59 - NUTRITION, ANTHROPOMETRIC PARAMETERS AND MOTOR DEVELOPMENT OF PRESCHOOL

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INTRODUCTION

Motor development is characterized as continuous change of the engine throughout life caused by the interaction between the demands of the motor task behavior, genotype of the individual at the phenotypic environmental conditions (GALLAHUE; OZMUN; GOODWAY, 2013).

Childhood is a stage of human life paramount to the cognitive, psychological, biological and motor development because during this period the main brain maturation occur in your body. But the lack of opportunities as reflecting habits of modern life that TV, video games, computers, street violence, among others, are restricting the forms of play and therefore the driving experience (TANI et al, 1988).

The main stage for the development of motor skills is the infancy, preschool, where you can make adjustments to compensate for or even change, so you can stay there or improvement in motor skill acquisition. (CAETANO; SILVEIRA; GOBBI, 2005). Children two to seven years of age are at the pre-operational period called, where the development of these patterns occurs in three stages: the initial, elementary and mature (GALLAHUE; OZMUN; GOODWAY, 2013).

The identification of motor development allows the healthcare professional to identify the factors which make the limited movement, making it possible to making a decision on what skills and motor criteria should be emphasized in the programs, as well as time to practice each skill and goals performance of the child, because the process of motor development is related to age, but is not dependent on it (VALENTINI, 2008; GALAHUE, 2003).

Counterpart another factor that arouses interest is the state of health in childhood, which may be reflected by changes in body composition. As the state of malnutrition and overweight characteristic of the nutrition transition, child health can be an indicator of the health of a country and be a predictor of living conditions of a particular region. Nutritional disorders of childhood may be related to the development of chronic diseases in adulthood, which is the biggest challenge for health systems in recent years (PEREIRA; LANZILLOTTI; SOARES, 2010; SILVA; COTTA; ROSE, 2013).

Studies on growth and development, such as the study of anthropometric variables are used as an important resource for actions to promote health and disease prevention. Good nutritional status of children is critical to their physical and organic development as well as for the development of physiological, psychomotor and social functions. It is in pre-school age due to the maturation process by passing critical to the proper formation of eating habits that will promote normal growth and development by preventing a number of chronic diseases in adulthood (GRANDRA, 2000; BRAZILIAN SOCIETY OF PEDIATRICS, 2009).

According tothe abovegeneralobjective of the studyis to classifythe levelof maturity of thedirectedwalkpatterns, stagetobounce the ballandstagebalancingon one footandspecifically targetthe studyof nutritional status andverify if there arestatistical differencesbetween the sexesand amongages.

METHODOLOGY

It is a cross-sectional quantitative study developed from the analysis of data collected in a municipal school with preschool students. Were observed and classified the major movers in initial, elementary and mature on the critical development phase of directed walk, balance on one foot and bouncing stage of standard patterns. As the collection of variables for calculating the Body Mass Index (BMI).

The sample consisted of children of both sexes of the second period of teaching children aged between 4 and 6 years old N = 23 (12 girls and 11 boys). Parents or guardians of students signed a consent form authorizing their participation in the research, as resolução196 / 96 of the National Health Council.

The tests chosen to analyze the level of motor maturation was according to Gallahue (2003) through engravings, these: stage of directed walk (for locomotion) p.239, stage of standard bounce (for handling) and stage p.237 balancing on one foot (for stabilization) p. 277 where every gesture engine is rated at initial, elementary and mature.

The tests were administered by three appraisers, one for each test. At first ages were collected, measured the height (anthropometric tape Sanny) and body mass index (scale Camry Glass Electronic Personal Scalepara), BMI was calculated by body weight (kg) divided by height 2 (m) equation. Students were organized by numbers for the control of data, then the tests were applied.

Data were tabulated using SPSS version 20.0 and presented in form of tables with measures of central tendency and dispersion. To compare sex and age with the variables: mass, height and BMI model analysis of variance (ANOVA) were used adopting 5% level of significance. Calculate the percentile for BMI classification according to WHO recommendations (2007) was used.

RESULTS AND DISCUSSION

The ability to move children is essential so that it can properly interact with the environment in which he lives. It is in childhood that most studies focus on motor development (SANTOS; DANTAS; Oliveira, 2004). It's up to about the age of seven that the fundamental movement phase extends, it is from this age that children begin to display movement patterns more consistent and mature (GALLAHUE; OZMUN; GOODWAY, 2013).

It is also at this age that eating habits are beginning to define themselves, changes in body composition and anthropometric variables may be of nutritional status and prognosis of organic and physical development of children. Being such parameters indicators of health status thereof (BRAZILIAN SOCIETY OF PEDIATRICS, 2009). In this sense, theresults tablesbelow showthe variablesbody mass, height and BMItodifferentiate betweenthe sexes(Table 1), differentiationbetween the agespriortothe samevariable(table 2), andthe classification ofmotor testsusedfor boys andgirlsbased on genderand age(Tables 3, 4 and 5).

Table 1 - Mean and standard deviation of the variables by sex body mass, height and BMI.

Sex		Mass *	Stature *	BMI*
Boys	Medium	20,2	1,1	20,2
	standard deviation	1,7	0,1	1,8
Girls	Medium	19,4	1,1	19,6
	standard deviation	3,4	0,1	3,3
All Value	Medium	19,8	1,1	19,9
	standard deviation	2,7	0,1	2,6

*P>0,05: there is no statistical difference between the sexes.
Font: direct research.

Table 2 - Mean and standard deviation for age of the variables body mass, height and BMI.

Age		Mass *	Stature *	BMI*
4	Medium	19,0	1,1	19,0
	standard deviation	2,7	0,1	2,4
5	Medium	20,0	1,1	20,2
	standard deviation	2,7	0,0	2,6
6	Medium	19,9	1,1	20,0
	standard deviation	4,2	0,1	4,2
All Value	Medium	19,8	1,1	19,9
	standard deviation	2,7	0,1	2,6

*P>0,05: there is no statistical difference between the ages.
Font: direct research.

According to Table1, for the groupof childrenof kindergartenstudysignificant difference wasfoundby genderfor the variablesbody weight, height andBMI. The meanbody massandheightof preschoolchildren in this studycorroborate theresearchby Coelho; Tolocka; Marco(2006). And in the sameway as the firsttablein Table 2was also notfound any significant differencefor the same variables(weight,height, andBMI)between the ages. Meaning to saythatbetween the ages4-6years therewas no significantgrowth of these childrenin termsofbody massheight andBMI.

The Brazilian population, as well as other nations are undergoing an epidemiological point of nutritional transition, which reinforces the importance of anthropometry to track, understand and monitor the health and development of preschool children, due to the prevalence of nutritional disorders (MONTARROYOS ; COSTA; STRONG, 2013).

Following the indications of WHO (2007), the classification of nutritional status through percentiles and z scores are acute thinness, leanness, normal weight, overweight, obesity and severe obesity. For the sample of children in this study was found only two such classifications, eutrophic with 75% of children within that classification and overweight with 25%, similar to the data found by Ferreira-Marim; Fabbro (2012) for normal weight compared to other classifications. The research by Carlucci et al (2013) corroborates the percentage of overweight in this study.

Table 3 - Level of motor maturity for directed walk (locomotion).

Directed walk			
	Initial	Elementary	Mature
Boys	18,2%	45,5%	36,4%
Girls	33,3%	50%	16,7%

Font: direct research.

Table 4 - Level of motor maturity to balance on one foot (stability).

Balance on one foot			
	Initial	Elementary	Mature
Boys	45,5%	18,2%	36,4%
Girls	0%	41,7%	58,3%

Font: direct research.

Table 5 - Level of motor maturity stage for the standard bounce (manipulation)

Stage of the standard bounce			
	Initial	Elementary	Mature
Boys	54,5%	45,5%	0%
Girls	75%	25%	0%

Font: direct research.

To test the engine directed walk, the percentages according to the classification were: most boys met in elementary and mature stage with 45.5% and 36.4% according to datapresented in Table 3, while girls between the initialstagewere33.3% and50% Elemental.Unlike the previoustestfor enginebalance onone foot table 4, the boyswere more frequentin theearly stageandmaturewith45.5% with36.4%, since the girls with41.7and 58.3% inelementary%mature.These findingsare contraryto somestudies, such asValdomiro; Neto; Nakamura(2012) andVasconcelos; Araújo(2010) than tothe same standardsthat the present studyis predominantlyin the initial andelementarystages.

The levelof maturitytothestageof the standard bounce predominated inearly elementary and ratings for both sexes(Table 5), with54.5% boysand 45.5% respectivelyforinitial andelementarygirlsand75% for25% toinitial andelemental.These data corroborate those reported by Valdomiro; Neto; Nakamura (2012), where boys and girls were in elementary and early stages.

The findings about the rating for the proposed tests canbe explained by the corresponding age grouprangingbetween 4 and6 yearsas the social context in which they found themselves, the environment factor, the motor trials, as well as the pace of development each child. Importantly, these results relate to the proposed tests in the research, meaning not say that they are

valid for any other tests related to the same standard engine.

CONCLUSION

Standards for engines tested, the results are within the expected / estimated level in the literature for the development of the age group in question, except for the stage to bounce the ball where most individuals is still in the initial pattern. No significant difference between the sexes and among ages for the variables body weight, height and BMI was found. And for investigation of body composition, nutritional status of the most suitable children's BMI for age (Eutrophia).

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NUTRITION, ANTHROPOMETRIC PARAMETERS AND MOTOR DEVELOPMENT OF PRESCHOOL

ABSTRACT

Motor development is characterized by continuous changes over the life of the human being, and childhood is essential for the physical and motor development of the child stage. The aim of the study is to classify the level of maturation of motor patterns proposed by three tests (locomotion, manipulation and balance), establishing the percentage by gender and the difference in anthropometric variables between ages and sexes of children of kindergarten. It is a cross-sectional quantitative study, the main drivers were classified in early, elementary and mature on the critical development phase of directed walk, balance on one foot and bouncing stage of standard patterns. As a collection of variables (age, height and body mass) for calculating and classification of Body Mass Index (BMI), which consists of body weight (kg) divided by height 2 (m). The sample comprised 23 children of both sexes, aged between 4 and 6 years old. Data were tabulated using SPSS version 20.0, to compare gender and age with the variables: mass, height and BMI, we used the model analysis of variance (ANOVA) at 5% significance level. Directed to walk the boys had predominance in elementary and mature stages, while girls in elementary and early, to balance yourself on one foot were boys with the highest concentration in initial and mature with girls in elementary and mature already to the standard bounce the ball both sexes was early and elementary. It is concluded that results were expected in the literature for the development of the age group in question, except for the stage to bounce the ball level. No significant difference was found between sexes and ages for the variables body weight, height and BMI.

KEYWORDS: motor development. BMI in childhood. Preschoolers.

NUTRITION, PARAMETRES ANTHROPOMETRIQUES ET DÉVELOPPEMENT DES MOTEURS DU PRESCOLAIRE

RÉSUMÉ

Le développement moteur est caractérisé par des changements continus sur la vie de l'être humain, et de l'enfance est essentielle pour le développement physique et moteur de l'étage des enfants. L'objectif de l'étude est de classer le niveau de maturation des schémas moteurs proposés par trois essais (locomotion, manipulation et équilibre), pour établir le pourcentage

selon le sexe et la différence dans les variables anthropométriques entre les âges et les sexes des enfants de la maternelle. Il est une étude quantitative transversale, les principaux moteurs ont été classés au début, élémentaire et la maturité de la phase de développement critique de la marche dirigée, équilibre sur un pied et le stade de rebondir de modèles standard. Comme un ensemble de variables (âge, taille et masse corporelle) pour calculer et classification de l'indice de masse corporelle (IMC), qui se compose de poids corporel (kg) divisé par la taille 2 (m). L'échantillon était composé de 23 enfants des deux sexes, âgés de 4 et 6 ans. Les données ont été compilées en utilisant SPSS, version 20.0, à comparer sexe et l'âge avec les variables: masse, taille et l'IMC, nous avons utilisé le modèle d'analyse de variance (Anova) auniveau de signification de 5%. Réalisé à marcher les garçons avaient prédominance dans l'enseignement élémentaire et matures, tandis que les filles dans les écoles élémentaires et audébut, à vous-mêmeenéquilibresurunpiedétaientdes garçons aveclaplus forte concentrationinitiale et lamaturitéavecdes filles dans les écolesélémentaires et mûrissent déjà à lanormerebondirlaballe deux sexes était précoce et élémentaire. Il est conclu que les résultats étaient attendus dans lalittératurepourledéveloppement de la classe d'âgeenquestion, à l'exception de laphase de rebondduniveau de labille. Aucunedifférencesignificative n'a ététrouvée entre lessexeset les âges pour lesvariables de poidscorporel, lataille et l'IMC.

MOTS-CLÉS: développement moteur. IMC dans l'enfance. Enfants d'âge préscolaire.

NUTRICIÒN, PARÁMETROS ANTROPOMÉTRICAS Y MOTORDE DESARROLLODEPREESCOLAR

RESUMEN

El desarrollo motor se caracteriza por continuos cambios durante la vida del ser humano, y la infancia es esencial para el desarrollo físico y motor de la etapa infantil. El objetivo del estudio es clasificar el nivel de maduración de los patrones motores propuestos por tres pruebas (locomoción, manipulación y equilibrio), estableciendoelporcentajeenel género y la diferencia enlas variables antropométricas entre edades y sexos de los niños de jardín de infantes. Se trata de un estudio cuantitativo transversal, losconductoresprincipales se clasificaronenlaprimera, elemental y maduran en la fase de desarrollo crítico de caminata dirigida, elequilibrioenun solo pie y rebotar etapa de patrones estándar. Como una colección de variables (edad, altura y masa corporal) para el cálculo y laclasificación de Índice de Masa Corporal (IMC), que consiste en el peso corporal (kg) dividido por la altura 2 (m). La muestra está compuesta por 23 niños de ambos sexos, con edades comprendidas entre los 4 y 6 años de edad. Los datosfueron tabulados mediante el programa SPSS versión 20.0, para comparar el género y la edad conlasvariables: masa, altura y el IMC, se utilizóel modelo de análisis de varianza (ANOVA) en el nivel de significación del 5%. Dirigida a caminarlos chicos teníanpredominioenlas etapas de primaria y maduros, mientras que lasniñasen primaria y temprana, a balancearseenun pie eranvarones con mayor concentración en la inicial y maduranconlasniñasenla primaria y maduranya a elestándar rebotar la pelota ambos sexos fue temprana y primaria. Se concluye que los resultados se espera que enla literatura para eldesarrollodel grupo de edadencuestión, excepto para la etapa a rebotar elnivelbalón. No se encontraron diferencias significativas entre sexos y edades para lasvariables peso corporal, la altura y el IMC.

PALABRAS-CLAVE: desarrollo motor. IMC en la infancia. Niños en edad pré-escola.

ESTADO NUTRICIONAL, PARÂMETROS ANTROPOMÉTRICOS E DESENVOLVIMENTO MOTOR DE PRÉ-ESCOLARES

RESUMO

O desenvolvimento motor é caracterizado por mudanças contínuas ao longo da vida do ser humano, e a infância é a fase primordial para o desenvolvimento físico e motor da criança. O objetivo do estudo é classificar o nível de maturação de padrões motores propostos por três testes (locomoção, equilíbrio e manipulação), estabelecer a porcentagem por gênero e a diferença de variáveis antropométricas entre as idades e os sexos de crianças do ensino infantil. Trata-se de um estudo transversal e quantitativo, foram classificados os principais padrões motores em inicial, elementar e maduro referente à fase fundamental de desenvolvimento da caminhada direcionada, equilíbrio em um pé só e estagio do padrão de quicar. Assim como a coleta de variáveis (idade, altura e massa corporal) para o calculo e classificação do Índice de Massa Corporal (IMC), que consiste do peso corporal (kg) dividido pela altura2(m). A amostra foi composta por 23 crianças de ambos os sexos, com idade entre 4e 6 anos de idade. Os dados foram tabulados no SPSS versão 20.0, Para comparar os sexos e idades com as variáveis: massa, altura e IMC utilizou-se o modelo de Análise de Variância (ANOVA) com 5% de significância. Para caminhada direcionada os meninos tiveram predominância nos estágios elementar e maduro, enquanto as meninas no inicial e elementar, para equilibrar-se em um pé só os meninos ficaram com maior concentração em inicial e maduro, com as meninas no elementar e maduro, já para o padrão de quicar a bola ambos os sexos ficou em inicial e elementar. Conclui-se que resultados encontrados estão dentro do nível esperado na literatura para o desenvolvimento da faixa etária em questão, exceto para o estagio de quicar a bola. Não foi encontrada diferença significativa entre os sexos e as idades para as variáveis de peso corporal, altura e IMC.

PALAVRAS-CHAVE: desenvolvimento motor. IMC na infância. Pré-escolares.