85 - THE INFLUENCE OF THE LEVEL OF PHYSICAL ACTIVITY ON THE BODY MASS INDEX IN STUDENTS FROM CORRENT - PI

RAIMUNDO FERNANDES DA SILVA;
FELIPE PEREIRA E SILVA;
AURELIANO MACHADO DE OLIVEIRA;
GUSTAVO SOUSA EVANGELISTA;
DAVID MARCOS EMÉRITO DE ARAÚJO
Universidade Federal do Piauí, Teresina, Piauí, Brasil

doi: 10.16887/85.a1.85

INTRODUCTION

Data from the Pan American Health Organization (PAHO) and the World Health Organization (WHO) argue that the prevalence of childhood obesity has increased by around 10% to 40% in most European countries over the last 10 years, and in Brazil the rate of child and adolescent obesity has risen 240% in the last two decades (PAHO, 2003). Besides the sedentary lifestyle and eating foods high in calories, obesity relate to this stage the hours of use of television, video games and computers. Furthermore, there is consistent evidence that active individuals during adolescence have a higher chance to become active adults. Several factors have been presented as influencers of obesity during adolescence, especially sociodemographic variables such as gender, socioeconomic status, education level, maternal education at birth, birth order, place of residence, type of school and the PAL (HALLAL et al. , 2006b; HALLAL et al, 2006c;. NELSON et al, 2006;. OEHLSCHLAEGER et al, 2004;. SHI et al, 2006;. Gordian et al, 2010).. However, studies conducted in different regions have commonly shown contrasting results (HALLAL et al, 2006b;. HALLAL et al, 2006c;. NELSON et al, 2006;. OEHLSCHLAEGER et al, 2004;. SHI et al, 2006;. Gordian et al., 2010), indicating the need for further investigations on the association of PAL, sociodemographic status and body mass index (IMC) in adolescence. Due to of excess body mass, adolescents may suffer effects of call metabolic syndrome (impaired glucose tolerance or diabetes mellitus, insulin resistance, dyslipidemia, visceral obesity and albuminuria) (MORENO et al, 1998;. SOAR et al. , 2004; BENSIMHON, KRAUS AND DONAHUE, 2006), and exposure to cardiovascular events (Andersen et al, 2006).. The child and adolescent obesity has some specific aspects of this population. Besides the sedentary lifestyle and eating foods high in calories, obesity relate to this stage the hours of use of television, video games and computers (MISRA AND Kurana, 2008), driven by a lack of safe places for leisure, little time parents have for family interaction, physical inactivity and exposure to the world of consumerist advertising (of calorie products) (MILLER, aND SILVERSTEIN ROSEMBLOOM, 2004). These findings are troubling given that the presence of metabolic disorders in childhood and adolescence increases the risk for premature morbidity and mortality in adulthood (HALLAL et al., 2006 HALLAL et al., 2006b). Furthermore, a recent systematic review on physical activity in adolescence showed that there is consistent evidence that active individuals during adolescence have a higher chance to become active adults (HALLAL et al., 2006). The literature recommends that adolescents should engage in vigorous for at least 60 minutes per day of moderate intensity physical activity, thus accumulating 300 minutes per week, and these activities can be practiced inside or outside the school, in a structured way or unstructured (STRONG et al., 2005). However, studies worldwide have shown a high prevalence of physical inactivity, for example, in Finnish, American and Portuguese adolescents. Similar trend was observed in studies with young Brazilian city of Pelotas (RS) and São Paulo (SP) .Therefore, quantifying the prevalence of physical inactivity and the risk identificaçãode are important in directing intervention strategies (Ceschini et al ., 2009), however other intervening factors can accelerate the process of physical inactivity, and consequently the onset of obesity. In Brazil, there is growing interest in promoting active lifestyles, which can help fight the epidemic of overweight (obesity) observed in the country (Gonçalves et al., 2007). Nevertheless, the scarcity of such data hinders the development of primary and secondary intervention programs nationwide (Dutra, ARAÚJO, BERTOLDI, 2006; MAGALHÃES, MENDONÇA). In this context, the present study aimed to investigate the influence of physical activity on body mass index in adolescents in the city of Corrente, Piauí, Brazil. The research sample included 104 students aged between 13 and 19 years, enrolled in frequent and integrated into the technical course informáticado Instituto Federal do Piauí high school. Students were selected by simple random sampling method and underwent two evaluations: anthropometric (weight, height and IMC) and questionnaire.

METODOLOGY

This study had a descriptive-analytic cross-sectional nature. The target population of the study were students of both sexes, aged 13 to 19 years, students of the Integrated Technical High School Course of Informatics of the Instituto Federal do Piauí - Campus Corrente. After the sample identified the researcher conducted a brief explanation of the survey instruments and objectives. Each student received two copies of the Statement of Informed Consent Form (ICF) for authorization of a responsible person. Data were collected during class hours, on school premises, combined with prior appointment with the students participating in the survey. Selected for the study were 104 students, volunteers. Students underwent an anthropometric assessment of weight and height to calculate the body mass index (IMC), and a written evaluation consists of a questionnaire to assess the level of physical activity. Body mass was measured on the appraised standing with his back to the scale of the balance, with lateral spacing of the toe and the platform between them. Then he puts on and in the erect center platform to look at a fixed point in front of you. Only one measure (; PROESP-BR, 2009 FERNANDES SON, 1999) was performed. Height measurement in the individual remained in the standing position (PO): individual standing, upright position, outstretched arms along the body, feet together, trying to touch the measuring instrument with the posterior surface of the heel, pelvis, waist scapular region and occipital. The measurement was made with the assessed maximal inspiratory apnea, to minimize possible variations in results and the head oriented in the Frankfurt plane, parallel to the ground (Fernandes Filho, 1999; PROESP-BR, 2009). As the cursor is at an angle of 90 ° relative to the scale. In this study was used to measure the body mass a scale Digital Camry - EB9013, with an accuracy of 100 grams, the device has a maximum capacity of 200 kg. To measure the height of a meter Asimed stature, with a minimum height of 95 centimeters (cm) was used, the equipment has a maximum capacity of 230 centimeters. The evaluated were advised to wear shorts and shirt, and remain barefoot during the ratings (weight and height). For the Body Mass Index was calculated: body mass in kg (kilograms) divided by height in meters (m) squared (kg / m2). Then, to determine the rate of overweight and obesity among adolescents classification Conde and Monteiro (2006) was applied. The level of physical activity was measured using the International Physical Activity Questionnaire (IPAQ InternationalPhysicalActivityQuestionnaire-, version 8, short form, last week). Developed by WHO, with a version in Portuguese validated for the Brazilian population (Matsudo et al, 2001;), and Brazilian adolescents (Guedes et al., 2005). The classification of physical activity in adolescents was based on criteria developed by IpaqResearchCommittee (2005), this classification takes into account the frequency and duration of physical activities performed in the last week. For this study, the PAL was subdivided into two categories: active and inactive. The study data were analyzed by GraphPadPrism 5.0 program. We used descriptive statistics to analyze data using mean,

standard deviation, minimum, maximum values and frequency. To correlate the results to analytical statistics used by Spearman's non-parametric test. The results are presented in tables using descriptive statistics.

RESULTS AND DISCUSSION

Table 1 presents the anthropometric characteristics of the participants. Are 104 teenagers, aged between 13 and 19 years, and of this total, 49 (forty nine) males and 55 (fifty five) female. The average age was 14.92 (± 1.51) years. The anthropometric data for mean height of 1.63 (± 0.05) m and average 55.15 (± 2.84) kg body weight was observed. The use of anthropometric data can identify the IMC of the sample, in general, with an average of 20.75 (± 2.08) kg / m 2.

TABLE 1.Anthropometric characteristics and age of the sample.

GENERAL			
Characteristics	**Mean**	**+/-**	**N**
Age (years)	14,92	1,51	104
Weight (kg)	55,15	2,84	104
Height (m)	1,63	0,05	104
IMC (kg/m^2)	20,75	2,08	104

After identifying the IMC, adolescents were classified as underweight, normal weight, overweight and obesity. Table 2 shows the rating composed of 25 (24.2%) subjects in Group low weight 69 (66.2%) of normal weight group 10 (9.6%) in the overweight group and 0 (0%) No obesity group.

TABLE 2. IMC classification, general and by gender.

	GENERAL		MALE		FEMALE	
Characteristics	**Frequency**	**%**	**Frequency**	**%**	**Frequency**	**%**
LowWeight	25	24,2%	14	28,5%	11	20,0%
Average Weight	69	66,2%	28	57,2%	41	74,5%
Overweight	10	9,6%	7	14,3%	3	5,5%
Obesity	0	0%	0	0%	0	0%
Total	104	100%	49	100%	55	100%

Our study corroborates the findings presented by Avancietall (2012) Table 1 contains values for mean and standard deviation of the variables for both sexes, where the average in relation to IMC for boys was 16.58 with a standard deviation of ± 2.23 while the girls had an average of 16.49 with a standard deviation of ± 1.48. Regarding perimeter variable waist boys had an average of 54.99 cm with a standard deviation of ± 3.81, since the girls had an average of 52.98 cm with a standard deviation of ± 3.91. As for the percentage of fat studied males had an average of 16% with a standard deviation of ± 0.04, however the girls had an average of 23% with a standard deviation of ± 0.08.

Table 03 identifies the results achieved in the questionnaire about the level of physical activity among adolescents, classified as: active and inactive.

TABLE 3.Classification of the level of physics, general activity and gender.

	GENERAL		MALE		FEMALE	
Characteristics	**Frequency**	**%**	**Frequency**	**%**	**Frequency**	**%**
Active	66	63,5%	37	75,5%	29	52,7%
Inactive	38	36,5%	12	24,5%	26	47,3%
Total	104	100%	49	100%	55	100%

Corroborating the above-mentioned studies, the overall prevalence of physical inactivity among high school students from public schools in the city of São Paulo was 62.5% (95% CI 60.5-64.1). Among adolescents who met the recommendation, 47% practiced in structured physical activities clubs of the municipal government. Doestudo The results showed that the prevalence of physical inactivity was significantly higher in girls (74.1%) in the older age group (71.6%), the socioeconomic level B (88%) and adolescents from schools in the western region the city of São Paulo (83.9%). (Ceschini, MATSUDO & OLIVEIRA, 2009)

The present study is in agreement with Gordia and Quadros (2010), in their studies inferred that the proportion of adolescents who had low PAL was quite low (2.3%), and girls and students of morning shift were groups most likely to present with this outcome.

The classification of NAF adolescents in relation to IMC and gender, adolescents were separated into active and inactive according to each range of IMC (underweight, normal weight, overweight or obese) and gender (male or female) can is shown in Table 4.

TABLE 4.Distribution of students according to level of physical activity and IMC

	GENERAL (n= 104)		MALE (n= 49)		FEMALE (n= 55)	
NAF	**Active**	**Inactive**	**Active**	**Inactive**	**Active**	**Inactive**
IMC LowWeight	13 (12,5%)	12 (11,5%)	9 (18,4%)	5 (10,2%)	4 (7,3%)	7 (12,7%)
IMC Normal	51 (49%)	18 (17,4%)	27 (55,1%)	1 (2%)	24 (43,6%)	17 (30,9%)
IMC Overweight	2 (1,9%)	8 (7,7%)	1 (2%)	6 (12,2%)	1 (1,8%)	2 (3,6%)
IMC Obesity	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

The PAL of most teenagers investigated was classified as high (76.8%) or moderate (20.9%) and only 2.3% had low PAL (Table 2), with an average energy expenditure of 7039 ± 5602 MET-minutes / week (table 1). Adolescents from public schools apresentarammaior energy expenditure than their counterparts in private schools (t = 1.643, p = 0.050), as well as residents of rural areas were more active than adolescents in urban area (t = 2.403, p = 0.009) . In addition, male adolescents had higher energy expenditure from the physical activity than adolescent females (t = 3.682, p = 0.001). There were no differences between adolescents from different socioeconomic conditions (A, B and C + D + E), as well as the foisemelhante energy expenditure

among all analyzed ages, 14-20 years (BIANCHINI Gordia E, 2010).

CONCLUSION

According to the data of the present study we can conclude that the sample participants present prevalence of overweight classification according to IMC variable, with a suggestive area of low weight variable in relation to overweight, where no case of obesity was observed in this study. These data might be justified by the influence of sociodemographic characteristics present, below the power level, displacement traversed until the institution of the research, housing and meals. The female group had a higher prevalence physical inactivity, certain predisposition justified by the lack of leisure and physical activity for this population in this age group options. The study shows no correlation of significance compared the variables IMC and physical inactivity.

REFERENCES

1.AVANCI D.F, *; SIMÕES, Kátia Letícia; FERNANDES, C, A;educação Física em Revista INSS: 1983-6643 Vol.6 Nº1 jan/fev/mar/abr - 2012.)

2.CESCHINI, F. L., FLORINDO, A., BENÍCIO, M. H. Nível de atividade física em adolescentes de uma região de elevado índice de vulnerabilidade juvenil. RevBrasCiencMov,15, 67-78, 2007.

3.CESCHINI, F., DOUGLAS, R., ANDRADE, D., OLIVEIRA, L., ARAÚJO JÚNIOR, J., MATSUDO, V. Prevalence of physical inactivity and associated factors among high school students from state's public schools. J Pediatr (Rio J), 85(4), 301-306, 2009.

4.CONDE, W. L; MONTEIRO, C. A. Valores críticos do índice de massa corporal para classificação do estado nutricional de crianças e adolescentes brasileiros. J Pediatr (Rio J), 82(4), 266-272, 2006.

5.DUTRA, C. L.; ARAÚJO, C. L.; BERTOLDI, A. D. Prevalência de sobrepeso em adolescentes: um estudo de base populacional em uma cidade no Sul do Brasil. Cad de Saúde Pública, 22(1), 151-162, 2006.

6.GONÇALVES, H., HALLAL, P., AMORIM, T., ARAÚJO, C., MENEZES, C. Fatores socioculturais e nível de atividade física no início da adolescência. Rev Panam Salud Publica, 22(4), 2007.

7.GORDIA, A. P; QUADROS, T; CAMPOS, W;PETROSKI, E. Nível de atividade física em adolescentes e sua associação com variáveis sociodemográficas. RevPortCienDesp [online],10(1), 172-179, 2010.

8.GUEDES, D. P; LOPES, C. C; GUEDES, J. Reprodutibilidade e validade do Questionário Internacional de Atividade Física em adolescentes. RevBrasMed Esporte. 11(2), 151-158, 2005.

9.MILLER, J, ROSEMBLOOM, A, SILVERSTEIN, J. Childhood obesity.JClinEndocrinolMetabol, 89 (9): 4211-8, 2004.

10.MORENO, L. A., FLETA, J, MUR, L, SARRÍA, A, BUENO, M. Distribution in obese and nonobese children and adolescentes.JPediatrGastroenterolNutr, 27, 176-180, 1998.

11.OEHLSCHLAEGER, M., PINHEIRO, R., HORTA, B., GELATTI, C., SAN'TANA, P. Prevalência e fatores associados ao sedentarismo em adolescentes de área urbana. Rev Saúde Pública, 38(2), 157-163, 2004.

12.OEHLSCHLAEGER, M., PINHEIRO, R., HORTA, B., GELATTI, C., SAN'TANA, P. Prevalência e fatores associados ao sedentarismo em adolescentes de área urbana. Rev Saúde Pública, 38(2), 157-163, 2004.

13.ORGANIZAÇÃO PAN-AMERICANA DE SAÚDE/ORGANIZAÇÃO MUNDIAL DA SAÚDE. Doenças crônico-degenerativas e obesidade: estratégia mundial sobre alimentação saudável, atividade física e saúde. Brasília, 2003.

14.PROJETO ESPORTE BRASIL. Manual de aplicações de medidas e teste, normas e critérios de avaliação. 2007. http://www.proesp.ufrgs.br/institucional/. Acessado em 20 de fevereiro de 2012 review. Am Heart J, 151, 598-603, 2006.

15.STRONG, W. B; MALINA, R. M; BLIMKIE, C., DANIELS, S; DISHMAN, R; GUTIN, B; HERGENROEDER, A; MUST, A; NIXON, P; PIVARNIK, J; ROWLAND, T; TROST, S; TRUDEAU, F. Evidence based physical activity for school-age youth. J Pediatr,146,732-737, 2005.

THE INFLUENCE OF THE LEVEL OF PHYSICAL ACTIVITY ON THE BODY MASS INDEX IN STUDENTS FROM CORRENT - PI

ABSTRACT

This study aimed at to investigate the influence of physical activity level (PAL) on body mass index in adolescents in the city of Corrente, Piauí, Brazil. The research sample included 104 students aged between 13 and 19 years, 49 (forty nine) males and 55 (fifty five) females, enrolled in frequent and integrated into the technical high school computer course at the Instituto Federal do Piauí. Students were selected by simple random sampling method and underwent two evaluations: anthropometric (weight, height and IMC) and questionnaire. On the results of analysis of PAL and its relationship with IMC and gender was observed that the average age was 14.92 (± 1.51) years. The anthropometric data for mean height of 1.63 (± 0.05) m and average body mass of 55.15 (± 2.84) kg were observed in BMI classification composed of 25 (24.2%) subjects in the low group weight, 69 (66.2%) in the normal weight group, 10 (9.6%) in the overweight group and 0 (0%) in the obese group.According to the data of the present study we can conclude that the sample participants present prevalence of overweight classification according to IMC variable, with a suggestive area of low weight variable in relation to overweight, where no case of obesity was observed in this study. These data might be justified by the influence of sociodemographic characteristics present, below the power level, displacement traversed until the institution of the research, housing and meals. The female group had a higher prevalence physical inactivity, certain predisposition justified by the lack of leisure and physical activity for this population in this age group options. The study shows no correlation of significance compared the variables IMC and physical inactivity.

KEYWORDS: IMC, NAF, Classification, Teenagers.

L'INFLUENCE DU NIVEAU D'ACTIVITÉ PHYSIQUESUR L'INDICE DE MASSE CORPORELLE CHEZ LES ÉTUDIANTS DU COMTÉ DE CORENTE-PI.

RÉSUMÉ

La présente étudevise à étudierl'influence du niveau d'activitéphysique (NAP) surindice de masse corporellechez les adolescentsdu comté de Corente, Piauí, Brésil. La rechercheporte sur un échantillonde104 étudiantsâgés de13 à 19 ans, 49(quarante-neuf) étant de sexe masculinet55(cinquante-cinq) femmin, tous inscrits au cours tecnique d'informatique à l'InstitutfairefédéraledePiauí. Les étudiantsont été sélectionnéspar une simpleméthode d'échantillonnage aléatoireet ontsubi deuxévaluations: anthropométrique(poids, taille etIMC) etquestionnaire. lesrésultats de l'analysedu NAPet sa relation avecl'IMCet le sexe nous a montré que l'âgemoyen était de14,92(± 1,51) ans, hauteurde 1,63(± 0,05) mètreset le poidscorporel moyende55.15(± 2,84) kg, quant à l' IMC la classification a été composéede25(24,2%) sujets dans le groupedepoidsfaible, 69(66,2%) dans le groupe depoids normal, 10(9,6%) dans le groupe surpoidset0(0%) dans le groupe obèse. Selon

lesdonnéesdecette étude, nouspouvons conclureque les participantsde l'échantillonprésentent uneprédominancedeclassificationenfonction de l'IMCen surpoids, avecune superiorité sugestive de la variable faible poidspar rapportà la surcharge pondéraleoùaucun cas d'obésité n'a étéobservée. Cesdonnéespeuvent être justifiéespar l'influence des caractéristiquessociodémographiquesprésentes , l'alimentation de mauvaise qualité, le deplacemente jusqu' àl'institutionderecherche, les conditions de logement et la nourriture.Legroupe de femmesa montré une plus forte prévalence au manque d'activité physique, prédispositionjustifiée par lemanque deloisirset d'activité physiquedans cettepopulationàcet âge.L'étude ne montreaucune corrélationimportancepar rapportaux variablesde l'IMCet de l'inactivitéphysique.

MOTS-CLÉS: IMC, NAP., Classification, adolescents.

LA INFLUENCIA DEL NIVEL DE ACTIVIDAD FÍSICA SOBRE EL ÍNDICE DE MASA CORPORAL EN ESCOLARES DEL MUNICIPÍO DE CORRENTE-PI

RESUMEN

El presente estudio tiene como objetivo verificar la influencia del nivel de actividades físicas (NAF) sobre el índice de masa corporal en adolescentes del municipio de Corrente, Piauí, Brasil. La investigación contó con una muestra de 104 alumnos con edad comprendida entre 13 y 19 años, 49 (cuarenta y nueve) del sexo masculino y 55 (cincuenta y cinco) del sexo femenino, matriculados que frecuentan la enseñanza media integrada al curso técnico de informática del Instituto Federal de Piauí. Los estudiantes fueron seleccionados por el método de muestreo aleatorio simple y sometidos a dos evaluaciones: antropométrica (masa, estatura y IMC) y cuestionario. En los resultados de análisis del NAF y su relación con el IMC y género, se observó que la media de edad fue de 14,92 (±1,51) años. Para los datos antropométricos fue observado una media de estatura de 1,63 (±0,05) metros y masa corporal media de 55,15 (±2,84) kilogramos, en cuanto al IMC la clasificación es compuesta por 25 (24,2%) con sujetos del grupo sobrepeso y 0% (cero %) del grupo obesidad. De acuerdo con los datos del presente estudio, podemos interpretar que los participantes de la muestra presentan un predominio en la clasificación sobrepeso según la variable IMC, habiendo un sugestivo dominio de variable bajo peso en relación a sobrepeso, dondeen este estudio no fue observado ningún caso de obesidad. Estos datos pueden ser justificados por la influencia de las características sociodemográficas presentes, alimentación de bajo nivel, traslados hasta la institución que realiza la investigación, condiciones de habitación y alimentación. El grupo femenino presentaba una mayor inclinación por la inactividad física, cierta predisposición justificada por la falta de opciones de recursos para el tiempo libre y práctica de actividades físicas para esta población en esa franja de edad. El estudio no presenta correlación significativa cuando son comparadas las variables inactividad física e IMC

PALABRAS CLAVES: IMC, NAF, Clasificación, Adolescentes.

A INFLUÊNCIA DO NÍVEL DE ATIVIDADE FÍSICA SOBRE O ÍNDICE DE MASSA CORPORALEM ESCOLARES DO MUNICÍPIO DE CORRENTE-PI.

RESUMO

O presente estudo objetivou verificar a influência do nível de atividade física (NAF) sobre o índice de massa corporal em adolescentes do município de Corrente, Piauí, Brasil. A pesquisa contou com amostra de 104 alunos com idade entre 13 e 19 anos, 49 (quarenta e nove) do sexo masculino e 55 (cinquenta e cinco) do sexo feminino, matriculados e frequentes no ensino médio integrado ao curso técnico de informática do Instituto Federal do Piauí. Os estudantes foram escolhidos pelo método de amostragem aleatória simples e submetidos a duas avaliações: antropométrica (massa, estatura e IMC) e questionário. Nos resultados da análise do NAF e a sua relação com IMC e gênero observou-se que, A média de idade foi de 14,92 (±1,51) anos. Para os dados antropométricos foi observado média de estatura de 1,63 (±0,05) metros e massa corporal média de 55,15 (±2,84) quilogramas, quanto ao IMC a classificação composta por 25 (24,2%) sujeitos no grupo baixo peso, 69 (66,2%) no grupo peso normal, 10(9,6%) no grupo sobrepeso e 0 (0%) no grupo obesidade. De acordo com os dados do presente estudo podemos inferir que os participantes da amostra apresentam predomínio de classificação em sobrepeso segundo a variável IMC, havendo um sugestivo domínio da variável baixo peso em relação a sobrepeso, onde não foi observado nenhum caso de obesidade nesse estudo. Dados esses que podem ser justificados pela influencia das características sóciodemográficas presentes, alimentação abaixo do nível, deslocamento percorrido até a instituição da pesquisa, condições de habitação e alimentação. O grupo feminino apresentava uma maior prevalência a inatividade física, certa predisposição justificada pela falta de opções de lazer e prática de atividades físicas para essa população nessa faixa etária. O estudo não apresenta correlação de significância quando comparado as variáveis inatividade física e IMC.

PALAVRAS-CHAVE: IMC, NAF, Classificação, Adolescentes