46 - OBESITY AND HEALTH RELATED PHYSICAL FITNESS: A STUDY OF SCHOOLCHILDREN IN SANTA CRUZ DO SUL – RS

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INTRODUCTION

According to Leite (2000), modern society has greatly changed children's behavior, such as decreased physical activity for excessive hours spent in front of the television and / or computer mainly. Environmental factors are of great importance in the prevalence of obesity in children, as it is believed that the food preferences of children as well as the interest in physical activity are acquired in childhood, which are closely related to the habits of parents and are likely to be maintained in adulthood (OLIVEIRA et al. 2003; HALLAL et al., 2010).

Obesity is a clinical condition in which the total amount of fat, the excess of fat on the trunk or abdominal region and the excess of visceral fat are three aspects that may be associated with the occurrence of chronic degenerative diseases in children and also prevalent among adults. Obesity is a risk factor for dyslipidemia, since it promotes increased cholesterol, triglycerides and reduced HDL cholesterol. The weight loss combined with physical exercise improves the lipid profile and decreases the risk of cardiovascular diseases, therefore, their practice is of utmost importance (MELLO, LUFT, Meyer, 2004).

Thus, regular physical exercise has been proven a protective factor against degenerative processes and metabolic disorders in the body, such as obesity, hypertension, and emotional stress (LEITE, 2000). For Nahas (2003), all body parts, if used in moderation and exercised in tasks to which they are accustomed, become healthy and age more slowly; and if underused, they become more susceptible to diseases and age rapidly.

With respect to physical activity, quality of life and health, Mello, Luft and Meyer (2004) report a significant decrease in rates of metabolism of an obese child compared to the others, when he / she is at rest, for example, when watching television, using the computer and the video game. So we can say that besides the metabolic expenditure of daily activities, the resting metabolism can also influence the occurrence of obesity. The time young people spend watching TV and / or in front of computers can lead to increased obesity, while the appropriate time for such activities is two hours daily. With regard to physical activity, recommendations indicate that children and young people of school age, should engage in activities of moderate intensity for at least 1 hour per day (TAMMELIN, 2009).

According to Böhme (1993) cited by Costa (2001), physical activity is considered the process that results in the state of physical fitness of the individual; with the latter being considered as a product. The health benefits are associated with both: physical activity (as process) and physical fitness (as product). Consequently, the more physical activity is practiced, the better fitness will be developed and an improved health condition will result in the individual. According to Costa (2001), a good level of fitness can provide a condition of well-being for individuals, in addition to enabling the prevention of diseases denominated hypokinetic, which are related to sedentary lifestyle.

Several authors (GUEDES, 2003; COSTA, 2001; NAHAS, 2003) conceptualize physical fitness, like Weineck (2003), who claims that physical fitness is, in general, the capacity and performance condition of human beings, as well as the current disposition for a particular area.

As a general objective we intend to verify the existence of a connection between obesity and indicators of physical fitness related to the health of schoolchildren in the town of Santa Cruz do Sul - RS.

METHOD

The individuals of this cross-sectional study are 98 students, 51 male and 47 female, 7 to 17 years of age, belonging to four different school settings (municipal, state and private) of Santa Cruz do Sul - RS.

To evaluate the body composition, we used the Body Mass Index (BMI). For the flexibility test, we used the Wells Bench. In the evaluation of strength / endurance, we used the abdominal strength and endurance test. All tests followed the protocol and the classifications proposed by PROESP-BR (2009).

The cardio respiratory evaluation, between the ages of 7 to 12 years, was performed with the 1000 meters test, established by Klissouras (1973), cited by Matsudo (2003). The Cooper test (COOPER, 1968) was used for those aged 13 to 17 years.

The study was previously submitted and approved by the Ethics Committee on Human Research at the University of Santa Cruz do Sul (UNISC)under protocol number 2525/10, craft 111/10. Parents or guardians signed a consent form authorizing the participation of their children in the testing of health-related fitness.

Using SPSS 18.0 for Windows for data analysis, we used the Student t test for comparison of means and Pearson correlation, assessing possible links between the variables. The association of significance was assessed using the confidence interval of 95% ($p < 0.05$).

RESULTS AND DISCUSSION

Table 1 shows the average values found in the tests of flexibility, abdominal and VO2max in males, females and in total, divided into students who are overweight / obese and those who are not.

The abdominal test in both sexes, had a higher average in the nonobese group. Comparing the results between the sexes, the average values of the abdominal test is higher for males in the group without overweight / obesity. The same occurs in the study conducted by Fonseca et al. (2010), with children from a full time public school in the city of Ponta Grossa-PR, and the study conducted by Dumith et al. (2008), with students of Rio Grande-RS, in which differences were observed in the number of sit-ups performed in relation to gender, with advantage for males.

For the test of VO2max in males and females, the group that was not overweight / obese had a higher average in relation to the obese group. Like the present study, Leite et al. (2009), in a study performed with adolescents, and Milano et al. (2009), in a study performed with public school students in Curitiba-PR, also found that the nonobese group showed higher values of VO2max than the obese group. With regard to gender, the study by Rodrigues (2006), carried out with a sample of

schoolchildren from the city of Vitória, shows that boys have higher values of VO2max when compared with the girls for all age groups, supporting the present study.

As for the flexibility test, in both sexes, the average values of the group who were not overweight / obese were lower than in the group who were overweight / obese, yet showed no significant difference. Unlike the study performed by Gouveia (2007), in which for the male sex, the nonobese group is more proficient in the tests of flexibility, compared to their overweight colleagues. For females, the average values of flexibility are very close between the overweight and nonobese groups.

In the same comparison, the study by Fonseca (2010) shows that the averages are higher for males, and in the study by Dumith (2008), we observe that the variable that was associated with greater flexibility was the gender, in which female students obtained approximately an extra 4cm in the test; the same occurs in our study, where the averages are higher for females.

Table 1 - Mean values of the physical fitness tests related to health according to the nutritional s schoolchildren

Physical fitness related to health	Overweight / obesity		
	No	Yes	p
Male (n=51)	n= 33	n= 18	
Flexibility (cm)	19,65 (6,74)	19,80 (8,26)	0,943
Abdominal	29,09 (10,54)	25,44 (9,72)	0,231
VO_2max (ml/kg/min)	40,39 (11,52)	31,90 (12,02)	**0,018**
Female (n = 47)	n=30	n=17	
Flexibility (cm)	22,31 (6,24)	25,91 (6,56)	0,069
Abdominal	23,10 (6,53)	22,29 (6,83)	0,691
VO_2 max (ml/kg/min)	32,08 (11,58)	28,52 (8,09)	0,283
Total (n=98)	n=63	n=35	
Flexibility (cm)	20,92 (6,59)	22,77 (8,00)	0,221
Abdominal	26,24 (9,29)	23,91 (8,46)	0,224
VO_2 max (ml/kg/min)	36,44 (12,19)	30,31 (10,35)	**0,015**

Values are expressed as mean (standard deviation).

Through Table 2, analyzing possible correlation between BMI and indicators of physical fitness related to health, we observe that correlation was not found for any variable. In contrast, the study by Roque (2010) conducted with adolescents from Londrina (PR), found that there is moderate and statistically significant negative correlation between the tests of VO2 max and BMI. A study conducted by Ostojic et al. (2011), with Serbian children and adolescents, found no significant correlation between BMI and VO2 max; yet, moderately high negative correlation was found between percentage of fat and VO2 max ($r = -0.76$, $p < 0.05$).

Table 2 - Correlation between BMI and indicators of health-related fitness

		Flexibility	Abdominal	VO_2
BMI	c	-0,120	0,082	-0,171
	p	0,240	0,422	0,097

C: Pearson linear correlation; p: significance level ($p < 0,05$).

CONCLUSION

At the end of the present study, results indicate that although no correlation was found between BMI and health-related fitness, the averages for VO2max and abdominal tests were higher for the nonobese group, in both sexes; only in the flexibility test, the average was higher for the obese group. Therefore we conclude that obese schoolchildren presented a poorer performance in tests of physical fitness related to health compared to the nonobese.

So, it is the responsibility of the school, especially the Physical Education professionals, to identify and intervene in the issue of physical inactivity, encouraging physical activity and sports. Moreover, the engagement of government agencies is also very important for the creation of environments suitable for the practice, both at school and in the neighborhood where they live, encouraging the adoption of a more active and healthy lifestyle.

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OBESITY AND HEALTH RELATED PHYSICAL FITNESS: A STUDY OF SCHOOLCHILDREN IN SANTA CRUZ DO SUL – RS

ABSTRACT

The present study aims to verify the existence of a connection between obesity and indicators of physical fitness related to the health of schoolchildren in the town of Santa Cruz do Sul. The cross-sectional study was of descriptive exploratory nature, involving 98 schoolchildren, 51 male and 47 female, using BMI as a collection tool for body composition, and tests of flexibility, strength/endurance and abdominal cardio respiratory testing for evaluating health-related fitness. For data analysis, we used the SPSS v. 18.0, through the Student t test and Pearson correlation. The results of this survey indicate that, although no correlation between BMI and health-related fitness was found, the averages for the abdominal and VO2max tests were higher for the nonobese group. Therefore, we concluded that obese schoolchildren had a lower performance in the tests of physical fitness related to health compared to nonobese schoolchildren.

KEYWORDS: obesity, physical fitness, child, adolescent

RESUMÉ

Le présente étude visa à évaluer l'existence d'une relation entre l'obésité et paramètres de l'aptitude physique liés à la santé des écoliers de la ville de Santa Cruz do Sul. L'étude transversale et de conception descriptive exploratoire a impliqué 98 écoliers, 51 masculins et 47 féminines, avant comme um outil pour la composition du corps l'IMC et pour évaluer l'aptitude physique liéus à la santé, les tests de flexibilité, la force-endurance des abdominaux et le test cardiorespiratoire. Le programme SPSS 18.0 a été utilisé pour l'analyse des données par test t de student et corrélation de Pearson. Les résultats de cette recherche indiquent que les moyennes de les tests VO2max et des abdominaux on été plus élévés pour le groupe des non-obèses bien que n'ayant pas été trouvé l'association entre l'IMC et l'aptitude physique de la santé des écoliérs. Dans ce sens, nous concluons que les écoliers obèses a sous-performé dans les tests d'aptitude physique liéus à la santé comparativement aux non-obèses.

MOT-CLÉS: obésité, aptitude physique, enfant, adolescent

RESUMEN

Este presente estudio tiene como objetivo verificar la existencia de uma relación entre la obesidad y los parámetros de aptitud física relacionados con la salud de los etudiantes de la ciudad en Santa Cruz do Sul. En el estudio transversal exploratório-descriptivo participaron 98 estudiantes, 51 hombres e 47 mujeres, teniendo como instrumiento de recoléccion de la composición corporal el IMC y, para evaluar la salud relacionados con la aptitud física, las pruebas de flexibilidad, fuerza-resistencia abdominal y la prueba cardiorrespiratoria. El programa SPSS 18.0 fuera utilisado para la análisis de dados por el test t de Student y correlación de Pearson. Los resultados desta búsqueda indican que los promedios de las pruebas de VO2max y abdominal fueran más altos para el grupo de no obesos, aunque no se encontro la correlación entre IMC e faptitud funcional relacionados com la salud. Así, concluímos que los estudiantes obesos tenían um menor rendimiento em las pruebas de aptitud física relacionados com la salud, em comparación com los no obesos.

PALABRAS CLAVE: obesidad, aptitud funcional, niño, adolescente

OBESIDADE E APTIDÃO FÍSICA RELACIONADA À SAÚDE: UM ESTUDO COM ESCOLARES DE SANTA CRUZ DO SUL – RS

RESUMO

O presente estudo tem como objetivo verificar a existência de relação entre obesidade e indicadores de aptidão física relacionada à saúde de escolares do município de Santa Cruz do Sul. O estudo transversal, de caráter descritivo exploratório, envolveu 98 escolares, sendo 51 do sexo masculino e 47 do sexo feminino, tendo como instrumento de coleta para composição corporal o IMC e, para avaliar aptidão física relacionada à saúde, os testes de flexibilidade, força/resistência abdominal e o teste cardiorrespiratório. Para a análise dos dados, foi utilizado o programa SPSS v. 18.0, através do teste t de Student e correleção de Pearson. Os resultados desta pesquisa indicam que, embora não tenha sido encontrada correlação entre IMC e aptidão física relacionada à saúde, as médias para os testes de VO2max e abdominal foram superiores para o grupo de não obesos. Sendo assim, concluímos que os escolares obesos apresentaram desempenho inferior nos testes de aptidão física relacionada à saúde, em comparação aos não obesos.

PALAVRAS-CHAVE: obesidade, aptidão física, criança, adolescente