la théorie de l'activité, les personnes âgées doivent se maintenir actives et participer de leur milieu social comme garantie d'une meilleure qualité de vie. Une vie saine et des activités physiques sont importantes pour la longévité avec qualité. Cet article est le résultat d'une recherche qui a eu pour objectif d'analyser l'aptitude physique de 30 femmes entre 60 et 74 ans participant au «Centre d'appui aux personnes âgées», situé à Palmeira-PR, dans un programme d'activités physiques orientées. On a établi l'application des tests suivants: le test de s'asseoir et de se lever en 30 secondes, le test de la marche de 6 minutes (décrits par Rikil et Jones en 1999 et cités par Matsudo en 2004), et le test de l'équilibre, établis par Williams et Greene (1990) et cités par Spieduso (1995). Avant le devéloppement des activités de s'asseoir et de se lever on a appliqué un test et les résultats on été d'une moyenne de 12,9 répétitions. Aprés le devélopement des activités on a réappliqué le test et les résultats ont été de 19,3 répétitions. En rélation au test de la marche, avant les activités, le résultat a été de 516,07m et aprés, de 579,45m; en rélation au test de l'équilibre, avant les activités, le résultat a été de 18,1 secondes et après, de 30 secondes. On a utilisé les critères T-students avec un niveau de signification de 5%; les différences ont été significatives dans toutes les variantes et ont atteint $p<0,05$. Comme conclusion, on peut remarquer qu'un programme d'activités physiques regulières augmente le niveau d'aptitude physique et aide les personnes âgées à avoir une vie active et saine.

Mots-clés : femmes âgées, aptitude physique, activité physique, gérontologie.

**LA APTITUD FÍSICA DE UN GRUPO DE MUJERES ANCIANAS**
**RESUMEN**

Actualmente se enfrenta el fenómeno del envejecimiento poblacional. Brasil posee hoy cerca de 15 millones de ancianos y con perspectiva de el año 2025 poseer alrededor del 34 millones. Conforme la Teoría de la Actividad, el anciano debe mantenerse activo, participativo e integrado a la sociedad para garantizar una mejor calidad de vida. La actividad física, comprobadamente es importante para la longevidad con calidad, tornando esencial la búsqueda por un estilo de vida saludable. Este artículo resultó de una investigación con el objetivo de analizar la aptitud física de 30 mujeres ancianas con edad entre 60-74 años que frecuentan el Centro de Apoyo (C.A.) de la "Divisão de Atenção ao Idoso" (D.A.I.) en la ciudad de Palmeira - PR (BR) y participan de un programa de actividad física estructurado. Los resultados obtenidos fueron a través de la aplicación de los siguientes testes: test de sentarse y levantarse en 30 segundos (T.S.L.30) el test de caminata de 6 minutos (T.C.6), descritos por Rikli y Jones (1999) y citados por Matsudo (2004) y el test de equilibrio (T.E.) de la batería de testes de Williams y Greene (1990) citada por Spirduso (1995). Los resultados obtenidos en el T.S.L.30 fueron en el pre test con media de 12,9 repeticiones para 19,3 repeticiones en el pos test. En el T.C.6 la media fue de 516,07 metros en el pre test y en el pos test 579,45 metros, en el T.E. fue de 18,1 segundos la media en el pre test, para 30 segundos en el pos test. Se utilizó el criterio T-Student con un nivel de significancia del 5%, donde las diferencias fueron significativas estadísticamente en todas las variables, siendo de $p<0,05$. De esta manera, se puede concluir que un programa de actividad física estructurada aumenta el nivel de aptitud física, auxiliando el anciano a tener una vida más activa y saludable.

Palabras clave: mujeres ancianas, aptitud física, actividad física, gerontología.

**A APTIDÃO FÍSICA DE UM GRUPO DE MULHERES IDOSAS**
**RESUMO**

Atualmente enfrenta-se o fenômeno do envelhecimento populacional. O Brasil possui hoje cerca de 15 milhões de idosos e com perspectiva de no ano 2025 possuir em torno de 34 milhões. Conforme a Teoria da Atividade, o idoso deve se manter ativo, participativo e integrado a sociedade para garantir uma melhor qualidade de vida. A atividade física, comprovadamente é importante para a longevidade com qualidade, tornando essencial a busca por um estilo de vida saudável. Este artigo resultou de uma investigação com o objetivo de analisar a aptidão física de 30 mulheres idosas com idade entre 60 -74 anos que freqüentam o Centro de Apoio (C. A) da Divisão de Atenção ao Idoso (D.A. I), na cidade de Palmeira - PR e participam de um programa de atividade física estruturado. Os resultados obtidos foram através da aplicação dos seguintes testes: teste de sentar e levantar em 30 segundos (T.S.L.. 30) e o teste de caminhada de 6 minutos (T.c.6), descritos por Rikli e Jones, (1999) e citados por Matsudo, (2004) e o teste de equilíbrio(T.E.) da bateria de testes de Williams e Greene, (1990) citada por (SPIRDUSO, 1995). Os resultados obtidos no (T.S.L.30), foram no pré-teste com média de 12,9 repetições para 19,3 repetições no pós-teste. No (T.c.6) a média foi de 516,07 metros no pré-teste, e no pós-teste de 579,45 metros, e no (T.E) foi de 18,1 segundos a média no pré-teste, para 30 segundos no pós-teste. Utilizou-se o critério T-Student com um nível de significância de 5%, onde as diferenças foram significativas estatisticamente em todas as variáveis, sendo de $p<0,05$. Desta forma, pode-se concluir que um programa de atividade física estruturada aumenta o nível de aptidão física, auxiliando o idoso a ter uma vida mais ativa e saudável.

**Palavras - chave:** mulheres idosas, aptidão física, atividade física, gerontologia.