30 - ANALYSIS OF MOTOR ELEMENTS IN ACADEMICS OF THE COURSE OF PHYSICAL EDUCATION

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The Physical Education is projected within the health area and it is up to its professionals developing activities with movements which help in the acquisition or the improvement of that health with their students or with the population who they are working with.

Starting from the presupposition that every concept evolves and shows variations, we understand the health as a significant bio-psycho-social well-being (Manoel at al 2002), recognizing the individual as a multidimensional being assisted in his mental, physical, social, affective and moral aspects. Nahas (2003) and Pitanga (2004) see health as a human condition, presenting the previously mentioned aspects, and being characterized by a continuous which goes from a positive extreme to the negative one. The positive health would be associated to the capacity of appreciating life and resisting to the daily challenges, while the negative health would be associated to the morbidity, and in the extreme with the mortality. The most influent factors on the movement of the individuals between these two poles would be the environmental ones, with or without the existence of pollution; the social ones, with basic sanitation, residence, familiar income, and transport; the life style with a good nutrition, physical activity with good management of the emotional stress, besides the biologic ones.

Several studies have evaluated the aspects of the physical fitness in relation to the health of the university students (Conte et al, 2002; Salvador et al, 2005; Macedo et al, 2003; Sigmaringa et al, 1992; Chaves et al, 2002; Loch et al, 2006), in order to evaluate important aspects on the sportive performance such as lesions, circumferences, and number of repetitions in strength test.

In addition to the application of exercises and activities aiming at the improvement of the aspects related to the life quality, we have the concern of verifying the health of the professional that acts or will act in Physical Education. We have started from a basic motor structure (Singer, 1975, Magill, 2000 and Schmidt e Wrisberg, 2001) which sees the time of reaction, the proprioception, the balance, and the coordination as motor components that can be trainable, besides bringing a highly positive repercussion in the accomplishment of any activity or exercise and, consequently, for the health as important elements for a healthy professional practice as well as for the execution of the exercises.

By focusing the importance of the equilibrium we can notice that it is responsible for avoiding the occurrence of the postural oscillations once that they are closely related to the risks of falls (Spirduso, 2005). Furthermore, for every simple motor act of locomotion, specially walking, although it may seems an usual process, it requires the stepping control, the equilibrium control, and the adaptation of the organism to the environmental changes. The repetitive task of keeping standing up with assorted objectives and including other activities only becomes efficient with the existence of the balance.

Another motor element of significant importance on the accomplishment of exercises or physical activities is the motor coordination. It allows the individual to develop the execution of the movement taking to a progressive integration of acquisitions besides favoring an optimal performance of the several muscular groups in the sequence of movements with a maximum of efficiency and economy. It is the ability of integrating in efficient patterns of movement motor systems apart with assorted sensorial modalities.

Meinel (1984) e Tittel et al (1988) emphasize that the motor coordination, in the sportive and recreational modalities, and also in the everyday tasks develops an important role on the control degree of the movements and for the reach of a level of quality in the learning process of these movements and also of the writing and the speaking. As a whole, when one describes coordinate people or people with a good coordination, it is referring to the capacity of people coordinate the eyes, hands, and foot in a way that a specific movement can be accomplished in order to achieve an objective (Spirdus, 2005).

The self-perception**,** also referred as kinesthesia, which treats about the information originating from several sensorial receptors of the muscles and articulations, informing strength, speed of the movement, and body position is another factor of relevant significance in the focus of this text. It is important once that provides responses to the muscular contractions and also to the relaxation. Its effects may be of short or long running and that is the reason why is necessary to train it and to use it in movement situations. According to Singer (1975), the self-perception can in part explain the fact of that maybe here it is one difference between what the executor of the structural movements makes and what it think that it makes.

As one last element, however, not concluding the list of perceptive-motor elements and their participation in every achievement, we have the time of reaction or the speed of response that is the interval of time between the appearance of a stimulus and the initial activation of the muscular groups appropriate to carry out a certain task (Spirduso,2005). The measurement of the time of reaction offers an explanation about the internal processes which take place in the voluntary movement. It may be applied in quite simple situations such as intercepting a ball or any object.

Thus, the present paper has the objective of identifying and co-relating levels of fine and large motor coordination, equilibrium, and self-perception**,** time of simple reaction and of choice in academics of the course of Physical Education.

Characterization of the Group of Study:

Took part in the study 35 students, 21 women and 11 men, of the 5th semester of the course of Physical Education (Full Degree - Curriculum Version 1990) of the Universidade Federal de Santa Maria enrolled in the discipline of Introduction to the Motor Learning in the classes 2005/2 with 24 students, and 2006/1 with 11 students. All of them had already studied the disciplines of collective sports I (Soccer), II (Basketball), III (Handball), and IV (Volleyball) and the Individual Sports I and II and Gymnastic I, II and III.

Tests and Procedures for its Accomplishment:

The tests accomplished were: the Test of Large Motor Coordination - Burpee (Johnson & Nelson, 1979); the Test of Fine Motor Coordination - Manual Abilities (Andreotti e Okuma, 1999); the Test of Equilibrium - Parada da Cegonha - STORK STAN (Johnson & Nelson, 1979); the Test of Self-Perception (Paixão, 1981); the Test of the Time of Simple Reaction and of Choice (Motta e Carpes 2004). All the students have been evaluated at the Laboratory of Motor Learning of CEFD/UFSM.

For the accomplishment of the test of Large Motor Coordination the individual starts from the standing position inflecting the knees and the trunk and sustaining the hands on the ground in front of the feet; throws his legs back, taking on the position of facial support with the arms extended; subsequently, he returns with the legs taking on the stooping position again and then returns to the standing position. With a command, the individual has 10 seconds to repeat that movement the largest number of times in a single attempt.

The test of Fine Motor Coordination consists of a panel where the individual must place the key in the lock, to place the socket in the plug, to remove the lamp from the support and to dial the number 9 on the telephone. Two attempts must be done, accepting the smallest time.

In the test of Equilibrium the individual must be standing over the dominant feet and to place the other one in the medial portion of the supporting knee with the hands in the hips. At one sign, the individual remove the heel of the supporting foot from the ground and try to keep the balance the largest time possible without letting the heel touch the ground. Three attempts are done and the longest time of equilibrium is registered in seconds.

For the test of Self-Perception it is used the kinesthesiometer where the individual place his domain arm over the ruler with the palm turned up and accomplish three movements lead by the assessor at 90°, 45° and 105° and with the eyes blindfolded he must travel the same course and in the same sequence. An attempt is done taking note of what remained or lacked to reach the required angles.

Now the Time of Simple Reaction and of Choice is evaluated by using a software where the individual sit down in front of the computer and wait for the light sign to appear for giving his answer. Initially, the light will be red and soon after it will be green. That is the moment when he must leave as fast as possible the finger from the keyboard being this moment characterized as time of simple reaction. For the time of choice reaction, as the name it self already says, the individual must choose the right answer according to the sign. Initially, the red light appears, after that, if the blue color appears he must leave the right pointing finger and if the light gets green he must leave the left pointing finger. He must carry out twenty attempts with the five first ones and the five last ones being discarded. The program it self will prepare the average and the standard detour of the 10 attempts of each individual in m/s.

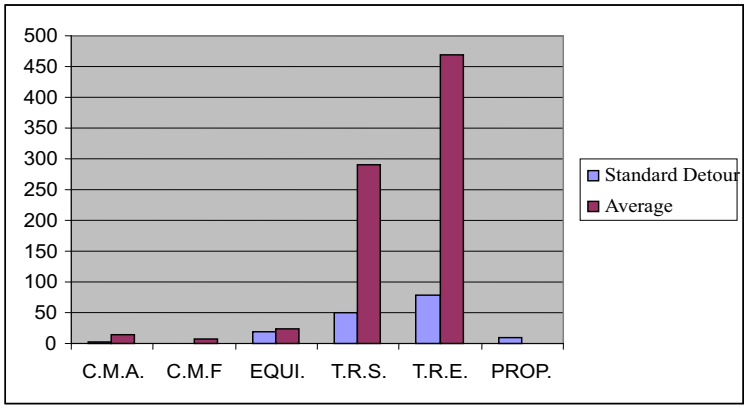
Data Statistical Analysis

The descriptive statistic with average and standard detour has been applied in both classes. The Pearson's Correlation with level of significance p< 0, 05, through the SPPS statistic package version 11.0, has been applied in order to verify the relation between the variables.

Results and Discussion

The results have been analyzed in average and standard detour for each motor-perceptive capacity. They have shown that for the Large Motor Coordination (CMA) the students have scored 14, 85 points in average (±2, 87); for the test of Fine Motor Coordination (CMF) their result on accomplishing the task was of 6,94 seconds in average ((±0,99), while for staying without touching the supporting feet on the ground, during the test of Equilibrium (EQUI), the average obtained was of 23,11 seconds ((±18,32). For the test of self-perception (PROP), in which they must develop the task in degrees, they achieved the average of right movements 0,085° (±10, 19). Now the responses for the time of simple reaction and of choice were the following: for the time of simple reaction (TRS) the average achieved was 291,47 m/s (±50,07), while for the time of choice reaction (TRE) the average was 468,66 m/s (±79,64). See graphic 1.

Graphic 1- Average and Standard Detour of the Large Motor Coordination (CMA), Fine Motor Coordination (CMF), Equilibrium (Equi), Time of Simple Reaction (TRS), Time of Choice Reaction (TRE) and Self-perception (PROP).



Taking in to account the Galahue & Ozmun's explanation (2005), when we generalize about the motor behavior and the performance along the life, we become improved at every decade of life, achieving stability during the beginning of the adult phase, the age group of the study's subjects.

The results have shown that in relation to both, large and fine motor coordination, the academics have achieved good levels. That is because, according to Gallahue & Ozmun (2005), the rudimentary body coordination and the eye-hand and the eye-foot coordination became improved in a linear way along the time reaching its top in the second stage of life. With regard to the equilibrium, the academics have shown a low performance, once that, being them young adults with a report of continuous practice of physical exercises, we expected a more expressive result. According to Spirduso (2005), is pretty more difficult to maintain the static balance over one foot than it is to maintain the stability over the both of them because, besides the supporting base being smaller, the neuromuscular skeletal system available is very restricted. With relationship to the self-perception, there has been an excellent performance, because the average of error in degrees was of 0,085 showing that the individuals have a good notion about the movements developed by their members in a certain space. It is interesting to emphasize that every sensorial system has its own sensibility degree for detecting the intensity discrepancies of stimulus Magill (2000). And finally, the results of the test of the time of simple reaction and of choice which have shown a great acting for the age group once that this capacity reaches its performance top in the beginning and in the middle of the second decade of life (Spirduso, 2005).

It is convenient to highlight that the individuals must have a good motor-perceptive development and motor development because they are important for a well succeed motor acting (Gallahue & Ozmun, 2005). In other words, the bases for any well succeed motor development are the capacities of equilibrium, coordination, speed of fast reaction and space perceptions and time and space perceptions.

The Pearson's correlation has been used in order to verify the existence of relation among the variables.

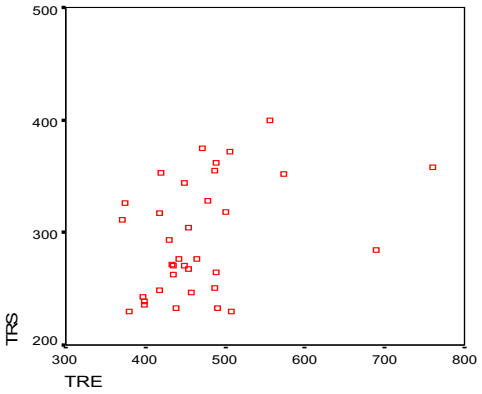
Figura 1 - Outcome of the Correlations.

		CMA	CMF	EQUIL	TRS	TRE	PROP
CMA	Pearson Correlation	1	-,106	,160	-,211	-,248	,156
	Sig. (2-tailed)	.	,546	,360	,224	,150	,370
	N	35	35	35	35	35	35
CMF	Pearson Correlation	-,106	1	-,312	,284	,049	,024
	Sig. (2-tailed)	,546	.	,068	,098	,779	,892
	N	35	35	35	35	35	35
EQUIL	Pearson Correlation	,160	-,312	1	-,203	-,263	-,098
	Sig. (2-tailed)	,360	,068	.	,242	,127	,577
	N	35	35	35	35	35	35
TRS	Pearson Correlation	-,211	,284	-,203	1	,365*	,078
	Sig. (2-tailed)	,224	,098	,242	.	,031	,655
	N	35	35	35	35	35	35
TRE	Pearson Correlation	-,248	,049	-,263	,365*	1	,252
	Sig. (2-tailed)	,150	,779	,127	,031	.	,145
	N	35	35	35	35	35	35
PROP	Pearson Correlation	,156	,024	-,098	,078	,252	1
	Sig. (2-tailed)	,370	,892	,577	,655	,145	.
	N	35	35	35	35	35	35

* Correlation is significant at the 0.05 level (2-tailed).

Starting from the analysis of the illustration 1, we can notice that a significant correlation has only occurred between the variables time of simple reaction and of choice that, although not being strong, it can be explained by the amount of participants in this study. This one may be considered as being quite significant.

Graphic 2 - Significant correlation between the variables TRS e TRE



Thus, we can observe through the statistic analysis that there has been a significantly statistic correlation between the TRS e o TRE (0,365). It shows that those are dependent measures, that is, one can interfere with the other's development. A study has been found (Rodrigues et al, 2005) relating the time of reaction and the time of movement with no significant relation being found. According to Magill (2000), these are really dependent measures because the time of movement begins when the time of reaction ends.

In spite the fact of we know that the motor-perceptive capacities are relatively dependents one from another, the score obtained for a person in one capacity does not indicate this person's score in the other test (Magill, 1984). By analyzing the correlation between the variables we can observe the inexistence of linearity between the capacities. It may be explained by the interference of the genetic factor on the individual motor capacities showing that if one of the motor-perceptive capacities is in superior levels the other one not always be.

Conclusions

The results of the present study have shown us that the evaluated elements are important predictors of health for any individual and also for the professional future of the Physical Education. It is well known that this last one may often make use of the studied elements in the demonstration of practical situations, for the feedback supply, in the transfers' usage or in the proposal of the development of activities or physical exercises.

Within the studied group we have achieved a good outcome on the motor capacities separately, and it was satisfactory once that we are talking about academics with a good repertory of practical activities. Nevertheless, when we intended to verify the relation between large motor coordination, fine motor coordination, equilibrium, self-perception, time of simple reaction, and time of choice reaction the correlation has been obtained only between the two last ones (TRS and TRE).

The general analysis has allowed concluding the importance of verifying the condition of motor health of academics of the Course of Physical Education ruling on these elements and allying to others a base of extreme magnitude for a good professional posture.

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ANALYSIS OF MOTOR ELEMENTS IN ACADEMICS OF THE COURSE OF PHYSICAL EDUCATION

ABSTRACT

Besides valuing the importance of the motor capacities for any individual as a health predictor in the accomplishment of physical activities and exercises, one can also notice its importance for the accomplishment of professional activities. The present study has aimed at identifying and correlating levels of large and fine coordination, equilibrium, proprioception, and time of simple reaction and of choice in academics of the course of Physical Education. Thirty five academics of the course of full degree in Physical Education with the same studied disciplines took part in the study. The instruments applied were the Burpee's test (Johnson & Nelson, 1979) in order to verify the large motor coordination; the test of fine motor coordination - Manual Abilities (Andreotti e Okuma, 1999); the test of Equilibrium - Parada da Cegonha - Stork Stan (Johnson & Nelson, 1979); the Test of Self-Perception (Paixão, 1981), and the Test of Reaction Time by using a software. The Pearson's correlation has been applied to verify the relation between the variables with significance level of 0, 05 through the SPSS statistic package version 11.0. The results have shown the existence of a statistically significant correlation (0,365) only between the results of time of simple reaction and time of choice reaction.

ANALYSE DES ÉLEMENTS MOTEURS DANS LES ACÁDEMIQUES DU COURS D´ÉDUCATION PHISIQUE

RESUMÉ

Pour valoriser l´importance des capacités moteures pour quelconque individu comme un prediteur de la santé dans la réalisation des éxercises et activités physiques, on perçoit aussi sa importance pour la realization des activités professionels. L´objectif de cet étude a été identifier e corrélationer niveaus de coordination ample et fine, equilibre, proprioception, temps de réalization simple et de choix dans les acádemiques du cours d´Éducation Phisique. Trinte et cinque acádemiques du cours d´Éducation Phisique Licence Pleine ont fait partie de cet étude, avec les mêmes disciplines frequentées. On a utilisé comme instruments le test de Burpee (Johnson & Nelson,1979) pour la constatation de la coordination moteure ample; le test de Coordination Moteure Fine- Habiletés Manuels (Andreotti et Okuma,1999); le test de Équilibre Estatique- Pause de la cigogne.- STORK STAN (Johnson & Nelson,1979); le test de proprioception (Paixão, 1981) et le test de Temps de reaction à travers d´un software. Pour la vérification de rapport entre variables on a utilisé la Corrélation de Pearson, avec niveau de significance 0,05,à travers du paquet statistique SPSS, version 11.0. Les resultáts ont montré l´existence de correlation statiquement significatif (0,365) seulement entre les resultáts du temps de reaction simple et temps de reaction de choix.

ANÁLISIS DE ELEMENTOS MOTORES EN ACADÉMICOS DEL CURSO DE EDUCACIÓN FÍSICA

RESUMEN

Valorizando la importancia de las capacidades motoras para cualquier individuo con un antedicho de salud en la realización de ejercicios y actividades físicas, se percibe también su importancia para la realización de actividades profesionales. El objetivo de ese estudio fue identificar y correlacionar niveles de coordinación amplia y fina, el equilibrio, la sensibilidad a los estímulos musculares, el tiempo de reacción simples y de elegida en académicos del Curso de Educación Física. Hicieron parte del estudio 35 académico del Curso de Licenciado en Educación Física, con las mismas disciplinas cursadas. Se utilizó como instrumento el Teste de Burpee (Johnson & Nelson, 1979) para la verificación de la coordinación motora amplia; el Teste de Coordinación Motora Fina - Habilidades Manuales (Andreotti e Okuma, 1999); el Teste de Equilibrio Estático - STORK STAN (Johnson & Nelson, 1979); el Teste de Estímulos (Paixão, 1981) y el Teste de Tiempo de Reacción a través de un software. Para la verificación de la relación entre las variables se utilizó la Correlación de Pearson, con nivel de importancia 0,05, a través del paquete estadísticos SPSS, versión 11.0. Los resultados mostraron que existen correlaciones estadísticamente significativas (0,365) sólo entre los del tiempo de reacción simples y del tiempo de reacción elegida.

ANÁLISE DE ELEMENTOS MOTORES EM ACADÊMICOS DO CURSO DE EDUCAÇÃO FÍSICA

RESUMO

Valorizando a importância das capacidades motoras para qualquer indivíduo como um preditor de saúde na realização de exercícios e atividades físicas, percebe-se também a sua importância para a realização de atividades profissionais O objetivo desse estudo foi identificar e correlacionar níveis de coordenação ampla e fina, equilíbrio, propriocepção, tempo de reação simples e de escolha em acadêmicos do Curso de Educação Física. Fizeram parte do estudo 35 acadêmicos do curso de Educação Física Licenciatura Plena, com as mesmas disciplinas cursadas. Utilizou-se como instrumentos o teste de Burpee (Johnson & Nelson, 1979) para a verificação da coordenação motora ampla; o Teste de Coordenação Motora Fina - Habilidades Manuais (Andreotti e Okuma, 1999); o Teste de Equilíbrio Estático - Parada da Cegonha - STORK STAN (Johnson & Nelson, 1979); o Teste de Propriocepção (Paixão, 1981) e o Teste de Tempo de Reação através de um software. Para a verificação da relação entre as variáveis utilizou-se a Correlação de Pearson, com nível de significância 0,05, através do pacote estatístico SPSS, versão 11.0. Os resultados mostraram haver correlação estatisticamente significativa (0,365) somente entre resultados do tempo de reação simples e tempo de reação de escolha.