128 - MORPHOFUNCTIONAL DIFFERENCES BETWEEN MALE SCHOOL CHILDREN FROM URBAN AND RURAL AREAS

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1. INTRODUCTION

Possible social and anthropometrical differences among individuals from rural and urban areas have been the focus of some studies (SWSON et al, 2005; DUBBERT et al, 2004), however studies have showed few findings related to functional-motor differences.

There are many groups and societies with great diversity in Brazil, causing behavioral changes in each region. So, it's possible to compare the main differences between urban and rural areas, mainly inside the schools of these places.

According to BOUCHARD and STHEPHARD (1993) in GLANER (2002) the levels of physical activity and fitness are influenced by heredity, personal attributes and, mainly, by life style and environment.

Similar studies from PITANGA (1998) show that the levels of physical activity, besides having a genetic component, are influenced by non-transmissible environmental factors, suggesting to motivate the population to increase physical activities through body move as in the work environment as leisure in order to increase the daily energy expenditure.

Habits related or not to sports practice diverge significantly among individuals from rural and urban areas (DUBBERT et al, 2004).

According to GLANER (2002) there are many differences between both areas and environment: considering that there are many spaces for innumerous activities in rural zone, the diary occupations are moderately active causing a higher energy expenditure, even the leisure time being used for resting. The urban zone life demands means of transportations, daily life inside closed places, lack of activities (media, computer influences).

Studies have shown there is a close relationship between physical activity levels and low indexes of body fat in children and adolescents. The more active the child is, less the possibility of fat accumulation and so a better motor development will happen (BAJERSKI, 1998).

Better aerobic fitness can prevent diseases and improve the ability of developing motor daily activities, decreasing body fat by positive changes in metabolic, hormonal and respiratory functions of the ones who practice aerobic exercises regularly. When focusing health-related physical activity, more attention must be paid on cardiorespiratory fitness.

Muscular endurance is also an important component of physical fitness and is directly related to health and life quality. According to PEREIRA (2004), hip and trunk flexor muscles endurance is indispensable not only to the maintenance of body posture, but mainly to guarantee the autonomy in basic moves such as: walking, sitting, standing up, going upstairs among other daily tasks, and also it's considered a good indicator of physical fitness. As well as the muscle endurance, strength provides people to be able to perform tasks with less fatigue (American College of Sports Medicine ACSM, 1996 in PEREIRA, 2004).

MAITINO (2000) suggests that children from schools should access information about regular and systematic physical activities benefits in order to acquire and maintain satisfactory levels of physical fitness, and also practice a healthy life style not only during the scholar period but keeping it when adults. Actually, it's not only because of physical fitness, but there is the aim of offering the students information about education and health-related physical activity, also aiming the fight against sedentarism.

2. METHODOLOGY

124 middle school students from “Juscelino Kubitchek” State School (rural area Lapa City, Parana State) and 128 from “Merley Mell” Municipal School (urban area Curitiba City, Parana State) were assessed, totalizing 251 assessed children.

Instruments and Procedures

Variables related to physical fitness were:

1) Body Composition height (cm) using an anthropometrics tape fixed vertically on a wall, the individual on a standing and orthostatic position (PO) and barefoot; body mass assessed on a Plenna Clear digital scale with precision of 0.1 kg, where the individual stood on a static and standing position, barefoot; relaxed arm, waist, hip, thigh and leg perimeter, using Gullick anthropometrics tape with precision of 0.1 cm; triceps, subscapular, abdomen and leg skinfolds, using Cescorf caliper with precision of 0.1 mm, according to JACKSON and POLLOCK (1985) standards.

2) Cardiorespiratory fitness Leger Test or 20m Shuttle-Run Test according to LEGER et al (1988), where: VO_2max = 31.025 + (3.238 x final stage speed) - (3.248 x years of age) + (0.1536 x years of age x final stage speed).

3) Muscular Endurance 60-second hip flexors test, where: IR = ((FQ60/FQ30)/2) x 100 (FQ60 = total of repetitions during 60 seconds and FQ30 = total of repetitions during 30 seconds.

4) Strength and Muscle Power Vertical Jump test according to JOHNSON and NELSON (1979) protocol and calculated according to SAYERS et al (1999) by the formula: Pot-P (watts)= 60.7 x Vertical Jump (cm) + 45.3 x Body Mass (kg) 2055.

Descriptive statistics, absolute values and means were used through SPSS 10.0 software. Student t-test for independent variables was applied to verify significant differences with p=0.05.

3. RESULTS AND DISCUSSION

Table 1. Mean and Standard Deviation of school children anthropometrical profile from urban and rural areas.

Variables	Urban School (N= 128)	Rural School (N= 124)
Age (years)	13.16 ± 1.79	12.39* ± 1.38
Weight (kg)	47.81 ± 12.52	40.88* ± 9.48
Height (cm)	155.98 ± 12.50	149.6* ± 10.28
BMI	19.37 ± 3.22	18.04* ± 2.40
% Body Fat	19.78 ± 12.58	16.42* ± 6.94

* Significant Difference from Urban School (p?0.05)

Table 1 shows that for all anthropometrical variables, rural school presented lower indexes which are statistically significant. By the hypothesis that children from rural areas make part of lower social classes, and many times need to work hard out of school period, do not have easy access to media, walk long distances until school, among other matters that can influence their body fat levels, weight and BMI, making them lower than children who live in the city, that use means of

transportation, spend much time in home watching TV or using the computer, live in areas with few spaces for activities, spend most time of the day sitting and else have higher caloric meals.

Table 2. Means and Standard Deviation of school children functional profile from urban and rural areas:

Variables	Urban School (N= 128)	Rural School (N= 124)
Hip Flexion 30" (repetitions)	18.84 ± 4.27	16.55* ± 3.25
Hip Flexion 60" (repetitions)	35.26 ± 9.06	30.73* ± 5.90
Vertical Jump (cm)	33.32 ± 8.30	28.96* ± 6.63
VO_2Max	44.15 ± 5.25	45.52* ± 3.52
Power (Watts)	2133.13 ± 868.54	1554.93* ± 596.39
Muscular Endurance	91.99 ± 17.99	93.24 ± 8.72

* Significant Difference from Urban School (p?0.05)

Functional assessment presented in table 2 shows that only muscular endurance values from hip flexion test did not point significant difference between rural and urban school children. 30 and 60-second repetitions from this same test, as well as in vertical jump test and power, showed that urban children are in better conditions, different from cardiorespiratory fitness where children from rural areas are better. These results show that when assessment demanded a higher endurance related to a lower body fat index and all variables presented in table 1, children from rural area showed better indexes for cardiorespiratory fitness and muscular endurance (although for the last one no significant differences were found). When assessment demanded vertical jump muscle power and no endurance, urban children showed higher indexes. The explanation for these results is not very clear. Environmental matters as well as proper places found in urban schools may be related to it.

4. CONCLUSIONS

There are many particularities between rural and urban schools, confirmed by not only the social aspects but also physical and anthropometrical matters.

Male rural students present a higher cardiorespiratory fitness and muscular endurance than urban children, and these when also compared show higher body fat indexes, although higher vertical jump power. In opposite to GLANER (2002) studies, where 101 boys from rural area and 130 from urban area of Santa Catarina state were assessed through strength and muscular endurance tests, flexibility, cardiorespiratory fitness, body fat and BMI, it was found that rural population presented better indexes for physical and motor tests with no significant differences for anthropometrical results, pointing that these boys have only motor and functional components better than urban population, which is more sensitive to non-transmissible chronicle diseases related to lower health-related physical fitness. Thus, according to LIMA (1996), when aerobic fitness among male school children was compared in different atmospherical pollution levels (Araucaria and Curitiba cities), finding a better maximal oxygen consumption of Araucaria students, maybe due to a bigger free space that can favor the regular physical activities practice. However, LIEBMAN et al (2003) observed a prevalence of 70% of overweight among men and 59% among women in north-American rural population, results related to inappropriate food habits and low oriented physical activity index.

Studies of MATSUDO (1995) related to comparisons of male school children from São Caetano do Sul and Ilha Bela cities (low social-economical level) show that in the second city children from 12-14 years old presented lower weight and height values than in the first city, which presented lower strength of lower limbs in 11, 13 and 15 years old. In this same study, Ilha Bela school children presented a delay on maturation levels of these variables (weight, height and strength of lower limbs). This indicated that in situations of low social, economical and nutritional levels, there is a late development of physical fitness, physical structure and motor development.

For this reason, some significant differences may be explained by the diversity of daily routine of the assessed population, but other reasons are not so clear by the fact that the references about this issue are low. This way, more studies to provide a better understanding of rural and urban children and adolescents reality are suggested.

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MORPHOFUNCTIONAL DIFFERENCES BETWEEN MALE SCHOOL CHILDREN FROM URBAN AND RURAL AREAS

ABSTRACT

Different local characteristics and realities are found even in regions located in the same place or city. This issue can be strongly confirmed by the fact that different habits, lifestyles and work are found in these same regions. Nowadays, the space between rural and urban areas environmental conditions is becoming bigger and bigger due to the improvement of technology and increasing of violence and people's needs. This situation also occurs inside the schools, where there are many problems of structure, teachers and illiteracy percentage (worse in rural schools). The aim of this study is to quantify the results found in both places by showing data about body composition, motor skills and physical fitness of school children from middle school (5th to 8th grade) from urban and rural areas, finding explanations for this diversity and so provide means to improve the physical fitness and life quality of the children in and out of the school environment.

Key words: Rural School Urban School Differences Physical Fitness

DIFFéRENCES MORPHOFONCTIONELLES ENTRE DES éCOLIERS DU SEXE MASCULIN DES SECTEURS URBAINE ET RURAL

RÉSUMÉ

Chaque région, même dans um seul lieu ou une ville possède certaines caractéristiques et réalités diversifiées. Cela si affirme plus fortement encore quand s´agit de lieux avec des habitudes, styles de vie et travail différents. Dans les jours d´aujourd´hui, avec l´avance de la technologie, violence et nécessités de la population, de plus en plus les secteurs urbaine et rural s´éloignent en si traitant de conditions et ambiant résidentiels.Cela se donne aussi à l´intérieur des écoles de ces lieux, dans des termes de structure, professeurs et pourcentage d´analphabétisme (la majorité pire dans les écoles rurales). En cherchant quantifier les résultats de ces deux pôles distincts, le présent travail a démontré des donnés au niveau de composition corporelle, habilités motrices et résistance d´enfants de la 5° à la 8° série des secteurs urbaine et rural en développant justifications pour cette diversité et en fournissant subsides pour améliorer l´aptitude physique et la qualité de vie de les mêmes à l´intérieur et dehors de l´ambiant écolier.

Mots-clés: école rurale, école urbaine, diférrences, aptitude physique.

DIFERENCIAS MORFOFUNCIONALES ENTRE ESTUDIANTES DEL SEXO MASCULINO DE LAS ZONAS URBANA E INTERIOR

RESUMEN

Cada región, en un mismo local o ciudad, posee determinadas características y realidades distintas. Eso se afirma más fuertemente todavia cuando se volca a locales com costumbres, estilos de vida y trabajos distintos. Em los dias actuales, com el avance de la tecnologia, violência y necessidades de la población, cada vez más las áreas urbana e interior se alejan cuando se trata de condiciones y ambientes residenciales. Eso también ocurre dentro de lãs escuelas de estos locales, em términos de estructura, profesores y percentual de analfabetismo (la mayoría peor en lãs escuelas rurales). Buscando cuantificar los resultados de estos dos pólos distintos, el presente trabajo há demostrado datos al nível de composición corporal, habilidades motoras y resistencia de niños de la 5ª a 8ª série de lãs zonas urbana e interior, desarrollando justificativas para esta diversidad y proporcionar subsídios para la mejora de la aptitud física y calidad de vida de lãs mismas dentro y fuera del ambiente escolar.

Palabras-chave: Escuela del Interior Escola Urbana Diferencias Aptitud Física

DIFERENÇAS MORFOFUNCIONAIS ENTRE ESCOLARES DO SEXO MASCULINO DAS ÁREAS URBANA E RURAL

RESUMO

Cada região, mesmo num único local ou cidade possui determinadas características e realidades diversificadas. Isso se afirma mais fortemente ainda quando se trata de locais com costumes, estilos de vida e trabalho diferentes. Nos dias de hoje, com o avanço da tecnologia, violência e necessidades da população, cada vez mais as áreas urbana e rural se distanciam em se tratando de condições e ambiente residenciais. Isso também se dá dentro das escolas destes locais, em termos de estrutura, professores e percentual de analfabetismo (a maioria pior nas escolas rurais). Procurando quantificar os resultados desses dois pólos distintos, o presente trabalho demonstrou dados ao nível de composição corporal, habilidades motoras e resistência de crianças de 5ª a 8ª série das áreas urbana e rural, desenvolvendo justificativas para essa diversidade e proporcionando subsídios para melhorar a aptidão física e qualidade de vida das mesmas dentro e fora do ambiente escolar.

Palavras-chave: Escola Rural Escola Urbana Diferenças Aptidão Física.