110 - BODY FAT DISTRIBUTION IN CHILDREN AND ADOLESCENTS

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INTRODUCTION

The motivate for study body composition in children an teenagers is the special interest in the information about body weight and your components, in view of the narrow relation among quantity and fatness distribution and some points of health.

The distribution of fatness, according to Gale *et al* (2007), can be classified by peripheral or central.

The adipose tissue is one of the most instable components, responsible for the principal changes in human beans (LOHMAN, 1986). Second Guedes and Guedes (2002) body fatness has some fundamental functions for the body, being energy reserve source and fat-soluble vitamins and beside that, protect the body from external factors. This fat mass can be influenced by genetics, environment, behavior and socioeconomic factors.

When this adipose tissue seems to be excess may characterize obesity and your preventive control is very important. (GUEDES E GUEDES, 1998). Therefore, for Costa (2001), the evaluation of body composition is very important since total body mass, separately, is not considered a good parameter for identify the excess or lack from different body components. There are a lot of methods for verify skinfolds thickness but the most useful and trustworthy is the anthropometric method (COSTA, 2001; NORTON & OLDS, 2005). The evaluation of body fatness e body composition is very important to follow the physical development in the different parts of life supplying information for preventives interventions in the obesity.

The skinfolds thickness can be used for estimates the regional distribution of subcutaneous fatness in trunk and extremities e to establish anthropometric profiles in (before) pubescent (after) pubescent (HEYWARD & STOLARCZYK, 2000).

The accumulation of central fatness in children, adolescents or adults became an important risk factor in public health, as associated with de development of arterial and heart disease, type 2 diabetes, among others. (MORENO *et al,* 1998).

Studies in schools from Rio de Janeiro (FONTANIVE et al., 2000) and Recife city (SILVA & BALABAN, 2000), about overweight and obesity, showed an increase in obesity in children, being overweight (26.2%) and obesity (8.5%) in Recife. The author verified higher prevalence of obesity in children (34.3% overweight and 14.2% obesity) than in teenagers (20.0% overweight and 4.2% obesity).

It's observed in literature, that about 15% to 20% of Brazilian children and adolescents are obese (CHAGAS & CUNHA, 1999), and in developed countries, this numbers seems to be highest, 22% to 30% expressing the necessity of preventive interventions to avoid increases (NIH, 1992).

From this, the aim of the study is to realize a descriptive analysis from body fatness distributions in children and adolescents from Rio de Janeiro.

MATERIALS AND METHODS

This is a transversal study, observational and descriptive, with election no probabilistic from the participants. The sample was constituted of 213 children and adolescents, being 122 of masculine sort (12.26 1.48 years) e 91 of feminine sort (12.57 1.29 years), with ages between 10 and 15 years. The authorization for participation in the tests was by the signature term of free consent and clarified.

The collects of data was realized in states and particulars schools in the city of Rio de Janeiro, during Physical Education classes. The study was approved by Ethic Committee of Clementino Fraga Filho Hospital, from the Federal University of Rio de Janeiro fulfilling determinations of the National Council of Health nº 196/96.

The body composition was estimated by anthropometric method proposed for *International Society for Advancement in Kinanthropometry (*ISAK), and all the measures realized bay the same avaliator. Were realized measures of skinfolds thickness (triceps, biceps, subscapular, chest, mid axillary, supraspinale, abdominal, front tight and medial calf (skinfolds thickness caliper CESCORF, 0.01 mm), height (stadiometer FILIZOLA, 0.1 cm) total body mass (digital scale SOEHNLE, 100g).

The data were organized in tables and present in graphics. The descriptive analysis contemplated measures of central trend and dispersions. The statistical analysis was performed using the computer software SPSS 13.0 for Windows.

RESULTS AND DISCUSSION

From the gotten results in the study, it's observed that as the age increases, the measures of total body mass and height suffer a progressive rise (Table 1). This an expected result and specific for this group and represent the antrhopometric changes decurrently of the intense physical development characteristic of that group. (Table 1)

Table 1: SAMPLE CHARACTERIZATION

Boys						
Age (years)	10 n=8	11 n=19	12 n=29	13 n=32	14 n=29	15 n=5
TBM (Kg)	33.67 (ÿ 3.48)	43.30 (ÿ 9.92)	48.36 (ÿ 9.50)	52.93 (ÿ 10.37)	58.32 (ÿ 13.67)	67.82 (ÿ 3.79)
Height (m)	1.42 (ÿ 0.04)	1,48 (ÿ 0.07)	1.55 (ÿ 0.06)	1.62 (ÿ 0.09)	1.67 (ÿ 0.07)	1.69 (ÿ 0.09)
Girls						
Age (years)	10 n=8	11 n=26	12 n=21	13 n=16	14 n=10	15 n=10
TBM (Kg)	41.22 (ÿ10,08)	44.48 (ÿ 13.36)	46.82 (ÿ 10.21)	50.25 (ÿ 7.99)	52.42 (ÿ 6.72)	50.02 (ÿ 10.52)
Height (m)	1.45 (ÿ 0.07)	1.51 (ÿ 0.11)	1.54 (ÿ 0.07)	1.57 (ÿ 0.05)	1.58 (ÿ 0.04)	1.59 (ÿ 0.05)

Data presented by medium and ±standard deviation; n=total.

According Guyton e Hall (1997) for this group, the quantity of relative fatness is highest in girls than in boys, and can be explained for the influence of the sexual hormone, the estrogen.

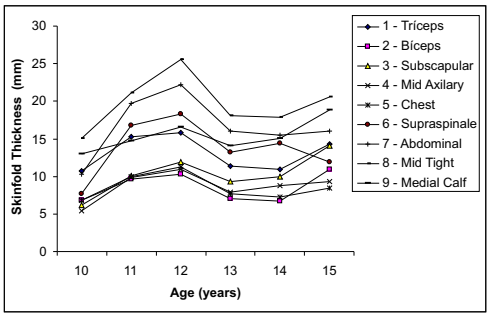
In childhood, the secretion tax of estrogens is low, but in puberty, under the influence of the gonadotrofic hormones from hypophisys, increases in twenty times.

The estrogens tend to increase discreetly metabolic rent, this increase correspond, in average, only to part of the increase produced by the masculine sexual hormone, the testosterone. Thus, the deposits of fatness in subcutaneous tissue, mainly, buttock and tights, characteristic of feminine sort provides by the increase of estrogen tax in circulation. In masculine tax, the grow of testosterone in circulation leads to a reduction in subcutaneous body fatness and an increase in lean mass.

The variation in the values of subcutaneous fatness thickness relative to age, in the different measurements can be observed in Graphics 1 and 2

According with Graphic 1, the distribution of body fatness in the masculine gender shows trend to the rise, in all body parts measeaured, reaching the peak around 12 years, having a decrease in the values beginning in 13 years. This decrease, seems to be because of the sexual maturation when occur the liberation of testosterone.

Graphic 2, shows that body fatness distribution in female group had different results than in males group, as expected in this study and seen in the literature. It's observed, from 12 to 13 years, all the skinfolds thickness increased, being higher in tight, subescapular and abdominal. From 13 years, the sample tends to decrease and, from now on this skinfolds thickness tends to stabilization until 15 years.



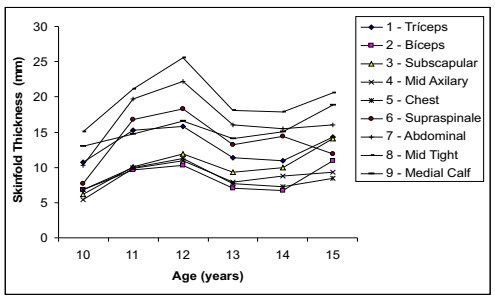
Graphic 1: Body fatness distribution in different body parts males.

This variation in body fatness could be related to the appearance of the sexual maturation (13 years) busted for the hormonal alterations who are responsible for the physical, physiological and emotional changes. (GUEDES E GUEDES, 2002)

According to Parísková, that has published a lot of works about the distribution of body fatness in children and teenagers, the higher quantity of subcutaneous fatness is deposited in extremities, but In some people, the quantity of subcutaneous fatness in trunk increases while decrease in extremities.

The results of present study, for both genders, for tight, abdominal and subscapular showed, for all ages, higher values than the other body parts, being more expressive for females.

The highest concentrations of fatness in abdominal part, as showed in this study is preoccupying e must be must be combated, Teixeira *et al* (2001) demonstrate that accumulation of fatness in body parts, specially in abdominal parts, elevate the chances of teenagers to have higher risks for metabolic disorders including cardiac diseases.



Graphic 2: Body fatness distribution in different body parts females.

In the same thoughts of the last citied author, Daniels et al (1999), studied the association between cardiovascular risk factors and the body fatness distribution in children and teenagers, they had evidenced that the analysis of the regional fatness distribution is more important to correlate cardiovascular risk factors than the percentage of total body fat. The authors fore mentioned related that relative preponderance of the central fat, deposition (android obesity), is associated with an adverse profile of lipids and lipoproteins plasmatic concentrations, arterial pressure, left ventricular mass, increasing the chances of the occurrence of cardiovascular disease in teenagers.

CONCLUSIONS

The analyzed sample has a physical development as expected for this group. It's observed that in both genders, tight, abdominal and subescapular showed, for all ages, higher values than expected for those skinfolds thickness, being bigger in females.

This profile of fatness distribution is bad for health and must have preventive interventions for awareness.

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BODY FAT DISTRIBUTION IN CHILDREN AND ADOLESCENTS

The present study had the objective a descriptive analysis of body fatness distribution in students of Rio de Janeiro. The sample studied was constituted of 213 students, being 122 of masculine gender (12.26 ± 1.48 years) an 91 of feminine gender (12.57 ± 1.29 years). The collects of data was made in state and private schools during Physical Education classes after parents authorization. The study was approved by Ethic Committee of Clementino Fraga Filho Hospital from the Federal University of Rio de Janeiro. The body composition was estimated by anthropometric method proposed by ISAK, measuring the skinfolds thickness, height ad total body mass. The statistic analysis was made in SPSS 13.0 for Windows. It was observed that for both genders, the regions of tight, abdominal and subsscapular, showed for all ages, higher values for skinfolds thickness than others body parts, being more expressive for females.

Key words: body fatness, children, adolescents

DISTRIBUTION DE LA GRASSE CORPORELLE CHEZ LES ENFANTS ET LES ADOLESCENTS

Cette étude a fait un descriptif analyze de la distribution de la grasse corporelle des enfants e des adolescents étudiants dans la municipalité de Rio de Janeiro. L'échantillon était constitué de 213 étudiants, partagé em 122 hommes (12,26 ± 48 ans) et 91 femmes (12,57 ± 1,29 ans). Ils ont été mensuré dans les écoles des réseaux publics et privés. On a demandé aux responsables la permission pur les enfants participé de à l'étude. Cette étude a été approuvé par le comité d'éthique de l'Hôpital Clementino Fraga Filho, UFRJ. La composition corporelle a été estimé par la méthode anthropométriques proposée par ISAK, avec le mesure de l'épaisseur des grasse corporelle, la stature e la masse corporelle totale. Statistical analysis a été réalisée dans SPSS 13.0 pour Windows. Il a été observé que, dans les deux sexes, les régions de la cuisse, l'abdomen et subscapular présenté pour tous les âges, une plus grande valeur pour l'épaisseur des grasse que les autres régions du corps, être plus expressif pour les femelles.

Mots clés: graisse corporelle, enfants, adolescents.

DISTRIBUCION DE LA GRASA CORPORAL EN NIÑOS Y ADOLESCENTES

El objetivo del estudio fue lograr un análisis descriptivo de la distribución de la grasa corporal de los estudiantes en el municipio de Río de Janeiro. La muestra consistió de 213 estudiantes, con 122 hombres (12,26 ± 1,48 años) y 91 mujeres (12,57 ± 1,29 años). La recopilación de datos se realizó en las escuelas de redes públicas y privadas de Rio de Janeiro, con el permiso de los responsables. El estudio fue aprobado por el Comité de Ética del Hospital Clementino Fraga Filho, UFRJ. La composición corporal se calcula por el método propuesto por la ISAK antropométrico, la medición del espesor de pliegues de piel cutáneas, talla y masa corporal total. El análisis estadístico se realizó en SPSS 13.0 - Windows. Se observó que en ambos sexos, las regiones del muslo, abdominal y subescapular presentado para todas las edades, un mayor valor para grasa corporal que las otras regiones del cuerpo, siendo más expresivo para las mujeres.

Palabras clave: grasa corporal, niños, adolescentes.

DISTRIBUIÇÃO DA GORDURA CORPORAL EM CRIANÇAS E ADOLESCENTES

O presente estudo teve como objetivo realizar uma análise descritiva da distribuição da gordura corporal de estudantes do município do Rio de Janeiro. A amostra deste estudo foi constituída de 213 escolares, sendo 122 do gênero masculino (12,26 ± 1,48 anos) e 91 do gênero feminino (12,57 ± 1,29 anos). A coleta dos dados foi realizada em escolas das redes pública e privada de ensino, durante as aulas curriculares de Educação Física mediante a autorização dos responsáveis. O estudo foi aprovado pelo Comitê de Ética do Hospital Clementino Fraga Filho da UFRJ. A composição corporal foi estimada através do método antropométrico proposto pela ISAK, mensurando a espessura de dobras cutâneas, estatura e massa corporal total. A análise estatística foi realizada no programa SPSS 13.0 para Windows. Observou-se que em ambos os gêneros, a regiões da coxa, abdominal e subescapular apresentaram, para todas as idades, um valor mais elevado para espessura de dobras cutâneas do que as demais regiões corporais, sendo mais expressivos para o gênero feminino.

Palavras-chaves: Gordura corporal, crianças, adolescentes.