The Importance of Physical Activity in the Elderly, and the Benefit in the Cholesterol and Triglycerides Values

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Abstract

Objective: Achieve the importance of physical activity programs for the elderly and their influence on BMI, triglycerides and cholesterol. **Methods**: The sample consisted of 91 elderly individuals, 63 females and 28 males aged between 65 and 78 years of age. All seniors practice water activities, including swimming and gymnastics. Were analyzed with respect to two aspects: The BMI, Cholesterol and Triglycerides and practice time, seniors who were physically active at least 3 months, and seniors who maintained habits of physical activity for more than 3 months and still accumulated 30 or more minutes of other activities. We have drawn up contingency tables were confronted where the variables described in the analysis. **Results**: It was found that seniors who maintained physical activity programs were broader outnumbered those who were overweight and obesity rates in Table I of BMI, and cholesterol and lower triglycerides. **Conclusions**: We concluded therefore that physical activity programs that contemplate 2 or more hours per week, duly organized and systematized constitute a positive factor in combating inactivity and turn into a more active and cheerful elderly.

KEYWORDS: Physical Activity, Active Aging, BMI, Cholesterol, Triglycerides.

1. Introduction

Aging is one of the most visible phenomenons in contemporary societies and like any other, cannot be ignored. Aging can vary from individual to individual, being gradual for some and faster for others. These variations are dependent on factors such as lifestyle, socioeconomic conditions and chronic diseases. Some characterize aging as a general decline in daily living skills; others consider it as a period of increased vulnerability and increasing dependence in the family. Still others venerate old age as the highest point of wisdom, common sense and serenity.

From the point of view of health, the main benefits of physical activity are the prevention of some diseases (osteoporosis and cardiovascular), maintaining ideal weight, improve functional capacity, motor coordination, increased mobility and locomotors skills activities daily (Fernandes, 2010).

In the old routine exercise is of paramount importance, the most suitable to the elders to keep them healthy and independents are working strength, balance, flexibility and endurance, the exercise should be done regularly, and should not be strenuous in order not damage any organ such as the heart, and (Oliveira Sampaio, 2012).

Adherence to exercise programs, social, social interaction can increase the levels of independence, reduces isolation occupying their free time, increases self-esteem and promotes well-being. In short, "physical activity is a healthy way, comfortable and fun to live the last phase of life" (Fernandes, 2010, p. 29).

2. Literature

Changes in levels of functional fitness are provided by the specificity of exercise and its intensity. For this, we need careful assessment of the physical conditions in which they are seniors and also the objectives to be achieved. Highlights the importance of individualized exercise programs and the use of literature available basis to maximize safety and effectiveness in the programs to the population over sixty years.

The relationship between physical activity, aging and health has been the subject of a growing interest of many researchers and gerontologists. PA programs for this age group are essential for presenting a set of benefits at physiological, social and psychological, to improve the well-being and quality of life of the subject. These programs are increasingly an option right, and more and more fans (Cardoso, 2002).

(Sardinha, 2009) argues that physical activity plays an important role in promoting selective changes in body composition, and metabolic fitness in physical fitness, meaning, the rate of degenerative process can be altered by physical activity.

The practice of AF, especially in the elderly, when performed systematically produces many benefits, such as increased life expectancy (longevity), reduces the rates of morbidity and mortality, prevents cognitive decline, maintain or improve functional capacity, reduces the frequency of falls and fractures, promotes independence and autonomy, improves self-esteem and image that the subject makes himself (psychological benefits), (Mazo et al., 2010).

The participation in regular exercise, it is assumed as an effective means to reduce / prevent some of the declines associated with age, highlighting the strength training that helps to counteract the loss of muscle mass and strength, (Lamas, 2008). Additional benefits are improved health of osteo-articular and reducing the risk of osteoporosis, improve postural stability, which means less risk of falls, and improved flexibility. Together, these adaptations to training significantly increase the functional capacity of the elderly, as well as improving the quality of life of these populations, (Matsudo, 2004).

It is therefore necessary to keep the elderly active and live a quality life stage which inevitably has its own characteristics, even considering the possibility of the presence of disease.

Without losing the notion that individuals of the same age and may differ in their physiological condition and response to stimulation caused by exercise, realizing that while aging is an inevitable process, or the rate at which this process occurs, whether its potential reversibility may be amenable to intervention.

The level of intensity depends on each individual, and is more suitable for seniors opt to exercise of low to moderate intensity, adapting to each of these in order to maintain interest in exercise performs, prevent injuries on use and prevent the occurrence of cardiovascular complications. To this must be taken into account parameters such as maximal oxygen consumption, heart rate or classification perception of effort, (Nunes, 2009).

The intensity level depends largely on the individual, and is more suitable for seniors opt to exercise of low to moderate intensity, adapting to each individual in order to maintain the interest of the user who performs the exercise, prevent injuries

for use and prevent the occurrence of cardiovascular complications. To this must be taken into account parameters such as maximal oxygen consumption, heart rate or classification perception of effort. In this sense, the work on a physical level, has been primarily aerobic in nature, amid simple, easy, or fast idle, and / or activities like swimming and water aerobics. These exercises are designed to improve the overall functional capacity (reduce joint impact) with an intensity 40-60% (FCM), a frequency of 3-5 times per week (preferably on nonconsecutive days) with durations between 30 and 60 minutes per session, (ACSM, 2007).

2.1) Cholesterol and Triglycerides

According to the National Cholesterol Education Program, prevail in the elderly a lipid profile (PL) more unfavorable. Studies have shown that high levels of triglycerides (TGC), total cholesterol (CLT) or low density lipoprotein (LDL) represent a risk factor for cardiac events in elderly individuals of both sexes, and (Oliveira Sampaio, 2012). In the Framingham Heart Study, TGC and CLT were significantly related to CHD death.

Hypertriglyceridemia and hypercholesterolemia represent a risk factor for myocardial infarction and arterial disease in older individuals. An increase in LDL is also a high risk for atherosclerosis and dementia, in this segment of the population, and (Oliveira Sampaio, 2012). On the other hand, low plasma levels of high density lipoproteins (HDL) are also a risk factor for new cardiac events, among the elderly.

In addition to the HDL and LDL, Triglycerides values have to be considered. However, the effects of the latter have not been fully established (Twisk, 2000). The triglycerides form the majority of fats and are essential for a normal functioning of the body, but may be elevated in the blood due to excess weight by drinking alcohol, diabetes or hereditary disease (Mota et al., 2003). The endocrine Triglycerides "represent the most important source of energy in the body and is present not only in adipose tissue but also in skeletal muscle and plasma" (Moreira & Sardinha, 2003, p. 4).

However, these cannot be identified as an independent risk factor, because of the large number of variables associated with elevated triglycerides such as obesity, physical inactivity, smoking, excessive alcohol, excess carbohydrates, type 2 diabetes and genetic factors (Assmann et al., 1998).

Here in the following table of triglycerides and cholesterol (total and lipoprotein high and low density) recommended by the Third Joint Task Force of European and other Societies on Cardiovascular Disease Prevention in Clinical Practice (De Backer et al. 2003), see table 1.

According to (Kostka, 2009) and (Dantas, 2003) is defended great importance to establish the effects of physical activity in older populations, as well as the intensities and durations to obtain beneficial results in terms of prevention of cardiovascular diseases. Noteworthy is the aerobic workout that helps prevent or delay the development of hypertension, and increase the ability to perform ADLs (activities of daily living) improving cardiovascular capacity.

The sport for these populations also has a role that goes beyond the aspects related to health, in seeking to achieve this important goal sócio-cultural, (Kalapotharakos, 2007). Thus, the movement of the body through physical exercises targeting this population segment promotes an experience of well-being, self-esteem and longevity, prominently displayed in a cheerful countenance and body awake and responsive.

Aquatic exercises are intended to improve the overall functional capacity (reduce joint impact) should have an intensity 40-60% (FCM), a frequency of 3-5 times per week (preferably on nonconsecutive days) and can last between 30 to 60 minutes per session, (ACSM, 2007)

3. Material and Methods

3.1) In this chapter we define the variables selected, the sample characteristics and procedures for the administration of tests, including instruments and equipment used.

3.2) Sample Selection

The sample were 91 subjects (63 female and 28 male), aged between 65 and 78 years. All practicing swimming and gymnastics were analyzed in relation to BMI, Cholesterol, Triglycerides and practice time (seniors who were physically active less than three months, and the elderly who held habits of physical activity for more than 3 months, and still accumulating 30 minutes or more other types of activities).

3.3) Complementary evaluations

The elderly group was assessed on two occasions: at the beginning of the season (mid-September) and at the end of the season (end of July). Were questioned / assessed for:

a) Profile motivation;
b) Medical history in Physical sports;
c) Hemodynamic parameters (blood pressure and heart rate at rest);
d) Symptoms of Respiratory and Cardiovascular Disease;
e) Risk Factors for Coronary Artery Disease;
f) Risk Stratification, (ACSM, 2007).

3.4) Definition of variables

We defined as dependent variables: BMI, the values of cholesterol and triglycerides. These variables were assessed at baseline (start of the season in mid-September and the end of the season in late July. Were established and compared the differences between them, making sure that there would be significant changes.

To determine the latter aspect was defined as the independent variable physical activity performed regularly during the week and throughout this period.

3.5) Instruments and procedures

First we assessed the weight and height of each individual to implement them in the BMI formula. For weight will use a portable digital scale with appropriate adjustment where we observed the weight indicated on the display and we recorded it in a informatics file. Was then measured subjects height with a tape measure "standard" inextensible with an initial part not graduated thereby facilitating their handling.

After evaluation of these two parameters was used the Quetelet index (ratio of weight in kilograms and height squared in meters) that designates BMI = weight / height ² (m).

For the records of the amounts of cholesterol and triglycerides was used the Accutrend Plus device and test strips from Roche, following the instructions in the instruction manual of the same. The collection was performed at the end of each lesson that individuals performed.

3.6) Data Analysis

For the treatment and analysis of the data we used the program "Statistical Package for Social Sciences - SPSS", version 17.0 for Windows. Initially we used descriptive statistics in order to describe and characterize the sample. Subsequently defined contingency tables (evaluation by stratum BMI), and even non-parametric tests of comparison intergroup and intergroup. (Wilcoxon, Mann-Whitney, Kruskal-Wallis).

4. Results

4.1) In this chapter, it will be proceed to present the results obtained after a statistical analysis of the variables involved in the study, see table 2.

We checked, by the stratum BMI greater tendency to overweight and obese Type I and II in the group that does not record the last 3 months practice 3 times per week. It appears this same variance in the study of the (Cross, 2011) where individuals with less practice time had levels considered obese, see table 3.

If we focus on the group that accumulate 30 minutes of physical activity on 5 or more days of the week, there are, except for the level of "Normal Weight" values most favorable to the group that fulfills this requirement. According to this stratification of BMI observed advantages in the group that meets 30 minutes of exercise five or more days per week in the heights of "obesities I and II," (Sardinha, 1999), (Santos, 2002) and (Santiago, 2006).

We note from table 4 that within BMI stratum, the highest percentages indicate cholesterol values below 60, regarded as beneficial. (Cruz, 2011), (Moreira, 2005) and (Shepard, 2003) it was found the same trend of cholesterol values taken as favorable, see table 4.

We observed from table 5 that within the BMI stratum, higher values indicate percentages of triglycerides below 150, considered as satisfactory, defined in the same way by (Lakatta, 2003), see table 5.

5. Conclusions

Considering the results presented and discussed above could deduce that the initial goals were achieved.

It appears therefore that physical activity programs that contemplate 3 or more hours per week, duly systematized and organized are a positive factor in combating inactivity and turn in an elderly person more active and cheerful.

They also feature an important factor in the regulation and / or a decrease in levels of cholesterol and triglycerides, as well as their body types, or BMI.

These data show that a physical experience in everyday routine practice has a favorable influence on health in individuals of any age or sex. Despite reductions in functional capacity and exercise performance, even among active individuals, regular exercise can counterbalance the typical effects of aging, (Pollock, 2007).

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Tables

Table 1 - Classification of CVD risk in adults, based on the amounts of triglycerides and cholesterol, Backer et al., (2003).

LÍPID	CONCENTRATION (mg/dl)	CLASSIFICATION
Cholesterol Total (CT)	< 190	Desirable
	> 320	High risk
Cholesterol of LDL	< 115	Desirable
	> 24	High risk
Cholesterol of HDL	≥ 60	Desirable
	≥ 60	High risk
Triglycerídes (TG)	< 150	Desirable
	≥ 150	High risk

Table 2 - List of the last 3 months that records the physical activity 3 times a week.

			BMI Stratification				
			Normal weight 18,5 < 24,9	Overweight 25 < 29,9	Obesity I 30 < 34,9	Obesity II 35 < 39,9	Total
In the last three months to record physical activity 3 times per week	No	N	27	30	11	3	71
		% Total	29,7%	33,0%	12,1%	3,3%	78,0 %
	Yes	N	7	9	2	2	20
		% Total	7,7%	9,9%	2,2%	2,2%	22,0 %
Total		N	34	39	13	5	91
		% Total	37,4%	42,9%	14,3%	5,5%	100,0 %

Table 3 - accumulates 30 or more minutes of physical activity 5 or more days during the week

			BMI Stratification				Total
			Normal weight 18,5 < 24,9	Overweight 25 < 29,9	Obesity I 30 < 34,9	Obesity II 35 < 39,9	
Accumulates 30 or	No	N	18	19	8	2	47

more minutes of physical activity 5 or more days during the week	Yes	% Total	19,8%	20,9%	8,8%	2,2%	51,6 %
		N	16	20	5	3	44
		% Total	17,6%	22,0%	5,5%	3,3%	48,4 %
Total		N	34	39	13	5	91
		% Total	37,4%	42,9%	14,3%	5,5%	100 %

Table 4 – BMI stratification related to HDL Cholesterol

			Cholesterol HDL		Total
			No < 60	Yes > 60	
BMI stratification	Normal weight 18,5 < 24,9	N	19	15	34
		% Total	20,9%	16,5%	37,4%
	Overweight 25 < 29,9	N	20	19	39
		% Total	22,0%	20,9%	42,9%
	Obesity I 30 < 34,9	N	8	5	13
		% Total	8,8%	5,5%	14,3%
	Obesity II 35 < 39,9	N	2	3	5
		% Total	2,2%	3,3%	5,5%
Total		N	49	42	91
		% Total	53,8%	46,2%	100,0%

Table 5 – BMI stratification related Triglycerides

			Triglycerides		Total
			No < 150	Yes > 150	
BMI stratification	Normal weight 18,5 < 24,9	N	24	10	34
		% Total	26,4%	11,0%	37,4 %
	Overweight 25 < 29,9	N	22	17	39
		% Total	24,2%	18,7%	42,9%
	Obesity I 30 < 34,9	N	8	5	13
		% Total	8,8%	5,5%	14,3%
	Obesity II 35 < 39,9	N	1	4	5
		% Total	1,1%	4,4%	5,5%
Total		N	55	36	91
		% Total	60,4%	39,6%	100 %