34 - ANTHROPOMETRIC STUDY OF STUDENTS PRACTICING PHYSICAL ACTIVITIES IN A PRIVATE SCHOOL, RIO DE JANEIRO

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INTRODUCTION
The World Heath Organization (WHO) defines adolescence from a chronological criterion point of view, considering two distinct stages for that period of life: the first one is from 10 to 14 years, and the final stage is from 15 to 19 years old. (WHO, 1995). During those years the growth of body and mind can be observed and the physical progress of puberty is associated with quick emotional and intellectual development. (MAHAN & ESCOTT-STUMP, 2002). Anthropometry is a direct method of evaluation of body dimensions often used because it can easily and inexpensively measure people at all stages of their lives. Anthropometric measures mostly applied among teenagers are weight, height, skinfolds and perimetry (FERNANDES FILHO, 2003). Health indicators can be built from the anthropometric data, so as to evaluate and monitor the bodily composition in order to establish up to what extent the problems related to the nutritional state can affect physical performance rates.

The prevalence of obese children and adults is detected in the whole world, having made WHO consider obesity a public health problem of alarming proportion. It is estimated that 20% of the Brazilian children are overweight and about 32% of the Brazilian adult population may be overweight at some rate (BRASIL, 2004). Eating habits among adolescents are often worrisome, for they usually have irregular meals, snacks and fast food, following alternative dieting standards. They also skip meals at home, mainly breakfast, and this habit is more common among females than males. (MAHAN & ESCOTT-STUMP, 2002). Another worrisome factor is the decrease in the practice of physical activities along the last decades due to the technological advancements and comforts in current everyday life. That factor is reflected in the reduction of total teenagers’ daily energetic consumption rate. (GIUGLIANO & CARNEIRO, 2004).

From this viewpoint, this study aims at delineating the anthropometric profile of students who practice physical activities in a private school in the city of Rio de Janeiro.

MATERIAL AND METHODS
It is a cross-cut descriptive study of primary basis accomplished in August 2006 among adolescents in a private elementary school unit located in the neighborhood of Ramos, in the city of Rio de Janeiro, RJ.

Every student enrolled in the 5th and 6th grade in elementary school, between the ages of 10 and 14 were requested to participate in the research. At the occasion they were invited, they were instructed on how to proceed to collect data. The free consent term was sent to the responsible for each child, and all the questions were clarified. A further meeting was appointed.

The applied variables were: gender, bodily mass (kg), height (m), age (years), date of birth, schooling, Bodily Mass Index (BMS - kg/m²). The anthropometric measures were made in the physical education scheduled class, in a room reserved for this kind of survey. The measuring techniques applied were the ones preconized by Lohman (SISVAN, 2004). The trademark of the scale used was Filizola, with maximum capacity for the weight of 150Kg, graduations of 100g, provided with a stadiometer. The equipment unit had been previously tested and calibrated for the research in order to measure bodily mass and height.

The following procedures were carried out for the collection of anthropometric measures: a) Bodily Mass (kg) - the teenager stood up in an upright position at the center of the scale, barefooted, wearing as few pieces of clothes as possible, feet together and arms stretched along the body, looking at a fixed point at the eye’s height; b) Height (m) - the teenager stood up in an upright position, barefooted, without any piece in the hair, feet together and arms stretched along the body, looking at a fixed point at the eye’s height. The internal bones of the heels should be in contact, as well as the internal part of both knees. The feet should be together so as to make a right angles with the legs.

The percentile classification criterion of Bodily Mass Index (BMI) was used for the assessment of teenagers’ nutritional status according to age and gender of the reference standards National Health and Nutrition Examination Survey - NHANES II. The BMI is the indicator recommended both for individual and collective diagnosis for the nutritional disorders in teenage. The calculation is made by dividing the weight expressed in kilograms by the square value of the figure corresponding to the height measured in meters (SISVAN, 2004).

The cut-off points established by WHO (1995) for the assessment of teenagers’ nutritional status are analysed by the percentile BMI. According to this method, teenagers below percentile 5 are diagnosed as thin or underweight; between percentile 5 and 85, as adequate or eutrophic; those who feature BMI percentile above 85 are diagnosed as overweight (SISVAN, 2004).

The data were printed and consolidated in Excel for Windows 2007 program, and statistical package SPPS version 10.0 was applied for the analysis. The exploration of the analysis was made through the absolute and relative frequencies and the measurements of the central trend (average and standard deviation) of the selected variables. The chi-squared test (°) was used to check the differences in proportions between variables: gender and age, weight, and BMI, at a significance level p<0.05. This study complied with the 196/96 resolution norms issued by the Conselho Nacional de Saúde (Health Nationa Council), which describes the “Diretrizes e normas regulamentadoras da pesquisa envolvendo seres humanos” (“Guidelines and regulating procedures for research involving human beings”, document issued by the Health Ministry - MS, FIOCRUZ, 1998). It was also approved by the research ethics committee at Centro Universitário Augusto Motta.

RESULTS AND DISCUSSION
From the total number of selected teenagers 50 (76.92%) participated in the study and 15 were left out from the survey because they were late to hand in their consent term signed by their parents. Sixty two percent of the participants were female, most of whom concentrated in the age range from 10 to 12 years old.

Table 1 presents absolute, average (±SD) values and value p for the age (years), weight (Kg), height (m) and percentile BMI of teenagers. Boys’ average age was 11.60.8 years, and girls, 11.50.8 years. Statistically meaningful differences were not observed in both genders in the average and standard deviations of age, weight, height and percentile BMI.

Table 1. Absolute, average values, standard deviation and p value for age, weight, height and BMI, according to gender among teenagers enrolled at a private school in Rio de Janeiro, RJ. August, 2006.
Eutrophy

Overweight and to the lack of physical activity among other issues in order to minimize the harmful effects that these factors may cause to the body composition. The comparison of the groups indicates that the girls acquire more adipose mass, while the boys acquire more thin mass and height (VITOLO, 2003; MAHAN & ESCOTT-STUMP, 2002).

Among girls, greater prevalence of overweight (46.4%) and low weight (10.7%) can be observed from the age of 10 to 12. This stage is not only different for boys and girts, it also brings about changes in the nutritional status according to gender, a greater prevalence of overweight was detected for boys (47.4%). For girls, high prevalence was observed for overweight (41.9%) and low weight (12.9%) (Table 2), with no records of statistically meaningful difference (p value = 0.923).

Table 2. Distribution of teenagers - according to gender and classification of nutritional status, - enrolled in a private school in Rio de Janeiro, RJ, August, 2006.

In chart 2 greater prevalence of overweight (47.1%) and low weight (11.8%) can be observed among male adolescents of the age of 10 to 12, with no records of statistically meaningful differences between genders (GARCIA et al. 2003).

In a survey carried out at the Centro de Juventude (Youth Center) in the city of São Paulo, involving 153 teenagers, the average age was 11.9 ± 1.3 years. The percentile BMI was registered for boys was 19.2 ± 3.6Kg/m² and for girls, 19.2 ± 3.2Kg/m², respectively, without statistically meaningful differences between genders (GARCIA et al. 2003).

According to data from National Health and Nutrition Examination Survey III (NHANES III), accomplished from 1988 to 1994 by the National Center for Health Statistcs (NCHS) at the Centers for Disease Control and Prevention (CDC), the prevalence of overweight among teenagers between the ages of 12 and 17 years was 10.6%. For the male group at ages from 12 to 14 years the prevalence of overweight (47.4%) was 45.5% and for the girls, 19.2Kg/m², respectively, without statistically meaningful differences between genders (GARCIA et al. 2003).

In the survey related to nutritional status carried out by Garcia et al. (2003), it was detected that 2.2% of the boys and 1.6% of the girls had their weight below the ideal weight for their ages, 77.2% and 80.3% were within the normal range, 10.8% and 13.1% feature overweight risk and 9.8% and 5% feature overweight, respectively, without statistically meaningful differences between the nutritional status and gender.

In the survey accomplished by Albano e Souza (2001), a higher prevalence of eutrophy was observed in the studied sample, both in males 58.1 % and females 71.5%. The authors found 4.7% for the prevalence of overweight in the male groups, and 16.6% in the female group. For low weight the male groups featured 9.3% and the female group, 2.0%.

According to data from National Health and Nutrition Examination Survey III (NHANES III), accomplished from 1988 to 1994 by the National Center for Health Statistics (NCHS) at the Centers for Disease Control and Prevention (CDC), the prevalence of overweight among teenagers between the ages of 12 and 17 years was 10.6%. For the male group at ages from 12 to 14 years the prevalence of overweight was 10.7%. For the female group, the prevalence was 11.5% for the ages of 12 and 14 years (TROIANO et al., 1998). Those data diverge from the data found in this study about overweight.

Chart 1. Distribution of male teenagers - according to age range and classification of nutritional status - enrolled in a private school in Rio de Janeiro, RJ, August, 2006.

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Puberty is the stage of adolescence transformations between the ages of 13 and 15 and a half years for boys, and between the ages of 11 and 13 years and a half for girls. This stage is not only different for boys and girls, it also brings about changes in the body composition. The comparison of the groups indicates that the girls acquire more adipose mass, while the boys acquire more thin mass and height (VITOLO, 2003; MAHAN & ESCOTT-STUMP, 2002).

So, one of the probable factors related to the high proportion of overweight among the adolescents analysed in this survey - from 10 to 12 years, at the puberty - is due to the fact that they had not reached the growth spurt; consequently they would still have an accumulation of adipose tissues necessary for this stage.

CONCLUSION

According to the anthropometric profile, both male and female teenagers feature high prevalence of overweight, mainly between the ages of 10 and 12 years. The professionals in the field of health, such as doctors, nutritionists, physical education teachers, among others, must be ready and prepared to act in the prevention and control of diseases related to incorrect eating habits, and to the lack of physical activity among other issues in order to minimize the harmful effects that these factors may cause to the individuals’ quality of life during adolescence and at later life stages.

BIBLIOGRAPHY

A adolescência é uma fase caracterizada por profundas transformações no organismo. O método amplamente utilizado para avaliar as transformações corporais é a antropometria, contextualizada na cineantropometria. O estudo objetivou traçar o perfil antropométrico dos adolescentes, baseado em dados de escola privada, no município do Rio de Janeiro, RJ. Foram avaliados 50 adolescentes, sendo 62% do sexo feminino e 38% masculino. O estudo foi realizado entre os anos de 2006 e 2007. A análise foi feita utilizando-se o pacote estatístico SPSS, versão 10.0. As medições foram realizadas em condições normais de peso e altura, de acordo com a idade e sexo. Os resultados indicam que a prevalência de sobrepeso e obesidade foi maior entre os adolescentes do sexo masculino, principalmente na faixa etária de 10 a 14 anos. As meninas também apresentaram prevalência aumentada, principalmente na faixa etária de 10 a 14 anos. A prevalência de baixo peso foi mais frequentemente encontrada entre as meninas, em todas as faixas etárias. 

MÉTODOS: O estudo foi realizado com adolescentes de um estabelecimento privado, no município do Rio de Janeiro, RJ. O estudo foi de caráter censitário, descritivo, de corte transversal, com população primária. O intervalo de idade variou de 10 a 14 anos. As medições antropométricas foram realizadas em condições normais de peso e altura, de acordo com a idade e sexo. O pacote estatístico SPSS, versão 10.0, foi utilizado para análises estatísticas. 

RESULTADOS: A prevalência de sobrepeso foi maior entre os adolescentes do sexo masculino, principalmente na faixa etária de 10 a 14 anos, em agosto de 2006. A análise foi feita utilizando-se o pacote estatístico SPSS versão 10.0. Dos 50 adolescentes, 62% eram meninas, com idade média de 11,50,8 anos e os meninos com média de idade de 11,60,8 anos. Quant à prevalência de sobrepeso, o IMC foi maior entre os adolescentes do sexo masculino, principalmente na faixa etária de 10 a 14 anos. As meninas também apresentaram prevalência aumentada, principalmente na faixa etária de 10 a 14 anos. A prevalência de baixo peso foi mais frequentemente encontrada entre as meninas, em todas as faixas etárias. 

CONCLUSÕES: A prevalência de sobrepeso e obesidade foi maior entre os adolescentes do sexo masculino, principalmente na faixa etária de 10 a 14 anos. As meninas também apresentaram prevalência aumentada, principalmente na faixa etária de 10 a 14 anos. A prevalência de baixo peso foi mais frequentemente encontrada entre as meninas, em todas as faixas etárias. 

PALAVRAS-CHAVE: Adolescente, Antropometria, Atividade Física.