127 - THE STUDENTS OF PHYSICAL FITNESS OF IFTO

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INTRODUCTION

The health related physical fitness is defined as the capacity to perform daily tasks vigorously and demonstrate traits and characteristics that are associated with a low risk of premature development of hypokinetic diseases and limitations on movement. (PATE, 1988; WINNICK e SHORT, 2001). Man is born, most of the time, no index sedentary, with a normal weight and without the tendency to gain weight, over the years, due to their diet, lack of knowledge, technological development and style of general life, your body will change and cause various problems that he had not before, as obesity and sedentary lifestyle, that will allow you to bring many diseases like diabetes mellitus, hypertension and heart disease. One way to know or find out what problems should be solved or avoided is making an appraisement of physical fitness. It is important that physically active children and adolescents consume energy and nutrients sufficient to reach their needs for growth, tissue maintenance and the performance of their intellectual and physical activities (SALLIS et al., 2000; ANDERSEN et al., 2006; OLIVARES et al., 2004; KIMM et al., 2005).

Monitor levels of motor performance, principally in children and young people, beyond provide important information for the development of motor capacity involved in many sports, can assist in the prevention, conservation and improvement of functional capacity resulting in better health and quality of life for the population (GUEDES e BARBANTI, 1995). Several researchers have observed that both children and adolescents as adults now appear to be less interest in having a healthy active life, and spend hours in front of a computer, television, eating inadequatly, which can result in a generation sedentary. This fact may encourage the increased prevalence of obesity, the decrease in lean body mass and motor capacity at ever precocius ages (BERKEY, ROCKETT, FIELD, GILLMAN, FRAZIER, CAMARGO, COLDITZ, 2000; SALBE e RAVUSSIN, 2002).

The object of this research has focused on description and analysis of physical fitness of the students of the IFTO – Campus Araguaína, in the age bracket from 14 to 17 years old, a period in which the body goes through major changes and require monitoring to detect possible risks of health problems in order to help them lead healthy lives through analysis of reference values for this population and age.

MATERIALS AND METHODS

The study was a descriptive according to the proposal of Thomas Nelson and Silverman (2007), characterized by concern for the status. The sample analyzed in this study composed 24 students (10 masculine and 14 feminine), officially registered in the Education, Science and Technology Federal Institute of Tocantins – IFTO, Campus Araguaína - Brazil, in the age bracket from 14 to 17 years old. The sample selection process was casual random type, because all the students, who have filled the inclusion and exclusion criteria, had the opportunity to participate in the data collecting.

The study included all students of both sexes in the age bracket from 14 to 17 years old officially registered in the IFTO – Campus Araguaína and were excluded from the students who had health problems that made it impossible to conduct the proposed tests, the students who refused to participate in the study voluntarily, without feedback or financial advantage, the students that parents or guardians refused to sign the Term of Consent according to Law 196/96 and even those who do not performed all the tests proposed. The variables used for description and analysis of physical fitness testing of students were the flexibility test (sit and reach), the strength test of abdominal endurance, test explosive strength of the lower limbs (horizontal jump), test explosive strength of upper limbs (pitch medicineball), the agility test (test of the square), the travel speed test (run 20 meters), the cardiorespiratory fitness test (9 minutes) and its comparison with the values of reference in the literature.

The protocol used to determine the flexibility test (sit and reach) of the students of the IFTO – Campus Araguaína was proposed by Gaya and Silva (2007), which consisted the use of the Bank of Wells unbranded, made in woodworking with the following characteristics: a cube built with pieces of 30 x 30 cm, a kind piece of 53 cm ruler long by 15 cm wide, a graduate metric between 0 and 53 cm, the rule placed on top of the cube in the central region so that the mark of 23 cm to stay exactly in line with the face of the cube where the students supported the feet. The students were barefoot, sitting in front of the base of the box with legs extended and together. They put one hand on the other and raised their arms vertical. The inclined body forward and reached the tips of the fingers as far as a point possible on the graduated scale without flexing the knees and without using movements balance sheet (reminders). Each student had two attempts. The examiner stood by the student, keeping her knees extended. The result was measured from the position farthest that the student can achieve on the scale with the fingertips. Was recorded the best result between the two runs with annotation in centimeters with a home decimal.

The protocol used to determine the strength test of abdominal endurance of the students of the IFTO – Campus Araguaína was proposed by Gaya and Silva (2007), which consisted in use of gym mat of brand deveras and timer brand speedo. The sudent is positioned supine with knees flexed at 90 degrees and the arms crossed over his chest. The appraiser determined the student's feet to the ground. At the signal the student began flexion of the trunk to play with his elbows on his thighs, returning to the starting position (no need for him to play with his head on the mat at each execution). The evaluator performed the counting aloud. The student was instructed to perform as many repetitions completed in one minute. The result was expressed by the number of full-motion performed in one minute.

The protocol used to determine test explosive strength of the lower limbs (horizontal jump) of the students of the IFTO – Campus Araguaína was proposed by Gaya and Silva (2007), which consisted in using a tape measure brand western 5 m with an accuracy of 1mm, fixed to the ground, perpendicular to a line of 1.5 m to the ground with a printed tape adelbras brand, being the zero point on it. The student was placed immediately behind the line, parallel with your feet slightly apart, semi-inflected knees, trunk slightly projected forward. At the sign of the student evaluator jumped as far as possible. We conducted two trials, recording the best result. The distance of the jump was recorded in centimeters with one decimal place, from the starting line drawn on the ground until the heel closest to this.

The protocol used to determine test explosive strength of upper limbs (pitch medicineball) of the students of the IFTO

– Campus Araguaína was proposed by Gaya and Silva (2007), which consisted in using a tape measure from the western brand of 50 m with a precision of 1 mm and a ball medicineball 2 kg. The tape was fixed on the ground perpendicular to the wall. The zero point on the tape is fixed along the wall. The student sat down with the knees extended, legs together and your back completely against the wall. Medicineball Holding the ball to his chest with elbows bent. At the sign of the evaluator, the student threw the medicineball as far as possible, keeping your back against the wall. The distance of the throw was recorded from the zero point to the location where the ball touched the ground first. There were two shots, registering the best result. The measurement was recorded in centimeters to one decimal place.

The protocol used to determine the agility test (test of the square) of the students of the IFTO – Campus Araguaína was proposed by Gaya and Silva (2007), which consisted of the use of a brand of clock speedo, a square drawn on the ground with slip 4 m from the side, marked with four bottles of refrigerant in 2 l PET filled with water and placed at the vertices of the square. The student went from a standing position, with one foot advanced forward immediately behind the starting line. At the sign of the evaluator, he moved to the next bottle in the diagonal direction. Subsequently, runs into the bottle to your left and then moves to the bottle sideways. Finally, runs toward the last bottle, which is the starting point. The student played with one hand each of the bottles that mark the route. The marker is set by the assessor at the time the student made the first step with the foot touching the inside of the square. There were two attempts, and recorded the best run time. The measurement was recorded in seconds and hundredths of seconds.

The protocol used to determine the travel speed test (run 20 meters) of the students of the IFTO – Campus Araguaína was proposed by Gaya and Silva (2007), which consisted in using a stopwatch was brand speedo and a track 20 meters marked with three parallel lines on the ground as follows: the first (starting line), the second 20m away from the first line (timing or finish line) and the third line (reference), marked the second of two meters (finish line). The third line served as reference for the coming student in an attempt to prevent it starts slowing down before crossing the line timing. Two bottles for the signaling of the first and third lines. The student went from a standing position, with one foot advanced forward immediately behind the first line and was informed that should cross the third line as soon as possible. At the sign of the evaluator, the student moved as quickly as possible toward the finish line. The timekeeper starts the stopwatch when the student took the first step (touching the ground), exceeding the starting line. When the student crossed the second line (20 meters), the timer was stopped. The timekeeper recorded the time of the route in seconds and hundredths of seconds.

The protocol used for determination of the cardiorespiratory fitness test (9 minutes) of the students of the IFTO – Campus Araguaína was proposed by Gaya and Silva (2007), which consisted in using a local dial plan the perimeter of the track, stopwatch brand speedo, registration card and tape the western brand of 50 m with a precision of 1 mm. The students were informed about the correct execution of the test emphasizing the fact that should run as long as possible, avoiding speed sprints interspersed with long walks, that should not stop along the way and that it was a test run although they could possibly walk when you feel tired. During the test, students were informed of the passage of time at 3, 6 and 8 minutes. At the end of the test used was a signal (whistle) so that the students interrupt the race, where they were staying in place (at the time of the whistle) to be recorded or signaling distance. The appraiser estimated the perimeter of the track before and during the test noted only the number of turns of each school. Thus, we multiplied the perimeter of the track by the number of turns of each student complete with the addition of the distance between the last lap completed and the location of the point of student after completing the test. The result was expressed by the total distance covered in 9 min, recorded in meters.

This study meets the standards for the conduct of human research, resolution 196/96 of the National Health Council, of 10.10.1996. Was submitted to the Ethics Committee in Research of the University Lutheran Center Palmas-CEULP/ULBRA approved by Opinion No.038/2011.

For analysis of the physical fitness of the students of the IFTO – Campus Araguaína was conducted descriptive statistics to characterize the groups according to sex, through measure of location (mean, median, minimum and maximum) and dispersion (standard deviation and coefficient of variation) in order to define the profiles of the groups and compare the results with the reference values proposed by Gaya and Silva (2007), classified as VERY LOW, LOW, REASONABLE, GOOD, VERY GOOD AND EXCELLENCE. Statistical analysis was performed with the program Bio Statversion 4.0.

RESULTS AND DISCUSSIONS

The results of the physical fitness of the students of the IFTO – Campus Araguaína are presented in Tables 1, 2, 3 and 4. The results with coefficients of variation were presented more than 26% were analyzed using the median and the other through the media.

TABLE 1 - FLEXIBILITY, AGILITY, SPEED AND ENDURANCE OF MALE STUDENTS

Measurements	Age (years)	Flexibility (cm)	Agility (s)	Speed (s)	Endurance (m)
N	10	10	10	10	10
Minimum	15	14	6	2	1068
Maximum	17	34	7	3	1685
Mean	16	26	6,3	2,9	1376
Median	15,5	25,5	6	3	1399
Deviation Pattern	1	6,6	0,5	0,3	185,7
Coefficient of Variation	5,82 %	25,32%	7,67%	10,90%	13,50%

TABLE 2 - STRENGTH / ENDURANCE AND STRENGTH EXPLOSIVE OF MALE STUDENTS

Measurements	Age (years)	Abdominal	Horizontal Jump (cm)	Pitch Medicineball (cm)
N	10	10	10	10
Minimum	15	15	167	395
Maximum	17	40	245	676
Mean	16	27	198,3	535,6
Median	15,5	25	187,5	517,5
Deviation Pattern	1	7,1	25	88
Coefficient of Variation	5,82 %	26,43%	12,60%	16,43%

TABLE 3 - FLEXIBILITY, AGILITY, SPEED AND ENDURANCE OF FEMALES STUDENTS

Measurements	Age (years)	Flexibility (cm)	Agility (s)	Speed (s)	Endurance (m)
N	14	14	14	14	14
Minimum	14	14	6	3	904
Maximum	17	44	8	4	1348
Mean	15	28,7	7	3,71	1138
Median	14	27,5	7	4	1168
Deviation Pattern	1	9	0,7	0,5	138,2
Coefficient of Variation	7,11 %	31,31%	9,71%	12,62%	12,15%

TABLE 4 - STRENGTH / ENDURANCE AND STRENGTH EXPLOSIVE OF FEMALES STUDENTS

Measurements	Age (years)	Abdominal	Horizontal Jump (cm)	Pitch Medicineball (cm)
N	14	14	14	14
Minimum	14	16	131	225
Maximum	17	45	207	494
Mean	15	26	162,4	371,6
Median	14	24	161,5	359
Deviation Pattern	1	8,2	26	67,5
Coefficient of Variation	7,11 %	31,71%	16,03%	18,17%

Flexibility is the driving quality that depends on muscle elasticity and joint mobility expressed by the maximum range of motion required to perform any physical activity, without the occurrence of pathological lesions. (ARAÚJO, 1987) Training flexibility is found almost a necessity for all, because of its importance to the health of the locomotor system (ACHOURJUNIOR, 1996). The results for the flexibility of the students of the IFTO of both sexes allowed us to classify them within the category REASONABLE, which arouses a state of alert under this component of fitness is directly related to the performance of daily activities and prevention of problems posture and back pain, osteoporosis and scoliosis and by virtue of its reduction with aging. (GAYA, MARQUES e TANI, 2004)

Agility is a physical fitness variable characterized by the ability to make fast changes of direction, sense of time and displacement of center of gravity of the whole body or part thereof. (MATSUDO, 2005) The results for the agility of the students of the IFTO of both sexes allowed us to classify them within the category WEAK.

Speed is the ability to reason in the mobility of the neuromuscular system and the potential for developing muscle strength to perform motor actions at short intervals from the available skills of conditioning (WEINECK, 2005). Speed is an essential physical quality of being measured on initial tests of fitness, despite being classified as travel speed, reaction time and speed of members (DANTAS, 1995). The speed is understood as the maximum capacity of an individual to move from one point to another (TUBINO, 1979). The results for speed the students of the IFTO of males and females allowed us to classify them respectively within the category of very good and good.

Endurance means the physical capacity to resist, as long as possible, to a stimulus requiring interruption of an exercise, in other word, the ability of the organism as a whole as well as separately for each system to resist fatigue. (WEINECK, 2005) The results for the endurance of the students of the IFTO of both sexes allowed us to classify them within the category WEAK.

The strength/endurance is a component related to musculoskeletal function. Nahas (2001), emphasizes that the muscles of the body that allow an individual to move in the environment you live in, and support exerting force to move objects in the activities daily. They are also allowing an upright posture, balancing the body against gravity. The results for the strength test of abdominal endurance of the students of the IFTO males and females allowed us to classify them respectively in the category VERY WEAK and WEAK.

Strength is a quality essential to the basic physical and motor performance can be defined as an individual's ability to develop tension against an external resistance. Can be classified into several types: static or isometric strength, explosive power or power, dynamic force. (MALINA, BOUCHARD & BAR-OR, 2009) Explosive strength is defined by Giannichi and Marins (2003) and Tubino (1979) as the ability to exercise maximum energy in an explosive act and Malina, Bouchard & Bar-Or (2009) as the ability of muscles to release maximum force in the shortest possible time, considered as a quality basic physics present in several sports such as athletics, football, handball, basketball, volleyball and others (MARINS & Giannichi, 2003; COSTA, Alves and Gomes, 2006) and present movements in simple to complex, being a relevant factor in motor performance (Matsudo, 2005).

The results for explosive strength of upper and lower limbs of the students male of the IFTO allowed us to classify them respectively in the category GOOD and REASONABLE, and the results found for explosive strength of upper and lower limbs of the students female of the IFTO allowed us to classify them respectively in the category VERY GOOD and GOOD, which deserves special attention because Santos (2005) states that with proper care, strength training can be effective and safe in the conditioning of children, improved bone mineral density, improved body composition and reducing the risk of sports and recreational injuries. And Silva (2003) states that physical force is a basic essential for quality health promotion as it provides a reduced risk of injury, increased range of motion and functional improvements in psychological and anatomical system.

CONCLUSION

The results allowed to observe that the study groups according to age and sex, showed intermediate results according to the benchmarks studied. This denotes a level of physical fitness of the students of the IFTO investigated within the desirable and compatible with a healthy lifestyle, however, suggests a need for participation in exercise programs and sports in the school, the segment in which most of the life habits are established, due to the decline of physical fitness components investigated with aging and its association with the maintenance of health.

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THE STUDENTS OF PHYSICAL FITNESS OF IFTO

ABSTRACT

The objective of this study was to assess the physical fitness of students at the Education, Science and Technology Federal Institute of Tocantins / IFTO - Campus Araguaína through the flexibility test (sit and reach), the strength test of abdominal endurance, test explosive strength of the lower limbs (horizontal jump), test explosive strength of upper limbs (pitch medicineball), the agility test (test of the square), the travel speed test (run 20 meters), the cardiorespiratory fitness test (9 minutes) and its comparison with the reference values proposed by Gaya and Silva (2007), classified as VERY LOW, LOW, REASONABLE, GOOD, VERY GOOD and EXCELLENCE. The study was a descriptive, the selection process was casual random type, descriptive statistics to characterize the groups according to sex, through measurements of location and dispersion. The sample analyzed in this study composed 24 students (10 masculine and 14 feminine), officially registered in the Education, Science and Technology Federal Institute of Tocantins – IFTO, Campus Araguaína – Brazil. The results for the flexibility of the students of the IFTO of both sexes allowed us to classify them within the category REASONABLE. The results for the agility and endurance of the students of the IFTO of both sexes allowed us to classify them within the category WEAK. The results for speed the students of the IFTO of males and females allowed us to classify them respectively within the category of very good and good. The results for the strength test of abdominal endurance of the students of the IFTO males and females allowed us to classify them respectively in the category VERY WEAK and WEAK. The results for explosive strength of upper and lower limbs of the students male of the IFTO allowed us to classify them respectively in the category GOOD and REASONABLE, and the results found for explosive strength of upper and lower limbs of the students female of the IFTO allowed us to classify them respectively in the category VERY GOOD and GOOD. This denotes a level of physical fitness of the students of the IFTO investigated within the desirable and compatible with a healthy lifestyle.

KEYWORDS: students, physical fitness, health.

LA CONDITION PHYSIQUE DES ETUDIANTS DE IFTO
RÉSUMÉ

L'objectif de cette étude a été d'évaluer la condition physique des étudiants de l'Institut fédéral d'Education, Science et Technologie du Tocantins / IFTO - Campus Araguaína à travers d'une épreuve de flexibilité (flexion du tronc), une épreuve de force / endurance abdominale, une épreuve de force explosive des membres inférieurs et supérieurs (saut à l'horizontal et lancer de medicine-ball), une épreuve d'agilité (test de carrés), une épreuve de vitesse de défilement (course de 20 mètres), une épreuve de capacité cardiorespiratoire (9 minutes) et sa comparaison avec les valeurs de référence proposées par Gaya et Silva (2007), classés comme « très faible », « faible », « raisonnable », « bon », « très bon » et « excellent ». Cette étude est caractérisée comme une recherche de type descriptive, aléatoire, et utilisant des statistiques descriptives pour caractériser les groupes selon le sexe, et selon des mesures de localisation et de dispersion. Nous avons évalué 24 étudiants (10 hommes et 14 femmes) de quatorze à dix-sept ans, inscrits à l'IFTO - Campus Araguaina. Les résultats obtenus pour la flexibilité des étudiants des deux sexes IFTO nous a permis de les classer dans la catégorie « raisonnable ». Pour le test d'agilité et de force, les deux sexes ont été classés dans la catégorie « faible ». Pour le test de vitesse, les garçons et les filles ont été respectivement classés dans la catégorie « très bon » et « bon ». Pour l'épreuve de force / endurance, les étudiants de sexe masculin et féminin ont été respectivement classés dans la catégorie « très faible » et « faible ». Pour le test de force explosive des membres inférieurs et supérieurs, les étudiants de sexe masculin ont été respectivement classés dans la catégorie « bon » et « raisonnable », et les résultats obtenus pour la force explosive des membres inférieurs et supérieurs des étudiantes de sexe féminin nous ont permis de les classer respectivement dans la catégorie « très bon » et « bon ». Cela nous permet de conclure que le niveau d'aptitude physique des étudiants de l'IFTO qui ont participé à l'enquête est bon et compatible avec un mode de vie sain.

MOTS-CLÉS: école, aptitude physique, santé.

LA APTITUD FÍSICA DE LOS ESTUDIANTES EN EL IFTO
RESUMEN

El objetivo de este estudio ha sido evaluar la aptitud física de los estudiantes en el Instituto Federal de Educación, Ciencia y Tecnología de Tocantins / IFTO – Campus Araguaína, a través de la prueba de flexibilidad (sentarse y alcanzar), prueba de fuerza / resistencia abdominal, prueba de fuerza explosiva de miembros inferiores y superiores (salto horizontal y balón medicinal), prueba de agilidad (cuadrado de prueba), prueba de velocidad de movimiento (carrera de 20 metros), prueba de aptitud cardiovascular (9 minutos) y su comparación con los valores de referencia propuestos por Gaya y Silva (2007), clasificados como muy bajo, bajo, razonable, bueno, muy bueno y excelente. El estudio se caracteriza como una investigación de carácter descriptiva, tipo aleatoria, estas estadísticas descriptivas han servido para clasificar los grupos en función del sexo, a través de medidas de localización y dispersión. Se ha evaluado a 24 estudiantes (10 hombres y 14 mujeres) de catorce a diecisiete años, inscritos en el IFTO - Campus Araguaina. Los resultados de flexibilidad de los estudiantes de ambos sexos del IFTO nos permitió clasificarlos en la categoría de RAZONABLE. En la prueba de agilidad y resistencia, ambos sexos fueron clasificados como “bajo”. En la prueba de velocidad, los estudiantes de sexo masculino y femenino, respectivamente, se clasificaron en la categoría “muy buena” y “buena”. En la prueba de fuerza / resistencia los estudiantes hombres y mujeres respectivamente, se clasificaron en la categoría “MUY BAJO” y “BAJO”. En la prueba de resistencia explosiva de los miembros inferiores y superiores, los estudiantes masculinos se clasificaron en la categoría de “bueno” y “razonable” respectivamente, y los resultados para la fuerza explosiva de las extremidades superiores e inferiores de las estudiantes femeninas, nos permitieron clasificarlas respectivamente en la categoría “muy buena” y “buena”. Esto nos permite decir que el nivel de aptitud física de los escolares del IFTO que fueron investigados, se ha situado dentro de lo deseable y compatible con un estilo de vida saludable.

PALABRAS CLAVE: escuela, aptitud física, salud.

APTIDÃO FÍSICA DOS ESCOLARES DO IFTO
RESUMO

O objetivo deste estudo foi analisar a aptidão física dos escolares do Instituto Federal de Educação, Ciência e Tecnologia do Tocantins/IFTO – Campus Araguaína através do teste de flexibilidade (sentar e alcançar), teste de força/resistência abdominal, teste de força explosiva dos membros inferiores e superiores (salto horizontal e arremesso de medicineball), teste de agilidade (teste do quadrado), teste de velocidade de deslocamento (corrida de 20 metros), teste de capacidade cardiorrespiratória (9 minutos) e sua comparação com os valores de referência propostos por Gaya e Silva (2007), classificados em MUITO FRACO, FRACO, RAZOÁVEL, BOM, MUITO BOM e EXCELÊNCIA. O estudo foi caracterizado como uma pesquisa de cunho descritiva, amostragem do tipo aleatória causal, estatística descritiva para caracterizar os grupos estudados conforme o sexo, através de medidas de localização e dispersão. Foram avaliados 24 escolares (10 do sexo masculino e 14 do sexo feminino) de quatorze a dezessete anos de idade, regularmente matriculados no IFTO – Campus Araguaína. Os resultados encontrados para flexibilidade dos escolares do IFTO de ambos os sexos nos permitiram classificá-los na categoria RAZOÁVEL. No teste de agilidade e de resistência, ambos os sexos foram classificados na categoria FRACO. No teste de velocidade, escolares do sexo masculino e feminino foram classificados respectivamente na categoria MUITO BOM e BOM. No teste de força/resistência, escolares do sexo masculino e feminino foram classificados respectivamente na categoria MUITO FRACO e FRACO. No teste de força explosiva dos membros superiores e inferiores, escolares do sexo masculino nos permitiram classificá-los respectivamente na categoria BOM e RAZOÁVEL, e os resultados encontrados para força explosiva dos membros superiores e inferiores dos escolares do sexo feminino nos permitiram classificá-las respectivamente na categoria MUITO BOM e BOM. Isto denota um nível de aptidão física dos escolares do IFTO investigados dentro do desejável e compatível com um estilo de vida saudável.

PALAVRAS-CHAVE: escolares, aptidão física, saúde.