

The sample was composed of 1843 children (976 girls and 867 boys) aged between 6 and 11 years. The anthropometric measures were obtained according to Fragoso and Vieira (2000), the maturation was estimated in accordance with Khamis-Roche (1994). The sample was divided into six groups according to BMI cut-off points proposed by Cole et al. (2000, 2007) and the physical activity was evaluated through a questionnaire. The physical activity variables were time spent on regular and non regular activities, sedentary activities (PC and TV) and domestic tasks, done in all week. The descriptive statistics and the multivariate ANOVA were generated by SPSS 15 for Windows. Gender, age and relative height were used as covariant variables. The level of significance was set at  $p \leq 0.05$ .

#### RESULTS

The prevalence of overweight, between 6 to 11 years, was 13.7% for boys and 20.3% for girls. The correspondent obese prevalence was 8.4% and 6.9%. The studied groups showed some differences on time spent on total physical activity being the three thinness grades the more active ones. Additionally the most sedentary children are the thinnest and obese ones. When using relative height as covariant the time spent on sedentary and non sedentary activities decrease slightly on the obese group. The only variable influenced by relative height was watching TV during the weekend.

#### CONCLUSION

Apparently, as it is shown in this study, relative height (maturation) doesn't seem to interfere in time spent in physical activity. However, early mature development can have different origins and different morphological consequences meaning that some of the children who are early mature spent more time in activity but some others who are also early mature are fat and sedentary. This confound factor will be considered in a future study.

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### IS THE BMI DURING THE FIRST TWO YEARS OF LIFE ASSOCIATED WITH THE BMI BETWEEN 6 AND 12 YEARS OLD?

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#### Introduction

In the last decades, many investigators have concluded that childhood overweight is associated to adult obesity. The association between a precocious metabolic program induced by nutritional stimulus or adaptations experienced in uterus that influences birth-weight (BW), physiological and morphologic characteristics in adult life and obesity is not consensual. Some studies point to a direct association between BW and fat-free mass (Singhal et al., 2003), others recognize a direct association between BW and adult obesity (Labayen et al., 2005), and even others document an association between growth velocity in the first weeks of life and obesity in adolescence (Deckelbaum & Williams, 2001). The aim of our study is to identify the association between BMI measured in different moments in infancy in a sample of Portuguese children.

#### Methods

Our sample was composed by 612 Portuguese school children (323 boys and 289 girls) aged 6 to 12 years, who were divided into 6 groups, according to BMI cut off points proposed by Cole et al. (2000, 2007). Weight and stature during the first two years of life were obtained by questionnaire. Each child's most recent measure was collected according to ISAK (2006) procedures. The BMI was calculated in five moments (birth, 1 and 6 months, 1 and 2 years and present age) and were transformed in Z scores. The descriptive analysis and the tests of Spearman and Friedman were calculated using SPSS 16.0 for Windows. The significance level was set at  $p < 0.05$ .

#### Results

We have not found differences in Z scores between the five moments in both sexes ( $p=0,506$  for girls and  $p=0,432$  for boys). However, we found a significant correlation between Cole's classification at two years and at present age in both sexes ( $p=0,001$  in girls and  $p=0,009$  in boys).

#### Conclusions

Our results reveal a tendency for the maintenance along the life time, at least until 12 years old, of the relationship between weight and stature (BMI). We concluded that there is an association between BMI in the first two years of life and BMI in later infancy.

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### THE IMPORTANCE OF THE WAIST CIRCUMFERENCE IN THE METABOLIC SYNDROME AND PHYSICAL FITNESS IN 6 TO 15 YEAR-OLDS

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Research evidence has showed a connection between central adiposity and an increased risk of metabolic disorders, morbidity, and mortality. Waist circumference (WC) has been identified as the best predictor of Metabolic Syndrome (MetS) in children and adolescents. The purposes of this study were: 1) to determine if there were significant differences between the subjects who presented the WC risk factor (WCrf) and those without that risk factor (non-WCrf) for all the other MetS components and physical fitness parameters, in boys and

girls across 3 agegroups (6-9, 10-11, and 12-14 year-olds) ; 2) to estimate the risk in WCrf subjects of having MetS and being considered unfit.

Methods:

Participants in this study were 1128 children and adolescents ranging from 6 to 15 years of age attending the public school system in the island of Madeira. Subjects were measured for anthropometric indicators (weight, height and waist circumference), metabolic parameters (blood pressure, triglycerides, glucose and C-HDL), and fitnessgram tests (curl-ups, push-ups and pacer-20m). WCrf was defined according to the classifications by Katzmarzick et al. (2004) and Maffei et al. (2001). MetS diagnosis was done according to the criteria established by Cook et al. (2003).

Results:

Multivariate ANOVA showed significant effects for factors agegroup and WCrf in all the metabolic parameters ( $p < .05$ ) but not sex. Significant effects for found for all 3 factors in the fitness tests ( $p < .05$ ). Significant 2-way interactions were found for blood pressure and triglycerides, and no 3-way interaction was found.

Risk estimate of being unfit in the pacer test when presented the WCrf was 3.453 (ICC 95% 2.559-4.661), comparing with the non-WCrf.

Conclusions:

For all agegroups and sex, subjects with the WCrf had significantly higher scores in the other MetS components (lower for C-HDL) and lower scores in the fitness tests.

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### ANALYSIS OF THE INFLUENCE OF SEVERAL FACTORS RELATED TO THE BIO-PSYCHO-SOCIAL HEALTH ON THE PHYSICAL ACTIVITY OF ADOLESCENTS IN MADRID

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An epidemiological study [1] for adolescent scholars between 13 and 17 years old from Madrid was made in order to know which variables are the most important determinants of the physical activity [PA]. After obtaining written consent of the parents, anonymous forms were completed by a random sample of 266 boys and 288 girls. This sample was selected from 35 educative centres from 16 of the 21 districts on which the city of Madrid is divided.

A first exploratory analysis showed that several variables turned out to be associated with PA, namely: gender, age, socioeconomic status [SES], PA of parents and friends, scholastic performance [SPI], money availability [MA], tobacco [TC] and alcohol [AC] consumption and being overweight [OW].

After a logistic regression, it was found that the variables that had the greatest influence on the [PA] were as follows, in order of importance: gender, PA of the father, PA friends and OW. With these four variables, a model was developed to predict the PA of the adolescents of Madrid.

As a result of our observations the following series of proposals for the future were made. Girls and adolescents with lower SES should receive high-priority attention concerning their health-related habits. Parents should be encouraged to practise PA, since the latter proves to have a positive influence on their children. Nutritional education for children, adolescents and parents is necessary to avoid being OW and to change sedentary habits. Although we did not observe any relationship between the screen time [ST] and PA, ST seems to be a relevant variable due to the current proliferation of multimedia entertainment and the average ST for our sample (225 min/day  $\pm$ 135 for boys and 174 min/day  $\pm$ 109 for girls).

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### DETERMINANT FACTORS OF CARDIORESPIRATORY FITNESS IN CAUCASIAN AND AFRICAN PORTUGUESE ADOLESCENTS

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Cardiorespiratory fitness is an important health indicator in aged-school children. The aim of the current study was to understand the effects of some variables, such as body composition, age, race and gender in maximal oxygen consumption (VO<sub>2</sub>max) in a racially diverse sample of Portuguese adolescents [Caucasians (C) and African Portuguese (AP)]. The sample consisted of 266 adolescents, 12-18 years of age [112 boys (80 C and 32 AP) and 154 girls (109 C and 45 AP)]. Percent body fat (%BF) was estimated by a hand-to-hand bio-electrical impedance device (BF 300, OMRON). Cardiorespiratory fitness was assessed by the shuttle test from the fitnessgram battery. Multiple regression modelling methods were used. The prevalence of normal weight and overweight/obesity in this sample was 80.8% and 19.2% respectively. The mean values of VO<sub>2</sub>max were 45.0 $\pm$ 6.2 ml/kg/min, 45.6 $\pm$ 6.3 ml/kg/min, 36.2 $\pm$ 4.9 ml/kg/min, and 38.8 $\pm$ 4.9 ml/kg/min, respectively for C boys, AP boys, C girls, and AP girls. Girls showed a lower VO<sub>2</sub>max and higher %BF compared with boys ( $p < 0.05$ ). Overall, there were no significant differences between C and AP, though AP girls showed higher values in cardiorespiratory fitness compared to their counterparts. The model developed to explain VO<sub>2</sub>max showed that %BF ( $\beta = -0.003$ ,  $p < 0.001$ ), age ( $\beta = -0.011$ ,  $p < 0.001$ ), and the interactions of age x Caucasian ( $\beta = -0.001$ ,  $p < 0.01$ ) and age x female ( $\beta = -0.004$ ,  $p < 0.001$ ) were significant