63 - COMPARATIVE ANALYSIS ANÁLISE OF THORACOABDOMNAL MOBILITY RELATING TO CHILDREN BODY MASS INDEX

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INTRODUCTION

The obesity is a multifactorial disease classified as chronicle and non-transmissible, becoming a public health problem, once results in the obese life quality injury because of its intervention in longevity. In Brazil, as the time went on the overweight and obesity reached great proportions. It is estimated that in 2025 our country will reach the 5 th position in the world of having problems with overweight and obesity (COSTA et al., 2010).

With the big concentration of fatness below the thoracoabdominal cavity occurred progressive changes in pulmonary function, the more relevant is the decrease of the functional residual capacity (FRC) (COSTA; BARRETO, 2003).

The thoracic mobility presents physiological changes related to the sex, age and physical activity practice. The sedentarism and a consequent drop of physical activities practice related to the individuals inactive behavior, influencing in the adiposity (ALBINO; PANIZZI; KERKORKI, 2005). The obesity contributes to the appearance of disturbances that occur in thoracic wall, once an increase in the respiratory work changes the thorax mobility (kerkorki ET AL., 2004).

With a physiotherapy look, it is important having the perception of the thoracoabdominal evaluation methods and, consequently, the expansibility that helps in a kinetic diagnosis groundwork (KERKORKI et al., 2004). The cirtometry that consists in a technique used a lot in thoracic mobility evaluation doesn't have reference values for the general population. The majority of the researches with this method is related to Ankylosing Spondylitis that embarrasses the comparison when applied in other population groups (PANIZZI et al., 2004). Therefore, the study has as objective to analyze comparatively the thoracoabdominal mobility relating the body mass index in children.

METHODS

It treats of a transversal study with quantitative and descriptive approaching that was accomplished in two schools in Lavras da Mangabeira – Ceará. 70 students were included with age between eight to twelve years, and that didn't present any visible postural deviance or respiratory diseases.

For the accomplishment of the cirtometry in axillar, xifoidea and abdominal region, were used the method described by Panizzi et al (2004). The body mass index BMI (kg/m2) was calculated and compared to the values used by the National Center for Health Statistics (NCHS), and the nutritional state according to the Health World Organization (WHO) recommendation in which students with BMI below the fifth percentile were classified as malnutrition: eutrophic with BMI equal or above the fifth and below the 85 percentiles; overweight with BMI equal or above percentile 85 and below 95; and obesity wirh com BMI equal or above percentile 95 (CASSOL et al, 2006).

The institutions previously identified were visited in different days, where the students were invited to participate of the study, being delivered a Free and Clarified Consent Term (FCCT) annexed together with a Parents Letter. During the research accomplishment each student signed the Permission. The evaluations occurred in a reserved room in the respective schools,

The data were registered in SPSS Statistics for Windows® programme, data basis form 20.0 version, and analyzed through descriptive and bivariate inferential statistics. For the descriptive procedures, were presented the relative data (percentages), central tendency measures (media) and of variability (pattern deviance). The procedures of inference statistics, by the way, were carried on based in parametric statistics, through the Variance Analysis (ANOVA) and Tukey post hoc test, that identifies differences among groups through the comparison and its medias. It is detached that the tests choice was lined in data distribution observance through frequency histograms, and that. For the information interpretation, was adopted a 95% confidence level of significance of 5% ($p<0,05$).

The collection beginned after Ethic and Research Committee (ERC) approval of Faculdade Santa Maria that generated the o 11215013.2 protocol number. In the research accomplishment it was considerated the ethical principles involving human beings, contained nº, 466/2011 Resolution.

RESULTS

70 students participated of the study, that were classified in three groups according to their eutrophic body mass indexes (57,1%), with overweight (15,7%) and obeses (27,1%).

Initially the axillar region was evaluated. It was observed that the eutrophic participants presented medium score of 3,98±1,23cm, while the overweight patients presented medium score of 3,73±1,34cm. The evaluated with obesity obtained lower score: 2,89±1,10cm. The ANOVA pointed out differences statistically significant among the groups. This way, the data were submitted to Tukey post hoc test. The results found pointed out differences between the eutrophic and the obese group, indicating, in this perspective, that the axillar region mobility is higher in the eutrophic group.

Equivalent results were found in the xifoidea region. It was verifies a reduction in the mobility score according to the groups: the eutrophic presented the higher scores (3,88cm), the patients with overweight presented the intermediate (3,27cm), while the obese presented the lower scores (2,63cm). The ANOVA concluded significant differences among the groups and the Tukey pot hoc Test pointed out that the difference occurred among the groups of participants with eutrophia and obesity. .

Table 1: Thoracoabdominal mobility evaluation according to the body mass index

Groups	*Axillar (cm)*		*Xifoidea (cm)*		*Abdominal (cm)*	
	M	DP	M	DP	M	DP
Eutrophia	3,98 *	1,23	3,88 *	1,30	2,98	0,86
Overweight	3,73	1,34	3,27	1,19	2,73	0,78
Obesity	2,89 *	1,10	2,63 *	0,83	3,11	1,04
F (p)	5,12 (0,009)*		7,31 (0,001)*		0,60 (0,54)	

Legend: * Difference statistically significant.

With the scope of confirming these results, the data of thoracoabdominal mobility in the three regions were compared to the gross body mass index (BMI). The results found pointed out for significant correlation in axillar and xifoidea regions. Such correlation were considered low and moderate in the two regions, respectively, and negative, that is, as the BMI increases, the patients mobility decrease. Finally, it wasn't verified any correlation between the BMI and the abdominal region mobility (Table 2).

Table 2: Correlation between thoracoabdominal mobility and body mass index

Region	*r*	*P*	*Interpretation*
Axillar	0,33	0,005	Significant Correlation, low and moderate
Xifoidea	0,42	<0,001	Significant Correlation, moderate and negative
Abdominal	0,08	0,51	There is no Significant Correlation among the variables

Legend: r: Pearson correlation; p: significance level

DISCUSSION

The thoracic expansibility and pulmonary function are on alterations basis not only because of the growth and the appearance of respiratory diseases, but also because of other factors related to body composition as sex, age and stature. It is possible to observe during the child growth the presence of changes in respiratory system, being extremely important the thoracic mobility determination in a physiotherapy evaluation (SILVA et al., 2012). (9)

The results obtained in this research are similar to the ones of Panizzi et al. (2004) that accomplished a study with healthy adolescents of both sexes, with age between eight and fourteen years old and observed that the mensuration values were decreasing from axillar to basal region. The same researchers affirmed that can exist relevant changes among the xifoidea region values of masculine sex and basal of feminine, and this can present association with factors related to anthropometrical measures, body fatness division and respiratory physiology.

In a study accomplished by Basso et al. (2011) in asthmatic and healthy adolescents, was observed that cirtometry values didn1t present any relevant difference between the two groups, but in the analysis accomplished inside group didn1t show significant differences in amplitude value between axillar and abdominal, xifoidea and abdominal lines, in the groups. They either complement affirming that even without cirtometry normality values, some authors cite that can be considered normal those ones that are over 4- 7 cm and that in hos study the axillar and xifoidea lines results were in this average.

Silva et al. (2006) accomplished a study with 100 healthy young adults with median age of 20 years, both sexes, and observed that the research didn't present significant results by ANOVA regarding to the groups divided by sex. By that time Albino et al. (6) described that other authors accomplished a cirtometry in children and adolescents of both sexes and obtained greater results masculine sex individuals when compared to feminine sex.

In Silva et al (2012) study the obtained results didn't present association between the xifoidea line mobility and the variables of age, weight, height and body mass index, on the other hand, the axillar values present a small, but significant relation with these variables, when related with the present study we can perceive that these variables interfered in a relevant manner in all measured regions results.

FINAL CONSIDERATIONS

In the present study can be observed that the obesity is without any doubt one of the main health problems that afflicts the population interfering significantly in respiratory system. It was confirmed the direct relation between thoracoabdominal mobility and body mass index that resulted in a significant difference in each group values mainly in axillar and xifoidea lines.

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COMPARATIVE ANALYSIS ANÁLISE OF THORACOABDOMNAL MOBILITY RELATING TO CHILDREN BODY MASS INDEX

ABSTRACT

Introduction: High body mass index in thoracoabdominal compartment promotes changes in respiratory system interfering in volumes and capacities e and consequently in gas change. Objective: To analyze comparatively the thoracoabdominal mobility relating to children body mass index. Methodology: It is a transversal study with quantitative and descriptive approaching. The sample counted with 70 children with ages of 8 to 12 years of both genders, and with variable body mass index. It was carried out a children weight, height and expansibility verification and after classified in three groups according to their body mass indexes: eutrophic (57,1%), with overweight (15,7%) and obese (27,1%). Results: The results obtained presented differences of the eutrophic and obese group indicating, in this perspective, that the mobility in axillar region xifoidea are greater in the eutrophic group when compared to the obese one. Conclusion: Therefore, it is concluded that the body mass index is related to children thoracoabdominal expansibility changes.

KEY-WORD: Child, Abdominal fatness, Mobility limitation.

ANALYSE COMPARATIVE DE LA MOBILITÉ THORACO-ABDOMINALE EN RELATION AVEC L'INDICE DE MASSE CORPORELLE CHEZ LES ENFANTS

RÉSUMÉ

Introduction: L'indice de masse corporelle élevé dans le compartiment thoraco-abdominale promeut des changements dans le système respiratoire, interfère avec les volumes et les capacités, et donc avec les échanges gazeux. Objectif: Analyser comparativement la mobilité thoraco-abdominale, reliée à l'indice de masse corporelle chez les enfants. Méthodologie: C'est une étude transversale avec une approche quantitative et descriptive. L'échantillon se composait de 70 enfants âgés entre 8 et 12 ans des deux sexes et avec un indice de masse corporelle variable. Nous avons déterminé la taille, le poids et l'expansibilité de ces enfants, qui ont ensuite été classés en trois groupes selon leur indice de masse corporelle: eutrophes (57,1%), avec surpoids (15,7%) et obèses (27,1%). Résultats: Les résultats obtenu montrent des différences entre le groupe des eutrophes et des obèses, ce qui indique, dans cette perspective, qui la mobilité dans la région axillaire et xiphoid est plus élevée dans le groupe des eutrophes par rapport au groupe des obèses. Conclusion: Il est conclu que l'indice de masse corporelle est relié à des changements dans l'expansibilité thoraco-abdominale des enfants.

MOTS CLÉS: Enfant. Graisse abdominale. Limitation de la mobilité.

ANÁLISIS COMPARATIVO DE LA MOVILIDAD TORACOABDOMINAL CON RELACIÓN AL ÍNDICE DE MASA CORPORAL EN NIÑOS

RESUMEN

Introducción: El índice de masa corporal alto en el compartimiento toracoabdominal promueve alteraciones en el sistema respiratorio, interfiriendo en los volúmenes y las capacidades, y, en consecuencia, en el intercambio gaseoso. Objetivo: Analizar comparativamente la movilidad toracoabdominal, relacionándola con el índice de masa corporal en niños. Metodología: Esto es un estudio del tipo transversal con abordaje cuantitativo y descriptivo. La muestra consistió en 70 niños con edades entre 8 y 12 años de ambos sexos y con índice de masa corporal variable. Se determinó la altura, el peso y la expansibilidad de estos niños, que fueron, entonces, clasificados en tres grupos, según su índice de masa corporal: eutróficos (57,1%), con sobrepeso (15,7%) y obesos (27,1%). Resultados: Los resultados obtenidos presentaron diferencias entre el grupo de los eutróficos y los obesos, indicando, en esa perspectiva, que la movilidad en la región axilar y xifoidea es más alta en el grupo de los eutróficos, cuando comparada con los obesos. Conclusión: Se concluye que el índice de masa corporal se relaciona con las alteraciones en la expansibilidad toracoabdominal de niños.

PALABRAS CLAVE: Niño. Grasa abdominal. Limitación de la movilidad.

ANÁLISE COMPARATIVA DA MOBILIDADE TÓRACO-ABDOMINAL EM RELAÇÃO AO ÍNDICE DE MASSA CORPORAL EM CRIANÇAS

RESUMO

Introdução: O índice de massa corporal elevado no compartimento toraco-abdominal promove alterações no sistema respiratório interferindo nos volumes e capacidades e consequentemente na troca gasosa. Objetivo: Analisar comparativamente a mobilidade tóraco-abdominal relacionando ao índice de massa corporal em crianças. Metodologia: Trata-se de um estudo do tipo transversal com abordagem quantitativa e descritiva. A amostra constou de 70 crianças com idade entre 8 e 12 anos de ambos os sexos e com o índice de massa corporal variável. Foi realizada a verificação da altura, peso, expansibilidade destas crianças em seguida classificadas em três grupos em função dos seus índices de massa corporal: eutróficos (57,1%), com sobrepeso (15,7%) e obesos (27,1%). Resultados: Os resultados obtidos apresentaram diferenças entre o grupo dos eutróficos e dos obesos, indicando, nesta perspectiva, que a mobilidade na região axilar e xifoideana são mais elevadas no grupo dos eutróficos, quando comparado ao dos obesos. Conclusão: Portanto conclui-se que o índice de massa corporal está relacionado a alterações na expansibilidade tóraco abdominal de crianças.

PALAVRAS - CHAVE: Criança. Gordura abdominal. Limitação da mobilidade.