164 - ANALYSIS OF MOTOR SKILLS OF ADOLESCENTS OF A SWIMMING TRAINING PROGRAM

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Introduction

Total fitness refers to man's whole biopsychosocial side, that is, when one is ready for all biological, physical, psychological and social needs.

During pre-adolescence years, growth is too fast and it becomes faster during adolescence. Girls reach this phase approximately between 11 and 13; boys reach it a bit late, between 13 and 15. Motor development improves with age as the nervous system develops. (GALLAHUE and OZMUN, 2005).

Early in childhood we can note marked expressions in motor skills but it's in adolescence that fast and sudden changes happen. Health and development aspects compound motor fitness. Health aspects are cardiorespiratory resistance, strength, flexibility and body composition. Development aspects are velocity, agility, balance, muscle power and reaction time. There's an improve in motor skills with the practice of sports activities both in health and development aspects. (PINTO, FERNANDES FILHO, DANTAS, 2000).

In order to have a harmonic development it is necessary some quality and quantity of stimuli given by the environment. Movement along with these stimuli lead to a better motor development.

Swimming is known as a sports activity, which can optimize motor development. Swimming involves motor, stabilizing and manipulative skills in aquatic environment and it's directly related to the compounds of motor fitness.

This combination of basic skills is the basis for swimming specialized skills expressed through harmonic and combined execution of the different types of swimming. (CORREA; MASSAUD, 2004).

Because it is done in water, swimming is a modality with a greater air resistance so it highly depends on swimming technique.

Training develops the body as a whole because it allows the activation of organic, cardiovascular, respiratory, sensitive and motor functions which will lead to a good performance and wellness. It is through sports practice along with a well planned training program that one will improve his motor skills both related to health or to the performance.

Instruments

Instruments used in this study were abdominal resistance test (AAHPER, 1976), long jump test (JOHNSON; NELSON, 1979), grip (JOHNSON; NELSON, 1979), sit-and-reach test (JOHNSON; NELSON, 1979), Shuttle run and Tapping test based on the parameters of the EUROFIT TEST (1988) and the motor reaction velocity to a visual stimulus (REIS; GONÇALVES apud AMARAL, 2002).

Statistics

Mean value and the standard deviation were calculated from the analysis of the mean values between ages. On testing the hypothesis defined for the study, data for this analysis were the ones obtained for age values from the group scores related to the percentile in the EUROFIT TEST (1988). Statistic significance were defined for p a 0.05.

RESULTS

Results are shown in Table 1 in terms of Mean value and Standard deviation for the age values. In Table 2 we can see the percentile scores related to the parameters of the EUROFIT TEST (1988) divided by age, considering that subjects with 10 years of age were not described because they were only 1% of the sample.

Table 1. **Mean values and Standard deviation of the Tests and data from the age of the subjects.**

		TT	Trunk flexion	Agility	Jump Test	Abd	Dyn.
	Age	**Seconds**	**cm**	**seconds**	**meters**	**Repetitions**	**Kilograma**
n=11	10 (0,9)	12,2 (0,6)	37,5 (9,8)	22,5 (1,4)	1,3 (0,2)	19 (5,3)	21 (13,5)
n=10	11 (42)	11,7 (42)	42,3 (42)	21 (42)	1,5 (42)	18,2 (42)	29,4 (42)
n=5	12 (0)	11,5 0,7)	40,4 (16,9)	21,2 (1,6)	1,6 (0,3)	14 (4,3)	28,4 (9,6)
n=3	13 (0)	11,3 (1)	43,5 (7,8)	20 (1,4)	1,5 (0,4)	18 (8,5)	33,5 (16,3)

Table 2. **Score in percentile (Mean position) referring to parameters on EUROFIT TEST(1988).**

	Age	**TT**	**Trunk flexion**	**Agility**	**Jump test**	**Abd**	**Dyn_**
n=1	10 (0,9)	90%	35%	25%	25%	99%	15%
n=10	11 (42)	79.5%	**47%**	**35%**	45.5%	42,5%	55,5%
n=5	12 (0)	**80%**	43%	30%	**57%**	15%	**69%**
n=3	13 (0)	60%	40%	23.3	38.3	**56,5%**	66,5

Results showed that subjects had a better performance in the velocity of legs and a worse result in abdominal strength and agility of the legs, as well as they revealed low scores for trunk flexion and agility of the legs tests. On the arms velocity test the sample achieved 77% of the score in the percentile related to the 100% of the parameter used. Relating to age, part of the 12-years-old sample achieved 80% and part of the 13, 60%. These results are according to the literature related to the process of learning how to swim that states the relation of arms movement and legs movement. According to Maglischo (1999), in swimming techniques arms work as propulsor once the legs work as stabilizers. Besides a part of the EUROFIT-TEST, the motor reaction velocity to a visual stimulus was also used and was analysed in mean values by scores in hundredth of seconds in relation to the age. Table 3 and Figure 1 show these data.

Table 3. Scores referring to motor reaction velocity to a visual stimulus (Hundredth/second) and Age

		M.R.T.
	Age	Hundredth/second
n=1	10 (0,9)	44 (5,4)
n=10	11 (42)	36,1 (42)
n=5	**12 (0)**	**31,8 (2,2)**
n=3	13 (0)	38 (0)

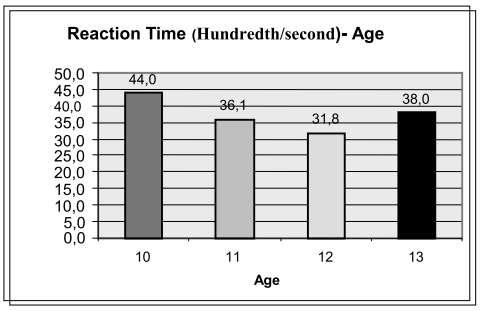


Figure 1. Scores referring to motor reaction velocity to a visual stimulus (Hundredth/second) and Age

Table 3 and Figure 1 show that the sample related to the 12-years-old group had a better response (less time) in relation to the group by age. This may be due to the process of learning itself related to the methodology of teaching swimming that optimizes the serial change of movements in the practice of the styles.

CONCLUSION

Swimming is, in this case, a sports practice that may be considered efficient when programs prioritizing motor activities (functional kinetic-biomechanics) with specific methodologies to each pace of development and to each motor phase of the learner are applied.

Harmonic development of human being depends,to a certain extent, on the quantity and quality of the stimulus from the environment. In swimming these stimuli are varied in relation to the combination of the natural movements. For this reason, swimming allows a period of learning adequated to the neuromotor adaptation of the person related, to a certain extent, to his ability. In the case of this study a probability of a better performance in ability related to the chores with emphasis on the training of this practice in the process of perfecting was observed. This study are according with the theories of periodical evaluation and specific to the nature of the sports modality in the search of a better performance. The aim of swimming is stimulate and optimize the whole development of the person and improve total ability.

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ANALYSIS OF MOTOR SKILLS OF ADOLESCENTS OF A SWIMMING TRAINING PROGRAM

ABSTRACT

Total fitness refers to man's whole biopsychosocial side, that is, when one is ready for all biological, physical, psychological and social needs. Swimming is known as a sports activity, which can optimize motor development. Swimming involves motor, stabilizing and manipulative skills in aquatic environment and it's directly related to the compounds of motor fitness. Nineteen swimmers from both genders who had practiced for at least 6 months, 3 times a week were tested. Age of the subjects varied from 10 and 13. It was conduct in a swimming school in Barra da Tijuca, Rio de Janeiro. Instruments used in this study were abdominal resistance test (AAHPER, 1976), long jump test (JOHNSON; NELSON, 1979), grip (JOHNSON; NELSON, 1979), sit-and-reach test (JOHNSON; NELSON, 1979), Shuttle run and Tapping test based on the parameters of the EUROFIT TEST (1988) and the motor reaction velocity to a visual stimulus (REIS; GONÇALVES apud AMARAL, 2002).Results were analysed within inferential descriptive statistics, with mean values between ages and revealed that pre-adolescents and adolescents who were tested have motor according to normal parameters and above this, taking into consideration their training program. These results confirm the initial hypothesis once they reveal superiority in skills related to health and development of pre-adolescents and adolescents swimming practicers showing the influence of the swimming training on the motor skills.

Key-words: Motor skills, Swimming training, Adolescents

L' ANALYSE DE L'APTITUDE MOTRICE DES ADOLESCENTS EN INTRODUCTION DANS UN PROGRAMME D'ENTRAINEMENT DANS LA NATATION

Résumé

L'aptitude complète fait allusion à la totalité biophysiquepsycosociale de l'homme , ou bien, elle traduit le fait de l'individu être prêt pour tous les besoins biologiques, physiques, psychologiques et socials. La natation est connue comme une des activités sportives habilitées pour améliorer le développement moteur. Nager demande un domaine locomoteur, une

habilité de stabiliser et un domaine de mouvoir le corp dans le space aquatique. Nager se rapporte directement aux éléments de l'aptitude motrice. Dix-neuf intégrants d'un entraînement de natation, de deux genres, ont été testés, pour analyse, avant et après six mois, avant une fréquence regulière de trois fois par semaine de natation. Les individus choisis et analysés avaient entre dix et treize ans. L'enquête a eu lieu dans une école de natation situé à Barra da Tijuca, Rio de Janeiro. Les instruments appliqués dans cet étude, Força abdominal (AAHPER, 1976), Salto horizontal long jump (JOHNSON, Nelson, 1979), Sentar e alcançar (JOHNSON, Nelson, 1979), Shuttle run, Tapping test com base nos parâmetros de análise do EUROFIT TEST (1988) et le Teste de Velocidade de Reação Motora a um Estímulo Visual (REIS, Gonçalves apud AMARAL, 2002). Les résultats ont été obtenus d'après la statistique descriptive, avec l'analyse des valeurs moyennes des variables entre les âges. Ces résultats-là ont montré que les adolescents ont réussi selon la santé et selon l'éxecution que ont été compatibles avec les paramètres normaux, en observant l'entraînement dans la natation. En affirmant l'hypothèse iniciale, les résultats montrent que les adolescents ont une santé totale et une excelente performance dans la natation. Ainsi, on peut affirmer que l'entraînement dans la natation optimise l'aptitude motrice.

Mots Clés: L'aptitude motrice, L'entraînement dans la natation, Adolescents.

ANÁLISIS DE LA APTITUD MOTORA DE ADOLESCENTES INSERTADOS EN UN PROGRAMA DE ENTRENAMIENTO EN NATACIÓN

RESUMEN

La aptitud total referese a la totalidade biofisicopsicossocial del ser humano, ou seja, traduce el hecho del individuo estar apto a todas las necesidades biológicas, físicas, psicológicas y sociales. La natación és conocida como una de las actividades esportivas capazes de optimizar el desarollo motor. El ejercicio de nadar envolve habilidades locomotoras, estabilizadoras y manipulativas en relación al cuerpo en el ambiente acuático, y está relacionado diretamente con los componentes de la aptitud motora. Para análisis de los datos, fueron testados 19 indivíduos de ambos los gêneros, praticantes de un programa de natación hace pelo menos seis meses y con frecuencia regular de tres vezes semanales. La faja etária de los indivíduos seleccionados y investigados varió entre 10 e 13 años. El estúdio fue realizado en una escuela de natación localizada en el barrio llamado Barra da Tijuca, em la ciudad del Rio de Janeiro. Los instrumentos utilizados en el presente estudio: Força abdominal (AAHPER, 1976); Salto horizontal - long jump (JOHNSON; NELSON, 1979); Preensão da mão grip dinamômetro (JOHNSON; NELSON, 1979); Sentar e alcançar (JOHNSON; NELSON, 1979), Shuttle run, Tapping test com base nos parâmetros de análise do EUROFIT TEST (1988); Teste de Velocidade de Reação Motora a um Estímulo Visual (REIS; GONÇALVES apud AMARAL, 2002). Los resultados que fueron tratados a partir de la estadística descriptiva inferencial, con análisis de los valores médios de las variables entre edades, revelaron que os pré-adolescentes e adolescentes testados apresentan aptitud motora; un dato compatible con los parámetros considerados normales y acima de la normalidad si considerado el entrenamiento qué realizan durante la práctica de la natação. En términos porcentuales, esses resultados confirman la hipótesis inicial para la investigación, ya qué revelan superioridad em la aptitud relacionada a la salud y la actuación de pré-adolescentes e adolescentes qué entrenan natación, presupuendo entoncis la influencia del entrenamiento en natación sobre la otimización de la aptitud motora.

Palabras-Clave: Aptitud Motora, Emtrenamiento en Natación, Adolescentes.

ANÁLISE DA APTIDÃO MOTORA DE ADOLESCENTES INSERIDOS EM UM PROGRAMA DE TREINAMENTO EM NATAÇÃO

RESUMO

A aptidão total refere-se à totalidade biofisicopsicossocial do homem, ou seja, traduz o fato do indivíduo estar apto para todas as necessidades biológicas, físicas, psicológicas e sociais. A natação é conhecida como uma das atividades esportivas, capaz de otimizar o desenvolvimento motor. O nadar envolve habilidades locomotoras, estabilizadoras e manipulativas em relação ao corpo no ambiente aquático e está relacionado diretamente com os componentes da aptidão motora. Para análise dos dados foram testados 19 sujeitos de ambos os gêneros praticantes de um programa de natação há pelo menos 6 meses e com freqüência regular de três vezes semanais. A faixa etária dos sujeitos selecionados e pesquisados, variou entre 10 e 13 anos. A pesquisa foi realizada em uma escola de natação localizada na Barra da Tijuca, no Rio de Janeiro. Os instrumentos utilizados na presente estudo, *Força abdominal* (AAHPER, 1976). *Salto horizontal* - long jump (JOHNSON; NELSON, 1979). *Preensão da mão grip* dinamômetro (JOHNSON; NELSON, 1979). *Sentar e alcançar* (JOHNSON; NELSON, 1979), *Shuttle run, Tapping test com base nos parâmetros de análise do EUROFIT TEST (1988) e o* Teste de Velocidade de Reação Motora a um Estímulo Visual (REIS; GONÇALVES *apud* AMARAL, 2002). Os resultados foram tratados a partir de estatística descritiva inferencial, com análise de valores médios das variáveis entre idades, revelaram que os pré-adolescentes e adolescentes testados apresentam aptidão motora, compatível com os parâmetros considerados normais e acima da normalidade, levando em consideração o treino que realizam na natação. Sendo em percentual, esses resultados confirmam a hipótese inicial para a investigação, já que revelam superioridade em aptidão relacionada à saúde e desempenho de pré-adolescentes e adolescentes que treinam natação, pressupondo dessa forma a influência do treinamento em natação sobre a otimização da aptidão motora.

Palavras-Chave: Aptidão Motora, Treinamento em Natação, Adolescentes.