13 - PHYSICAL FITNESS OF STUDENTS OF DIFFERENT SOCIAL AND ECONOMICAL LEVEL FROM RIO DE JANEIRO

VINICIUS OLIVEIRA DE BARROS; MARIA ELISA KOPPKE MIRANDA;
FÁTIMA PALHA DE OLIVEIRA.
Federal University of Rio de Janeiro, Rio de Janeiro, RJ, Brasil.
maria_koppke@yahoo.com.br

INTRODUCTION

Informations about variables that looks for to evidence growth characteristics, body composition, physical fitness and its interactions could consist, as know, in important pointers of the levels of health in a young population. According to Guedes (1997), the concern in preventing and promote the health of children and adolescents is the main stimulation to the whole world researchers that develop studies in this area.

With measures as height and total body mass you can classify the normality standard about growth and chronological ages of children and adolescents.

The physical fitness of children and adolescents is an increasing concern between health specialists. This interest is justified because the physical activity can to prevent, conserve and increase the functional capacity, anyway, in the young health (OKANO, 2001).

It has been observed a little vantage, for male children, in the physical fitness, especially in the second infancy (6 to 12 ages). In this period the boys present a better physical fitness, mainly in activities that demand muscle potency. However, the girls present a better performance in the balance and flexibility activities.

Although exists the biological factor in relation to the sexual dimorphism in the motor tasks, it doesn't have as not to disrespect the influences of enviroment factors, and mainly social and economical (MANOEL, 2001).

The number of studies that search to obtain relative informations to indices of physical fitness between the young population has grown quickly. Despite this, still there is a great difficulty in the interpretation of the information produced by related studies to the evaluation of the physical fitness of children and adolescents.

MATERIALS AND METHODS

Sample: Participated of these study 103 male students with age between 10 and 15 years, 47 students of public schools (12. 45 1.50 years) and 56 (12.55 1.09 years) of private schools from Rio de Janeiro. In this sample they had been used adolescents without any fiscal problem that they hindered to carry through the motor tests and whose the parents signed the term of consent freedom and evident.

Anthropometric evaluation: The anthropometric measures were estimated by the anthropometric method indicated by ISAK - *International Society for Advancement in Kinanthropometry* (NORTON & OLDS, 2000). Were obtained height (stadiometer, 1cm) and total body mass (TBM, electronic balance SHOENLE, 50g).

Physical fitness testing: The following tests were applied: flamingo balance (total body balance), tapping test of arms (velocity of arms), sit and reach (reach), standing broad jump (explosive force), hand grip test (force), abdominal test (trunk muscle force), bent arm hang (force), velocity shuttle run (velocity and agility) and endurance shuttle run (cardio respiratory endurance), according to *Committee for the development of sport of the council of Europe* (Eurofit, cited by Marins & Giannichi, 1996).

Social and economical levels: The social and economical levels were determinated according to their school: public school (low level) and private (high level). These schools were localizated in north and south zone of the city of Rio de Janeiro.

Statistics Analysis: The data were presented as average and standard deviation. For the statistics analysis was realized the Excel (2003) adopting the t-*Student* test non-pareated for the comparisons between groups (p = 0.05).

Ethical aspects: This study was approved by the Committee of Ethics of University Hospital Clementino Fraga Filho (UFRJ), according determination of National Committee of Health n° 196/96. Before the application of the tests, the students were informed about the protocols, being able to leave the evaluation at any time. The data were analyzed without identification, to preserve the students' identify.

RESULTS

Analyzing the students' anthropometrics characteristics (Table 1), was observed that the groups do not differ for the variables: chronological age, total body mass and height measures (without significantly differences for the average values), pointing for a similar physical development between the analyzed groups.

TABLE 1: ANTHROPOMETRIC CHARACTERISTICS

	Public School (n=47)	Private School (n=56)	t-*Student* (p)
Age (years)	12.45 ± 1.50	12.55 ± 1.09	0.68
Total body mass (kg)	49.20 ± 13.31	50.42 ± 8.66	0.58
Height (m)	1.56 ± 0.12	1.58 ± 0.10	0.55

Average, standard deviation and p-value for anthropometrics characteristics.

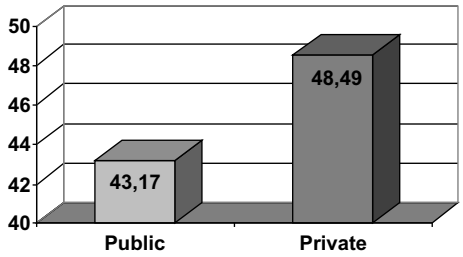
About physical fitness tests (Table 2), significantly differences were found only for the seat and reach test (p=0.02) and the reply time test (ruler) (p=0.02).

TABLE 2: RESULTS OF PHYSICAL FITNESS TESTS

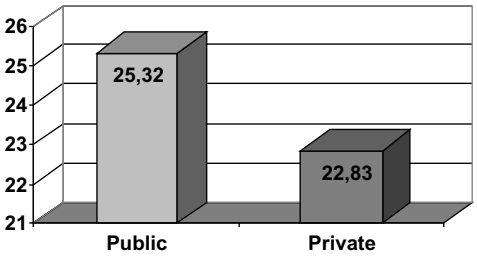
Variables	Public School (n=47)	Private School (n=56)	p-value
ABDOMINAL (repetitions, 30s)	19.45 ± 5.91	21.18 ± 6.30	0.15
HAND GRIP right (kg)	25.67 ± 7.29	24.51 ± 7.03	0.41
HAND GRIP left (kg)	24.56 ± 7.85	22.86 ± 6.89	0.24
SHUTTLE RUN endurance (time, s)	11.00 ± 2.65	11.47 ± 1.10	0.23
SHUTTLE RUN velocity (time, s)	22.54 ± 2.74	23.25 ± 2.93	0.21
SIT AND REACH (length, cm)	43.17 ± 14.66	48.49 ± 7.56	**0.02**∗
FLAMINGO BALANCE (n° attempts)	3.64 ± 2.41	3.49 ± 2.90	0.82
NELSON SPEED OF MOVEMENT TEST (length, cm)	25.32 ± 5.40	22.63 ± 5.68	**0.02**∗
TAPPING TEST OF ARMS (time, s)	13.71 ± 3.11	13.95 ± 5.05	0.78
BENT ARM HANG (time, s)	3.15 ± 3.53	2.86 ± 3.25	0.66
STANDING BROAD JUMP (length, cm)	145.99 ± 32.22	143.24 ± 39.86	0.70

Average, standard deviation and p-value for the physical fitness tests.
∗ Significantly differences: p≤0.05.

Grafic 1: seat and reach test (distance, cm)



Grafic 2: bent arm hang (time, s)



The joined results indicates high values for flexibility and speed of time of reply for boys of the private school.

DISCUSSION

The results found in this study, with relation to the anthropometrics characteristics (chronological age, total body mass and height), point to a similar physical development as soon for boys of the public school, as the private school.

These results corroborate with the study produced for Barros (2006) where had also not been found regional differences in any one of the variables in the male students.That is a good prognostic to the growth and development of children and young of different families of social and economical levels.

In the studied sample, this factor seems doesn't limit the development of these adolescents of low economical level analyzed.

Flexibility, that was one of the analyzed variable in the tests of physical fitness, in a general way, it is defined as being the capacity of a joint get to move for great amplitude of movement (NIEMAN, 1999).

Thus, is perceived that the flexibility is an important physical capacity in the life of all human, also in the accomplishment of some activities of the daily one, therefore, for minor who is the executed action, there is the necessity of a minimum of flexibility in the joints, mainly in the dorsal region and in the posterior muscles of the thigh (ACSM, 2000).

The results of this study, relationated to the test that analyzed this physical valence was significantly favorable to the boys who studied in the private school (high social and economical level).

Corroborating, thus, with the study of Negrão (2000) in which it was observed that the students of the private school were 215% better in relation to the public school children.. That is not confirmed in the study of Bragada (1995), where the Portuguese girls of the agricultural way reveal high values without significantly differences compared with the girls of the urban zone.

The reaction time, that had significantly results to the boys of the private, it can be appraised as the time between the stimulation and the beginning of the reply (MARINS & GIANNICHI, 2003). It is important to say that is a variable influenced for some factors: the involved sensorial agency, intensity of the stimulation, general muscular tension, motivation etc. Although to be a factor considered innate, the reaction time can be trained (JOHNSON & NELSON, 1989). With this, can be considered the use of bent arm hang to an excellent parameter, despite the scarcity of works published about this subject.

CONCLUSIONS

The adolescents of private schools, of this study, presented only high reach (flexibility of the hip, back and posterior muscles of the inferior members) and better time of reply to the visual stimulation of that the adolescents of the public school. The social and economical level didn't promote evident morphologic differences between the groups.

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Rua Joaquim Méier, n° 810/ apt° 101 - Méier
(21) 2269-0090 - vinnyeefd@yahoo.com.br

PHYSICAL FITNESS OF STUDENTS OF DIFFERENT SOCIAL AND ECONOMICAL LEVEL FROM RIO DE JANEIRO

ABSTRACT

The aim of this study was analyze the physical fitness of the male students of public (PuS) and private (PrS) school from Rio de Janeiro. The social and economical level were determinated according to their school: public school (low level) and private (high level). Participated of these study 103 male students with age between 10 and 15 years, 47 students of public schools (12.45 1.50 years) and 56 (12.55 1.09 years) of private schools from Rio de Janeiro. Were obtained the height and total body mass to characterize the sample and the motor tests had been used to analyze the physical fitness (*Eurofit*): flamingo balance, tapping test of

arms, sit and reach, standing broad jump, hand grip test, abdominal test, bent arm hang, velocity shuttle run and endurance shuttle run. For the statistics analysis was realized the Excel (2003) adopting the t-Student test non-pareated for the comparisons between groups (p = 0,05). It was observed that the groups don't differ for the variable: chronological age, total body mass and height (without significantly differences between the groups), a similar physical development between the analyzed groups was identified. About the tests of motor ability, significantly differences had been found only for the seat and reach test (p=0.02) and the reply time test (ruler) (p=0.02), both with favorable values to PrS group. Pupils of PrS had presented only bigger reach (flexibility of the hip, back and posterior muscles of the inferior members) and better time of reply to the visual stimulation of that of the pupils of the PuS. The social and economical condition didn't promote evident morphologic difference between the groups.

KEY WORDS: adolescents, physical fitness and social and economical levels.

APTITUDE PHYSIQUE DES ÉTUDIANTS AVEC LE NIVEAU SOCIAL ET ÉCONOMIQUE DIFFÉRENT, HABITANTS DANS LE RIO DE JANEIRO

RESUMÉ:

Objectif: Le objectif de cette étude était d'analyser la l'aptitude physique des étudiants enregistré dans les écoles d'Etat et les ecoles privées de la ville de Rio de Janeiro. Le niveau économique des étudiants a été déterminé par la caractéristique de l'école (écoles d'Etat=baisse niveau et école privée=haut niveau). **Matériel et méthodes:** 56 garçons d'école privée (12,55 années ±1,09) et 47 de les écoles d'Etat (12,45 années ±1,50) ont été analysés. Le poids et la taille de corps avait été mesuré afin de caractériser physiquement les étudiants. Le capacité moteur a été avalié par la norme d'Eurofit:: force du tronc (redressements station assise); force statique (dynamométrie manuelle); endurance cardio-respiratoire (test de course navette d'endurance) et vitesse (test de course navette de velocité); souplesse (flexion tronc avant en position assise); équilibre général (test d'équilibre Flamingo); temps à la réponse visuelle (essai de la règle); vitesse des membres (teste de frappe de plaques); endurance musculaire des bras et des épaules (suspension bras fléchis) et force explosive de jambes (saut en longueur sans élan). L'analyse statistique a été faite dans l'Excel 2003 (Microsoft) et le *t-Student test* a été adopté pour la comparaison entre les groupes (p=0,5). **Résultats:** Il n'y avait aucune signification statistique pour l'âge, masse de corps et stature entre les entre les deux groupes d'étudiants. Les groupes semblent être au même niveau du développement physique. On a observé la signification statistique seulement dans la souplesse (p=0,02) et à à la réponse visuelle (p=0,02), avec des résultats favorables à l'étudiant' d'école privée. **Conclusion:** On conclut que les étudiants de l'école privée avaient une plus grande souplesse et une meilleure temps de réponse visuelle par rapport aux étudiants de l'école d'Etat. Il n'y a évidence que le niveau social et économique de les étudiants a déterminé des différences
entre les étudiants.

MOTS CLES : Adolescent, aptitude physique et niveau social et économique.

CAPACIDAD FISICA DE ESTUDIANTES CON DIVERSO NIVEL SOCIAL Y ECONÓMICO, HABITANTES EN RÍO DE JANEIRO

RESUMÉN:

Objetivo: El objetivo de este estudio fue analizar la capacidad física del estudiante registrado en escuelas privadas y públicas de la ciudad de Río de Janeiro. El nivel social y económico de los estudiantes fue determinado por la característica de la escuela (públicas=bajo y privadas=alto). **Material y Métodos**: analizaban a 56 muchachos de escuela privada (12,55 años ±1,09) y a 47 estudiantes de las escuelas públicas (12,45 años ±1,50). El total de la masa y de la estatura del cuerpo fue medido para caracterizar físicamente la muestra. Le estándar de *Eurofit* fue usado para avaluar la capacidad física: Abdominal; preencajo manual (*dynamometry*); resistencia y capacidad del velocidad (*Shutle run*); flexibilidad (prueba del alcance); balance (prueba del Flamenco); tiempo a la respuesta visual (prueba de la regla); velocidad del brazo (prueba que golpea ligeramente); resistencia del brazo (sustentación en la barra) y energía de las piernas (salto horizontal). El análisis estadístico fue hecho en el Excel 2003 (Microsoft) y el *t-Student test* fue adoptado para la comparación entre los grupos (p=0,5). **Resultados:** No había significación estadística para la edad, masa del cuerpo y estatura. Los grupos de los estudiantes parecen estar en el mismo nivel del desarrollo físico. La significación estadística fue observada solamente en la flexibilidad física (p=0,02) y para el tiempo a la respuesta visual (p=0,02), con los resultados favorables a les estudiantes de la escuela privada. **Conclusión:** Se concluye que los estudiantes de la escuela privada habían presentado solamente mayor flexibilidad y una más rápida contestación a un estímulo visual que los estudiantes de la escuela pública. No hay evidencias que el nivel social y económico promovió diferencias de capacidad física entre los estudiantes.

PALABRAS CLAVES: Adolescentes, capacidad del neuromotora y nivel social y económico.

CAPACIDADE FÍSICA DE ESCOLARES DE DIFERENTES NÍVEIS SÓCIO-ECONÔMICOS DO MUNICÍPIO DO RIO JANEIRO

RESUMO:

O objetivo deste estudo foi analisar a capacidade física de escolares do sexo masculino das redes de ensino pública (Epu) e particular (Epar), em algumas regiões do município do Rio de Janeiro. O nível sócio-econômico dos alunos foi determinado de acordo com a característica da escola (pública ou particular). Foram analisados 103 escolares, sendo 56 meninos da Epar (12,55 ± 1,09 anos) e 47 da Epu (12,45 ±1,50 anos). Foram mensuradas a massa corporal total e a estatura a fim de caracterizar a amostra. Foram utilizados testes motores que analisaram a capacidade física (seguindo o padrão Eurofit): força abdominal; preensão manual; *shutle run endurance*; *shutle run*; sentar e alcançar; equilíbrio do flamingo; teste da régua; *tapping* test; suspensão na barra e impulsão horizontal. A análise estatística foi realizada no programa Excel (Microsoft, 2003) e o teste t-*Student* não pareado foi empregado na comparação entre os grupos (p 0,05). Os resultados encontrados não apresentaram significância estatística para as variáveis: idade, massa corporal total e estatura (apontando um desenvolvimento físico semelhante entre os grupos). Em relação aos testes motores foram encontradas diferenças estatisticamente significantes apenas para o teste de sentar e alcançar (p=0,02) e o teste da régua (p=0,02), ambos com valores favoráveis ao grupo da Epar. Conclui-se que os alunos das Epar apresentaram maior flexibilidade do quadril, dorso e músculos posteriores dos membros inferiores e melhor tempo de resposta, comparados aos alunos da Epu. Desta forma constata-se que a condição sócio-econômica promoveu diferenças morfofuncionais evidentes apenas para estas duas capacidades físicas.

PALAVRAS-CHAVES: adolescentes, capacidade física e nível sócio-econômico.