77 - PHYSICAL FITNESS RELATED TO HEALTH OF GIRLS AGING BETWEEN 8 AND 11 YEARS OLD

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INTRODUCTION

The Physical Fitness Related to Health (PFRH) is defined as the capacity of accomplishing daily tasks vigorously, showing lines and features which are associated to a low risk of the early development of hypokinetic diseases (PATE, 1988).

This concept is basically derived from the clinical studies which have emphasized the incidence of more significant health problems among elderly, adults and teenagers with a sedentary life. The concept that includes the PFRH is that a better index in each one of its components is associated to a lower risk of developing diseases and/or functional incapacities (ACSM, 1996). The PFRH embodies 5 components which comprise the morphological, functional, motor, physiological, and behavior factors.

The morphological component concerns the body composition, most specifically the amount of fat that when in excess is related to several non-transmittable physical diseases such as: high levels of blood cholesterol, hypertension, osteoarthritis, diabetes, vascular-cerebral accident, several types of cancer, coronaries diseases, besides the psychological and social problems (ACSM, 1996; BOUCHARD, 2000; NIEMAN 1999).

The cardio-respiratory fitness or the capacity of capturing, transporting, and spending oxygen in middle-intensity activities during a moderate or extended period of length refers to the functional component (ACSM, 1996; HOOTMAN *et al*, 2001).

The motor components embody the force/resistance and flexibility. The force/resistance is related to the muscle capacity or a group of muscles' capacity of sustaining repeated contractions along certain period of time. The flexibility concerns the locomotion extent of a certain articulation. Together, force/resistance and flexibility prevent postural and articulations problems, muscle-skeletal harms, osteoporosis, lombalgy, and located fatigues (GEORGE, FISHER e VEHRS, 1996).

The physical tests battery and the measure of body fat proposed by the AAHPERD (1988) is one of the most accepted techniques for the PFRH evaluation among different countries' researchers. This alliance shows reference criteria scores for each PFRH component. These scores are used as parameters for indicating whether the subject has a recommended PFRH (GLANER, 2002).

According to Glaner (2002), the PFRH evaluation in scholar students seems to be a primary intervention alternative of low cost, large reach, besides being of easy reproduction and interpretation. The same author mentions that the evaluation of the PFRH components becomes important for one to be able to interact sharply within the information, understanding, promotion and motivation of the habitual practice of physical exercises along the whole life in a society in which the chronic non-transmittable diseases have their hidden period in childhood and adolescence due to the hypokinesias.

The accomplishment of the PFRH components evaluation in the schools is of fundamental importance for the detection as early as possible of the potential health risks besides providing subsidies for the capable organs to develop actions which help to promote the child's well being.

Starting from this point of view, the present paper has analyzed the PFRH of girls aging between 8 and 11 years old from a local school of the city of Santa Maria-RS.

METHODOLOGY

The study group has been composed of 51 female students aging between 8 and 11 years old.

Tests and protocols suggested by the AAPHERD (1988) have been applied on the analysis and collection of the PFRH variables: Body Composition (body mass index - BMI and scoring of triciptal and calf skin folds - SF), Flexibility (sitting and reaching), Resistance and Located Muscular Force (Abdominal and Altered Bar), and Cardio-respiratory Resistance (Mile Test). Due to physical space problems within the school it has not been possible to accomplish the data collection referring to the mile test.

The data have been classified according to the criteria established by the AAHPERD (1988) (Table 01):

Table 01. **Reference criteria for girls established by the AAHPERD (1988)**

Age	BMI (Kg/m^2)	ΣSF (mm)	Flexibility (cm)	Abdominal (repetitions)	Bar
8 years old	**14 - 20**	**16 - 36**	**25**	**26**	**1**
9 years old	**14 - 20**	**16 - 36**	**25**	**28**	**1**
10 years old	**14 - 21**	**16 - 36**	**25**	**30**	**1**
11 years old	**14 - 21**	**16 - 36**	**25**	**33**	**1**

Two trainees took part in the research, coached for the accomplishment of the anthropometric measurements, skin folds, and management of the physical fitness tests. A digital balance with scales of 100g has been used for the measurement of body mass while a stadiometer with scale in millimeters has been applied for the measurement of hight according to Alvarez and Pavan's protocol (2003). The Benedetti, Pinho and Ramos' protocol (2003) has been applied for the measurement of the skin folds.

The tests have been accomplished along the month of October, 2004 during the scholar physical education classes.

Statistical Analysis

The 2000 Excel Version has been the program used for the data tabulation. The descriptive analysis has been

accomplished in the SPSS statistical package (Statistical Package for the Social Sciences) 10.0 Version for Windows.

Results and Discussion

The table 2 shows the average and standard deviation of the tests.

Table 02. Average and Standard Deviation of the study Group n=51

Age	N	BMI	ΣSF	Flexibility	Abdominal	Bar
8 years old	5	17,0 ± 2,2	31,4 ± 7,7	24,6 ± 6,3	25,4 ± 7,7	4,0 ± 2,5
9 years old	18	17,5 ± 3,1	31,3 ± 13,8	23,4 ± 5,7	26,8 ± 8,6	2,4 ± 1,9
10 years old	11	18,6 ± 1,7	35,2 ± 9,4	23,1 ± 6,5	25,1 ± 6,5	2,5 ± 2,7
11 years old	17	18,7 ± 3,4	33,9 ± 11,7	23,4 ± 6,7	25,7 ± 6,9	3,5 ± 2,4

No statistically significant difference has been found among the ages within the analyzed variables (Kruskal-Wallis' non-parametric test has been applied for BMI, Abdominal and Bar and for SF and flexibility the Analysis of Variance was the applied test).

The Illustration 01 shows the variables' behavior according to the age.

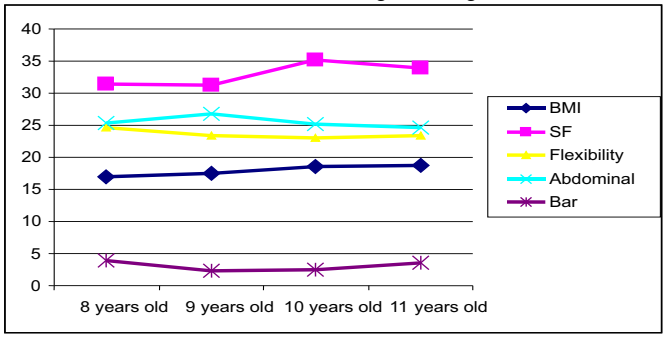

Illustration 01. Variables' behavior according to the age

The variables have shown a small variation with the age increase. There has been an increment on SF at the age of 10 years old and posterior decrease. The BMI was shown to be linear and increasing along the age. The scores of the flexibility test, abdominal and bar have indicated different variations according to the age.

In the Guedes and Barbanti's study (1995) girls have shown a tendency to present relatively small values at each year from 7 to 9 years old and, subsequently, they have pointed a quite important increase by around 15 years old. In the present study, a decrease on the results until the age of 10 years old was found.

Guedes and Barbanti (1995) mention that in most of the motor tests girls achieve superior results around 10-11 years old with posterior decrease or constancy of values. However, the girls on this study did not present a similar behavior to that one proposed by the authors.

The description of the students' arrangement in relation to the health criteria adopted for each one of the physical fitness components related to the health is presented on the tables 03 and 04.

Table 03. Predominance (%) of the girls in the Healthy Zones of Physical Fitness at 8 and 9 years old.

Test	8 years old			9 years old		
	Below	Within	Above	Below	Within	Above
BMI	0	100	0	0	77,8	22,2
ΣSF	0	60	40	0	61	39
Flexibility	60	40	-	72,2	27,8	-
Abdominal	40	60	-	61,1	38,9	-
Bar	0	100	-	22,2	77,8	-

Table 04. Predominance (%) of the girls in the Healthy Zones of Physical Fitness at 10 and 11 years old.

Test	10 years old			11 years old		
	Below	Within	Above	Below	Within	Above
BMI	0	100	0	0	82,36	17,64
ΣSF	0	54,55	45,45	5,9	64,7	29,4
Flexibility	54,54	45,46	-	58,82	41,18	-
Abdominal	72,72	27,28	-	82,35	17,65	-
Bar	16,7	83,3	-	0	100	-

In agreement with a study accomplished in Canoas (BERGMANN *et al*, 2005), the BMI and SF were the variables presenting smaller occurrence of students below the healthy zone with the most of them being within the suggested levels of physical fitness (except for the SF at 10 years old).

High and significant correlations between the BMI and SF variables have been found in the ages of 8, 9 and 11 years old (r= 0,904, r= 0,938 e r=0,852, respectively). Nevertheless, the age of 10 has presented a weaker correlation (r=0,670, p =0, 02), though significant, in relation to the others. It may probably explain the fact that 100% of the children in that age is classified as healthy with regard to BMI and at the same time, 45,45% of them are above the health patterns in the SF.

In the neuromuscular components there have been tendencies to a major occurrence in the zone under the suggested for the muscular resistance (abdominal) and for the flexibility, except for the 8 years old group. Only in that age a strong and significant correlation (r= -0,961, p =0,009) has been observed between flexibility and abdominal, however, inverse. In other words, within this study group, girls presenting good flexibility have evidenced unsatisfactory results for the abdominal test. The muscular strength (bar) has presented larger frequency in the ideal zone for the ages.

It is preoccupying the occurrence of scholars out of the platform suggested by the health criteria adopted. However, it is not unexpected, once that other studies, even though using a different approach (for example, the Fitnessgram), achieved similar results to the ones of this study (BERGAMANN *et al*, 2005; GAYA *et al*, 2002; GUEDES and GUEDES, 1993).

The results point out to the role of the school physical education in children's life since that a lot of them only have access either to the sportive practice or to the participation in oriented programs of physical exercises inside the school. Thus, the physical education classes must look for mechanisms of developing and/or contributing for the most appropriate development of the levels of physical fitness related to its students' health.

It is opportune to emphasize the need of being careful when interpreting these results, once that the adopted criteria are international ones (GUEDES e GUEDES, 1993). The use of these criteria becomes necessary when the objective is evaluating the physical fitness of children and adolescents by reference criteria, since still there are no reference criteria for the physical fitness of children and adolescents starting from data of the Brazilian population, in spite of the existence of some efforts in this sense.

CONCLUSIONS

The results have been considered preoccupying, mainly regarding muscular strength and flexibility, where a great amount of the scholar students have shown scores below the minimum limits of the healthy zones of fitness related to the health. Thus, it was concluded that the study group is exposed to postural and articulations problems, muscle-skeletal harms, osteoporosis, lombalgy, and located fatigues (GEORGE, FISHER e VEHRS, 1996).

Thus, larger attention is suggested with regard to the levels of physical fitness of children and adolescents mainly where the school and physical education classes can contribute for an improvement of the PFRH components and an encouragement on the search for a physically active life even after the school years.

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PHYSICAL FITNESS RELATED TO THE HEALTH OF GIRLS AGING BETWEEN 8 AND 11 YEARS OLD
ABSTRACT

Introduction: The habitual exercise and the sports practice increase the physical performance leading to an improvement of the body functional efficiency. The physical activity practice exerts influence and is influenced by the indexes of physical fitness which determine and are determined by the health condition. In children and adolescents the levels of physical fitness must not be faced only as results of prior experiences but also as an element of promotion of future life styles. **Objective:** To analyze Physical Fitness Related to Health (PFRH) in girls aging between 8 and 11 years old of a local school of the city of Santa Maria -RS. **Methodology:** The Study Group has been composed of 51 female students aging between 8 and 11 years old. For the analysis and collection of the PFRH variables, tests and protocols suggested by the AAPHERD (1988) have been applied. Descriptive statistics was used for the data analysis. **Results:** The girls have presented an age of 10 years old in average, BMI of 18 3 kg/m², SF of 33 12 mm, 23 6 cm in the flexibility test, and 26 7 e 3 2 repetitions in the abdominal test and of bar, respectively. The results were shown to be preoccupying, mainly regarding to muscular resistance and flexibility, where most of the students have presented low scores in relation to the minimum limits of the healthy zones of fitness related to the health. **Conclusion:** Due to the unsatisfactory scores regarding the components of muscular resistance and flexibility, one can verify that the study group is exposed to postural and articulation problems, muscle-skeletal harms, osteoporosis, lombalgy, and located fatigues.

Keywords: PFRH, girls, health

L'ENDURANCE ET LA SANTÉ CHEZ LES FILLES DE 8 ET 11 ANS
RÉSUMÉ

Introduction: L'exercice régulier et la pratique des sports augmentent la performance physique, élément qui induit une amélioration dans l'efficacité de l'organisme. La pratique de l'activité physique influence et est influencée par les indices d'endurance qui déterminent et sont dictés à la fois par l'état de santé. Chez les enfants et les adolescents, les niveaux d'endurance ne doivent pas seulement être envisagés comme des résultats d'expériences passées, mais aussi comme facteurs déterminants de styles de vie futurs. **Objectif**: Décrire l'endurance et ses implications sur la Santé (AFRS) chez les filles de 8 à 11 ans d'une école publique de la ville de Saint Maria - RS. **Méthodologie**: Le Groupe d'étude a été constitué de 51 élèves de sexe féminin, dont l'âge est compris entre 8 et 11 ans. Pour l'analyse et la collecte des variables de l'AFRS on a utilisé des tests et des protocoles suggérés par l'AAPHERD (1988). La statistique descriptive a été choisie pour l'analyse des données. **Résultats**: Les filles ont présenté un âge moyen de 10 ans, IMC de 18 ± 3 kg/m ², DC de 33 ± 12 mm, 23 ± 6 cm au test de Flexibilité et 26 ± 7 et 3 ± 2 répétitions à l'essai abdominal et à la barre, respectivement. Les résultats se sont montrés préoccupants, principalement dans les domaines résistance musculaire et flexibilité, où une grande partie des élèves a présenté des scores au-dessous du seuil minimal dans le cadre acceptable d'endurance liée à la santé. **Conclusion**: En raison des résultats insatisfaisants obtenus au niveau de la résistance musculaire et de la flexibilité, on observe que le groupe d'étude est exposé à des problèmes de posture, d'articulation, de lésions musculaires, d'ostéoporose, de lombalgie et de fatigues localisées.

Mots clefs : AFRS, filles, santé

LA APTITUD FÍSICA RELACIONADA A LA SALUD DE NIÑAS CON EDAD ENTRE 8 Y 11 AÑOS
Resumen

Introducción: El ejercicio diario y la práctica de deportes aumentan el rendimiento físico, el hecho que está asociado con la mejoría en la eficiencia funcional del organismo. La práctica de actividad física influencia y es influenciada por los índices de capacidad física, las cuales determinan y son determinadas por el estado de salud. En los niños y adolescentes, los niveles de Aptitud Física no deben ser vistos solamente como resultados de vivencias anteriores, pero también como elemento que promueve estilos de vida futuros. **Objetivo**: Describir la Aptitud Física Relacionada a la Salud (AFRS) de niñas entre 8 y 11 años de una escuela publica de la cuidad de Santa Maria - RS. **Metodología**: El Grupo de Estudio fue constituido por 51 estudiantes del sexo femenino, con la edad entre 8 y 11 años. Para el análisis y coleta de las variables de la AFRS se utilizaron testes y protocolos sugeridos por la AAPHERD (1988). Se utilizó la estadística descriptiva para el análisis de los resultados. **Resultados**: Las niñas presentaron una edad media de 10 años, IMC de 18 ± 3 Kg/m^2 , ?DC de 33 ± 12 mm, 23± 6 cm en teste de Flexibilidad y 26 ± 7 y 3± 2 repeticiones en teste de abdominal y barra, respectivamente. Los resultados se mostraron preocupantes, principalmente en los componentes de resistencia muscular y de flexibilidad, donde gran parte de los escolares presentó valores abajo de los límites mínimos de las zonas saludables de capacidad relacionada a la salud. **Conclusión**: Debido los valores insatisfactorios en los componentes de la resistencia muscular y de flexibilidad, se verifica que el grupo de estudio está susceptible a problemas posturales, articulares, lesiones musculares, osteoporosis, lumbalgia y fadigas localizadas.

Palabras-claves: AFRS, niñas, salud

APTIDÃO FÍSICA RELACIONADA À SAÚDE DE MENINAS COM IDADE ENTRE 8 E 11 ANOS
RESUMO

Introdução: O exercício regular e a prática de esportes aumentam o rendimento físico, fato que está associado a uma melhora na eficiência funcional do organismo. A prática da atividade física influencia e é influenciada pelos índices de aptidão física, as quais determinam e são determinadas pelo estado de saúde. Nas crianças e adolescentes, os níveis de Aptidão Física não devem ser encarados somente como resultados de vivências anteriores, mas também como elemento promotor de estilos de vida futuros. **Objetivo:** analisar a Aptidão Física Relacionada à Saúde (AFRS) de meninas de 8 a 11 anos de uma escola municipal da cidade de Santa Maria - RS. **Metodologia**: O Grupo de Estudo foi constituído por 51 estudantes do sexo feminino, com idade entre 8 e 11 anos. Para a análise e coleta das variáveis da AFRS utilizaram-se testes e protocolos sugeridos pela AAPHERD (1988). Utilizou-se a estatística descritiva para analise dos dados. **Resultados**: As meninas apresentaram uma idade média de 10 anos, IMC de 18 3 kg/m², DC de 33 12 mm, 23 6 cm no teste de Flexibilidade e 26 7 e 3 2 repetições no teste de abdominal e barra, respectivamente. Os resultados mostraram-se preocupantes, principalmente nos componentes resistência muscular e flexibilidade, onde grande parte dos escolares apresentou escores abaixo dos limites mínimos das zonas saudáveis de aptidão relacionada a saúde. **Conclusão:** Devido aos escores insatisfatórios nos componentes da resistência muscular e flexibilidade, verifica-se que o grupo de estudo está exposto a problemas posturais, articulares, lesões músculo-esqueléticas, osteoporose, lombalgia e fadigas localizadas.

Palavras-chaves: AFRS, meninas, saúde.