# 19 - ANALYSIS OF FITNESS ASSOCIATED TO PHYSICAL HEALTH OF ADOLESCENTS FROM A CAMPO GRANDE - MS PUBLIC SCHOOL

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## INTRODUCTION

With the evolution of technology XXI century children are increasingly replacing physical activities that require energy expenditure to more automated activities, spending hours involved with television, computer, mobile etc. Not having to play freely and anticipating health problems as they develop irregular eating habits. Since their childhood, they should be motivated to play, move, thus developing their motor skills, their cognitive and affective skills.

It can be observed that a sedentary lifestyle does not occur only in adults, fewer children and teenagers are performing physical activities in their daily lives. Pine and Petroski (1997) associate the children's physical activity level to the health level and physical inactivity as a potentiating risk factor for various diseases, such as obesity, hypertension, diabetes, anxiety, cholesterol and acute myocardial infarction. Physical inactivity has been considered a disease of the next millennium. In order to maintain a satisfactory level of health we need to be more active on a daily basis, inserting physical activity in our lives.

According to Bouchard (1990), health is defined as "a human condition with physical, social and psychological dimensions, each one characterized by a continuum with positive and negative poles." Health cannot be just a medical problem, one must convert the available knowledge into practice and way of life, in other words, the information brought by this knowledge must be lasting so that they turn into habits and quality of life thereby improving your fitness physical (Guedes and Guedes p. 10, 1995).

The school is one of the places that children and young people are usually practicing some form of exercise; therewith it should include activities in physical education classes that prioritize the development of health-related physical fitness for its students, wherefore, when outside school they can manage their own suitability according their needs.

The fitness level of an individual and the interaction of these levels can allow or restrict movements throughout life, therewith, the present study aims to assess the level of physical fitness and health of students enrolled in 9th grade of elementary school in a Campo Grande-MS public school and compare such data to the survey performed in 2011 with the 8th grade students of that school.

## LITERATURE REVIEW

Adolescence is a period of profound transformation in body, mind and form of social relationship of an individual. It is in this stage of life that occurs the puberty, the onset of family conflicts, the information process and crystallization of attitudes, values and behavior that will determine his identity towards future life (SILVA, 2010 apud BRASIL, 2000, p. 05).

The most visible and clear feature of that period is the development establishment that comes with the "growth spurt" (which lasts on average 4 years) and is marked by an increase in height and body weight. Boys, on average, start the growth spurt at the age of 11 and it is consolidated around 15 years. For girls, the growth spurt occurs earlier, around the age of 9 and stabilizes around the age of 13 and this is the period of growth that should be a concern for the health-related physical fitness.

The definition of fitness, some time ago, sought to privilege individual skills related to the sport practice. In recent years, this concept evolved out of common sense and exclusively sports related and has been considered in two trends: physical fitness related to motor skills and physical fitness related to health (GUEDES; GUEDES, 1995 P.15).

The first trend - physical fitness related to motor skills -aims to promote permanent skills acquisition of agility, balance, coordination, force and reaction time, forming a motor repertoire in which the individual could use throughout life. This is integrated to success in sports. Thus, someone who does well in various tasks or motor sports has a greater chance of social involvement through physical activity and may thus occupy their free time with physical activities.

The second trend - the health-related physical fitness – is a transitional aspect of physical fitness that need to be constantly crafted in order to maintain or obtain the desired optimal level, as cardiorespiratory endurance, strength, muscular endurance, flexibility, body composition (FARINATTI; FERREIRA , 2006). This is related to the ability to perform daily activities effectively and maintain a lower risk of developing chronic diseases.

The cardiorespiratory endurance, also known as aerobic capacity, that is the capacity of the cardiovascular and respiratory system to allow moderate physical exertion for long periods, or even the capacity of circulatory and respiratory systems to adjust and recover the body for exercise (MARCHESONI et al, 2011 apud BARBANTI, 1990).

The Body Composition is also a component of physical fitness because the amount and distribution of body fat are directly related to changes in the people's physical fitness and health status level. The children and adolescents' food preferences, as well as the physical activity practice are influenced by their parents lifestyle and habits and often persists into adulthood. What is seen is that the juvenile population has become less active (SOUZA JR; BIER, 2008).

Flexibility can be defined as "the maximum physiological amplitude of a given joint movement and the ability to perform movements of large amplitude, under external forces, or requiring the handling of many joints" (MARCHESONI et al, 2011). The flexibility level varies according to age, gender, the practice of physical exercise and according to each individuals need, thus, good flexibility allows the individual to perform joint movements without major difficulties and injuries during their daily activities.

Muscle strength is defined by Guedes (1995 p.27) as "maximum tension level that can be produced by a specific muscle group." Proper maintenance of muscle strength is an important mechanism of functional health, because it prevents postural joint problems and musculoskeletal injuries.

The Esporte Brasil project aims to present the somatomotor profile of motor development and life habits of children and adolescents aged 7 to 16 years to build indicators allowing the construction of a policy on physical education and sport for children and youth in Brazil. It proposes to physical education teachers the application of their tests to establish the monitoring of their students in somatomotor development aspect, nutrition and physical fitness (GAYA, 2001).

This paper features a descriptive and quantitative survey. The subjects of both genders, at the age group of 13 to 15

years old, registered on the 8th (2011) and 9th grade of elementary school in a Campo Grande - MS public school.

In 2011 the sample consisted of 57 students, 27 male and 30 female students and in 2012 it was composed of 59 students, 29 male students and 30 female both in the vespertine period. To the data gathering, were requested the school's permission to such research; the Laboratory of Physics Evaluation from the Universidade Católica Dom Bosco (UCDB) university and the authorization to use the assessment data held in 2011; students parental consent to participate in physical assessment.

On physical examination was performed the height measure, body mass, run / walk for nine minutes traversing the larger distance possible, for the aerobic capacity test, sit and reach test, to measure joint mobility, and perform as many repetitions as possible of abdominal exercises up to a minute to check abdominal strength. The instruments employed in this study were: Techline Glass Digital Scale with capacity of 180 kg, scientific tape-measure and adipometer Sanny, Cronobio timer, data record chart, tapeline, stock mats and sit and reach bench. It was used the BR-PROESP Protocol to the physical assessment data interpretation.

**RESULTS AND DISCUSSION**

The revaluation conducted this year showed significant changes in some items both in males as in females, compared from one year to another. The average age of both sex and year was 14 years, so always compare the results for this age group. Below, the results of health-related physical fitness:

| | Girls | | Boys | |
|---|---|---|---|---|
| **Variables** | **2011** | **2012** | **2011** | **2012** |
| WEIGHT (Kg) | 52,31 | 55,06 | 51,22 | 60,66 |
| BMI (kg/m²) | 20,76 | 21,54 | 18,62 | 21,5 |
| ABDOMINAL | 24 | 26 | 36 | 32 |
| 9 MINUTES (meters) | 1045 | 724 | 1325 | 967 |
| FLEXIBILITY (cm) | 25 | 24 | 23 | 20 |

Weight changes in adolescence are, generally, more pronounced in boys than it is in girls. There was not much change in the females' body weight from one year to another. In 2011 the average weight was 52.3 kg and in 2012 there was a small increase with an average of 55 kg. In males there was a significant weight increase up to 19kg when compared to 2011 which was 41.2 kg. In 2012 the average weight was 60, 6 kg. This difference in weight is not necessarily related to obesity, since, according to Gallahue (p. 355, 2005) there is a significant increase in height and muscle mass in boys while the body fat remain relatively stable during this period. However, other assessments would be necessary to verify that this increase in body weight is related to the increase in body fat or muscle mass.

The Body Mass Index (BMI) is an indicator of body density which is determined by the proportion between weight and height and is related to body fat. The female average BMI collected this year was 21.54 kg/m². The referential considerable acceptable for this age group is 17 to 23 kg/m². In the data comparison, no significant changes were detected, because in 2011 the result of BMI was 20.76 kg/m². When comparing with the PROESP-BR Atlas, we can see that the results are above the average for the Midwest region (19.5 kg / m²) and national level (20 kg / m²) for this age group, however it does not exceed normal parameters.

In boys, the average BMI in 2011 was 18.62 kg/m², considered normal to their age and being, as well, within the average of the Midwest region (19 kg/m²) and nationally (19.5 kg / m²). In 2012 the average was also within the reference, 21.50 kg/m², but put above the national average and the Midwest region as well and almost surpassing the reference level that is 16 to 22 kg/m². The values near or above the cutoff are risk indicators for the occurrence of obesity, high cholesterol levels and blood pressure (GAYA, 2001).

In the strength/endurance abdominal test both assessments were considered below average among females, because the reference value is 30-35 repetitions and the values presented in 2011 were, on average, of 24 repetitions as in 2012 were 26 repetitions. Monteiro (1996 p.46) infers that inadequate levels of force make people more prone to acquiring musculoskeletal and neuromuscular diseases and also, some movements, necessary for daily life, can be limited if reasonable levels of force are lost.

Among males, in 2011 the average was 37 repetitions, being within the desired levels of health-related physical fitness (35-40 reps). The class of 2012 presented below reference levels with an average of 33 repetitions. This value may indicate risk to the presence of postural deviations and complaints of backache (GAYA, 2001).

Aerobic capacity or cardiorespiratory endurance is one of the fitness components that has major implications in health throughout life and is related to body mass (HAYWOOD; GETCHELL, 2004 p. 272). This was one of the tests that had the worst performance among both groups in females as in males. In 2011 the average distance traveled between the girls was not reaching the 1046m mark as 1300 to 1750m are considered ideal by PROESP-BR. In 2012, the average was even lower, 724m. To Haywood and Getchell (2004) it is normal aerobic capacity declines in girls during adolescence because the likely increase in adipose tissue.

Amid males, the class of 2011 was the one that came closest to the benchmark of 1550 to 2000m with an average of 1326m traveled. In 2012 we had an even lower average, 967.24 m. The values obtained represent risk factors for the presence of hypertension, high cholesterol levels and a probable occurrence of obesity. It would be of interest to have a follow up of this group to see if the low aerobic level is causing other deficiencies in the physical components, changes in school performances, and daily activities.

People with good levels of flexibility have less risk of injury when subjected to intense efforts (MONTEIRO, 1996). In both evaluations females presented considerable desirable levels of physical fitness and health data, 23 to 28 cm, and in 2011 an average of 26 cm as in 2012 the average was 24 cm. This may be related to the practice of physical exercise, as Haywood and Getchell (2004) argue that flexibility decreases during adolescence as a result of lack of exercise and limited daily activities.

The males flexibility is less pronounced due to the large amount of muscle mass, however, it was noted that the class of 2011 had, on average, 27 cm of flexibility which is considered above the reference of 20-25 cm, and the class of 2012 barely reached the reference average of 20 cm of flexibility. Regarding this decreased flexibility in boys, observed that it can occur even before the growth peak rate, stabilizing after this period (FARIAS, 2010 apud SILVIA ET AL, p. 103).

**FINAL CONCLUSIONS**

This study concluded that the level of health-related physical fitness had major changes from one year to the other mainly in males, and females showed the highest levels of fitness. The class of 2011 presented results closer to those considered optimal for health in both sexes. The components that had more changes from one year to the next among girls were resistance/abdominal strength and endurance. In other components such as body weight, BMI, and there was a minor difference leaving the female with the best levels of health-related physical fitness. Yet in males significant changes occurred in all components of physical fitness, as the students had unsatisfactory results in 2012 compared with the class of 2011 and with the PROESP-BR referential network.

According to Farinatti and Ferreira (2006), what is seen in Physical Education programs, is a predominance of games and fun activities that privilege a form of coordinative motor skills, leaving aside factors related to health. Thereat, it is necessary that other content are developed in physical education for students to adopt a healthy lifestyle and autonomy to practice physical exercise thus improving the components of physical fitness related to health.

**REFERENCES**

BRASIL. SECRETARIA DE EDUCAÇÃO FUNDAMENTAL. Parâmetros curriculares nacionais: Educação Física. Brasília: MEC/SEF, p. 96, 1997. Disponível em: http://portal.mec.gov.br/seb/arquivos/pdf/livro07.pdf. Acesso em: 10 jun 2012. CANDEIAS, Nelly M. F. Conceitos de educação e promoção da saúde: mudanças individuais e mudanças organizacionais. Revista Saúde Publica, São Paulo, v.31, n.2, p. 209-13, abr/set. 1997.

Retirado em: http://www.scielosp.org/pdf/rsp/v31n2/2249.pdf acesso em: 8/6/2012

FARIAS, Edson dos Santos ET AL. Efeito da atividade física programada sobre aptidão física escolares adolescente. Revista Brasileira Cineantropometria Desempenho Humano. Rio Branco, v.12, n.2, p. 98-105. 2010. Retirado em: http://www.rbcdh.ufsc.br/DownloadArtigo.do?artigo=561 acesso em: 10 out 2012

FARINATTI, Paulo. T.V; FERREIRA, Marcos Santos. Saúde, promoção da saúde e educação física conceitos, princípios e aplicações. 1. Ed. Rio de Janeiro: eduerf, 2006.

GALLAHUE, David I; ARAUJO, Maria Aparecida da Silva Pereira; RIBEIRO, Juliana de Medeiros; SILVA, Juliana Pinheiro Souza. Compreendendo o desenvolvimento motor: bebes, crianças, adolescentes e adultos. 3 ed. São Paulo: Phorte, 2005. 585 p.

GAYA, Adroaldo. Projeto Esporte Brasil - Indicadores de Saúde e Desempenho Esportivo em Crianças e Jovens (PROESP-BR). Ministério do esporte e turismo, Rio Grande do Sul, p. 1-1. 2001. Disponível em: http://www.esef.ufrgs.br/proesp-br/proespbr.htm acesso em: 09 jun 2012

GUEDES, Dartagnan Pinto; GUEDES, Joana Elisabete Ribeiro Pinto. Exercicio físico na promoção da saude. Londrina: Midiograf, 1995. GUEDES, Dartagnan Pinto; GUEDES, Joana Elisabete Ribeiro Pinto. Controle do peso corporal: composição corporal, atividade física e nutrição. Rio de Janeiro: Midiograf, 1998.

HAYWOOD, Kathleen M.; GETCHELL, Nancy; PETERSEN JÚNIOR, Ricardo. Desenvolvimento motor ao longo da vida. 3 ed. Porto Alegre: Artmed, 2004. Disponível em: http://sbafs.org.br_artigos\322.pdf. Acesso em: 05 out 2012.

MAERQUES,H.R; MANFROI, J; CASTILHO, M. A; NOAL, M. L. Metodologia da pesquisa e do trabalho cientifico. 3. Ed. Campo Grande: UCDB, 2008.

MARCHESONI, César Costenaro; SALES, Rebeca. A importância da aptidão física relacionada à saúde na escola. Revista digital, Buenos Aires, v.15, n.153, fev/. 2011. Retirado em: http://www.efdeportes.com/efd153/a-importancia-da-aptidao-fisica-na-escola.htm acesso em: 09 jun 2012.

MONTEIRO, Walace David. Aspectos fisiológicos e metodológicos do condicionamento físico na promoção da saúde. Revista Brasileira de Atividade Física e Saúde, Londrina, v.1, n. 3, pag. 44-58, 1996.

SOUZA JUNIOR, Sergio Luiz Peixoto; BIER, Análise. A importância da atividade Física na promoção da saúde da população infanto-juvenil. EFDesportes.com, Revista Digital, Buenos Aires, ano 13, nº 119, abr. 2008. Disponível em: http://www.efdeportes.com/efd119/atividade-fisica-na-promocao-de-saude.htm Acesso em: 04 abr 2012.

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**ANALYSIS OF FITNESS ASSOCIATED TO PHYSICAL HEALTH OF ADOLESCENTS FROM A CAMPO GRANDE - MS PUBLIC SCHOOL**

**SUMMARY**

The present study aimed to continue a survey conducted in 2011 with students enrolled in the 8th grade of elementary school at a public school in Campo Grande - MS. We conducted tests with the same class, as today the 9th grade (2012) performing a data comparison with the results obtained thus evaluating the level of physical fitness related to adolescent health. This is a longitudinal survey, being a descriptive quantitative survey. The research was conducted with individuals of both sexes, with ages 13-15 years old; in 2011 the test was performed by students enrolled in the 8th grade and consisted of 57 students, being 27 male and 30 female students. The test was repeated with the same classroom today 9th grade (2012) and it consisted of 59 students, 29 male and 30 female students both in the vespertine period. In the evaluation, were performed the height measure, body mass index (BMI), run / walk for nine minutes covering the largest possible distance (aerobic capacity), sit and reach test to measure joint mobility (flexibility) and make the largest number of repetitions abdominal within one minute to check abdominal resistance. Study results revealed that the level of physical fitness had major changes from one year to the other mainly among males. The female subjects showed better levels of fitness.

**KEYWORDS:** Health - Adolescence - Physical Fitness.

**ANALYSE DE L'APTITUDE PHYSIQUE PAR RAPPORT À LA SANTÉ DES ADOLESCENTS DANS UNE ÉCOLE PUBLIQUE DE CAMPO GRANDE-MS.**

**RÉSUMÉ**

Cet étude a eu comme objectif donner continuité à une recherche réalisée dans 2011 avec des élèves inscrits dans la 8º année de l'enseignement fondamental d'une école publique de Campo Grande - MS. Nous avons effectué des tests avec le même groupe aujourd'hui 9º année (2012) en faisant une comparaison de données avec les résultats obtenus en évaluant ainsi le niveau d'aptitude physique liée à la santé des adolescents. Il s'agit d'une étude longitudinale, une recherche de caractère descriptive, de nature quantitative. La recherche a été réalisée avec des personnes des deux sexes, les âges 13-15 ans, en

2011. Le test a été réalisé avec les étudiants inscrits en 8o année, composé de 57 élèves, en étant 27 du sexe masculin et 30 du sexe féminin. Nous avons refait l'essai avec le même groupe, aujourd'hui 9º année (2012) composé de 59 élèves, 29 élèves du sexe masculin et 30 du sexe féminin, les deux de la période vespérale. Dans l'évaluation a été réalisée la mesure de la stature, masse corporelle (IMC), courir/marcher pendant neuf minutes en couvrant la plus grande distance possible pour le test (capacité aérobie), essai d'asseoir et lever pour mesurer la mobilité d'articulation (flexibilité) et effectuer le plus grand nombre de répétitions possibles de l'abdomen en moins d'une minute pour vérifier (résistance abdominale). Les résultats des études ont révélé que le niveau d'aptitude physique a eu de grandes modifications d'une année pour l'autre principalement dans le sexe masculin. Déjà le sexe féminin a été ce qui a présenté de meilleurs niveaux d'aptitude physique.

**MOST-CLÈS:** Santé - Adolescence - Aptitude Physique.

**ANÁLISIS DE LA APTITUD FÍSICA RELACIONADA A LA SALUD DE ADOLESCENTES DE UNA ESCUELA PÚBLICA DE CAMPO GRANDE-MS**

**RESUMEN**

El presente estudio tuvo el objetivo de dar continuidad a una investigación realizada en 2011 con alumnos matriculados en el 8º curso de la enseñanza fundamental de una escuela pública de Campo Grande - MS. Realizamos las pruebas con la misma clase, hoy de 9º curso (2012), haciendo una comparación de los datos obtenidos, evaluando así el nivel de aptitud física relacionada a la salud de los adolescentes. Se trata de un estudio longitudinal. La investigación es de carácter descriptiva, de naturaleza cuantitativa. El trabajo fue realizado con individuos de ambos sexos, con edad de 13 a 15 años de edad, en 2011. La prueba fue realizada por 57 alumnos matriculados en 8º curso, 27 del sexo masculino y 30 del sexo femenino. La prueba fue realizada de nuevo por la misma clase, hoy en 9º curso (2012), compuesta por 59 alumnos del período vespertino, 29 del sexo masculino y 30 del sexo femenino. En la evaluación se midió la estatura, se calculó la masa corporal (IMC), prueba de correr/andar durante nueve minutos, recorriendo la mayor distancia posible (prueba de capacidad aeróbica), prueba de sentar y alcanzar para medir la movilidad articular (flexibilidad) y efectuar el mayor número posible de abdominales en un minuto, para verificar la resistencia abdominal. Los resultados de los estudios revelaron que el nivel de aptitud física tuvo grandes alteraciones entre los dos años principalmente en el sexo masculino. El sexo femenino presentó mejores niveles de aptitud física.

**PALABRAS-CLAVE:** Salud – Adolescencia – Aptitud Física.

**ANALISE DA APTIDÃO FISICA RELACIONADA À SAUDE DE ADOLESCENTES DE UMA ESCOLA PÚBLICA DE CAMPO GRANDE-MS**

**RESUMO**

O presente estudo teve como objetivo dar continuidade a uma pesquisa realizada em 2011 com alunos matriculados no 8º ano do ensino fundamental de uma escola publica de Campo Grande - MS. Realizamos os testes com a mesma turma hoje 9º ano (2012) fazendo uma comparação de dados com os resultados obtidos avaliando assim o nível de aptidão física relacionada à saúde dos adolescentes. Trata-se de um estudo longitudinal Sendo uma pesquisa de caráter descritiva de natureza quantitativa. A pesquisa foi realizada com indivíduos de ambos os sexos, com a faixa etária de 13 a 15 anos de idade, em 2011 o teste foi realizado por alunos matriculados no 8º ano sendo composta por 57 alunos, sendo 27 do sexo masculino e 30 do sexo feminino. Refizemos o teste com a mesma turma hoje 9º ano (2012) composto por 59 alunos, sendo 29 alunos do sexo masculino e 30 do sexo feminino ambos do período vespertino. Na avaliação foi realizado a medida da estatura, massa corporal (IMC), correr/andar durante nove minutos percorrendo a maior distancia possível para o (teste de capacidade aeróbia), teste de sentar e alcançar para medir a mobilidade articular (flexibilidade) e efetuar o maior número de repetições possíveis de abdominal em até um minuto para verificar a (resistência abdominal). Os resultados dos estudos revelaram que o nível de aptidão física teve grandes alterações de um ano para o outro principalmente no sexo masculino. Já o sexo feminino foi o que apresentou melhores níveis de aptidão física.

**PALAVRAS-CHAVE:** Saúde – Adolescência – Aptidão Física.