104 - COORDINATIVE CAPACITY OF SWIMMING AND NON SWIMMING CHILDREN PRACTITIONERS

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INTRODUCTION

Early childhood education is the basis for motor development; this is the time of life when the Physical Education professional should mostly encourage motor learning with different activities, so that the children get the maximum motor experiences that will culminate with a good motor development; the greater the diversity of movements worked, the better the children motor learning will be.

According to Gallahue (2005), motor development is the continuing change in motor behavior throughout life, provided by the interaction between the task needs, the individual biology, and the environmental conditions. The same author also states that "Development is an ongoing process that begins at birth, and ends only with death" (GALLAHUE, 2005). But it is intensified in the 6 first years of life.

For a good development of the coordination, there are countless possibilities/tools/motor practices, pedagogical interventions to be used, among which we highlight swimming. Swimming lessons in primary school is crucial for motor learning, as it simulates several different moves in the liquid environment, which by itself is a great motivational factor. Besides, swimming for children is important for safety reasons.

Therefore, the aim of this study was to determine the coordination level of children that practice swimming, and that don't practice swimming, by using a reliable instrument, in order to have concrete data on such, and thereby be able to make improvements in the professional intervention proposals.

MATERIALS AND METHODS

This is a descriptive research, with a quantitative approach in a sample of primary school students. 30 students were evaluated, both genders, aged between 9 and 10 years (mean 9.5 ± 0.70), 15 of which were practitioners of swimming, and 15 were not swimmers, duly enrolled in two private educational institutions Manaus/AM/Brazil. The participants were given a Voluntary Consent Term to be signed by their parents (or legal representative), and returned afterwards, in order to qualify for a fully voluntary research. All ethical research procedures with human subjects were observed, according to the Guidelines and Norms Regulating Research Involving Human Subjects (Brazil Resolution196/96, from the National Health Council). All data collection was initiated only after the receiving and acceptance of the terms.

The subjects were split into two groups of 15 students each, as it follows: the 1st group (swimmers), made up of students who attended to swimming lessons regularly at school, and the 2nd group (non swimmers), was made up of students who did not attend to swimming lessons regularly. The swimming lessons took place during the Physical Education classes, two sessions a week, 50 minutes each. The activities carried out during the lessons were prepared by the school's Physical Education teacher, therefore not being influenced by the researchers.

The instrument used to collect the data was the KTK - Body Coordination Test for Children (Körperkoordinationstest Für Kinder), better described by Gorla & Araújo (2007), an instrument that consists of 4 separate tests: Balancing Backwards (BB), One Leg Jumping (OLJ), Sideway Jumping (SJ), and Moving Sideways (MS).

The KTK tests the "general body domain" movement dimension, according to the results of several factors analysis, which aim to a strong homogeneity of the test tasks. It lends itself to the determination of the development of the movement scale in children from 4.5 to 14.5 years-old.

It is noteworthy that the sum of the four motor quotients (MQ) of each task is equivalent to a score ranging from 42 to 148 points, being associated with a percentage from 0 to 100, which allows the analysis of the results of two ways: separately for the 4 tasks, or showing a general MQ score (LOPES, 1997).

Kiphard and Schiling (1974, cited in GORLA; ARAÚJO; RODRIGUES, 2009) state that the four KTK tests aim the characterization of the general motor coordination and body domain. The four tests are described as it follows:

1) Balance Backwards Test: it aims the balance stability while waking backwards along three wooden bars. In this test, the subject should walk backward 3 times on each 3 different bar. Every bar is 3 meter long, but the width of the bar varies: the first one is 6 cm, the second 4.5 cm and the third 3 cm wide. In this test, every step made is counted. The maximum amount of steps for each attempt is 8. The result from this test is the summation of steps made at all nine attempts, giving the maximal result of 72 steps. The total amount of points is counted and then converted to the MQ result. Before the test, subjects can have one practice walk forward and backward on each bar.

Figure 1. Balance Backwards Test



Source: https://www.google.com.br/search?q=imagens+de+crian%C3%A7as+realizando+o+teste+de+KTk&biw

2) One Leg Jumping Test: The objective of this is to evaluate the coordination, dynamic energy and power of the legs. This test is performed unilaterally and both legs are evaluated for the results. The subject has to take speed with hopping on one leg and then jump over the increasing pile of soft pillows; the jumping height varies from 0 cm to 60 cm. The performance is approved when the

subject is able to take two hops with one leg after jumping over the pile. Every attempt is evaluated and the subject has three attempts on every height. Getting over the pile on the first attempt gives 3 points, getting over with the second attempt gives 2 points and with the third attempt, the subject will get 1 point. The total amount of points for both legs are counted and then converted to the MQ result. Before the test, subjects may have one practice performance over a 5 cm obstacle. The starting height for the test is 25 cm.

Figure 2. One Leg Jumping Test



Source: https://www.google.com.br/search?q=imagens+de+crian%C3%A7as+realizando+o+teste+de+KTk&biw

3) Sideway Jumping Test: This test is performed bilaterally. This test is limited by time and the subject has 15 seconds to jump over a 2 cm high and 4 cm wide wooden rod. All accepted jumps are counted to the result. The subject has two attempts and both results are counted and then converted to the MQ result. Before the test subjects may have five practice jumps.

Figure 3. Sideway Jumping Test



Source: https://www.google.com.br/search?q=imagens+de+crian%C3%A7as+realizando+o+teste+de+KTk&biw

4) Moving Sideways Test: In this test, the subject moves one plate on sideways and he is standing on the other plate. The subject has 20 second to perform and every movement of the plate is one point and step on to the other plate is one point. The points are the result from this test. The plate has to be moved with both hands. The subject can have two attempts and perform the movement for both ways. The total amount of points for these two attempts is counted and then converted to the MQ result. Before the test, subjects may have training for five sideway movements.

Figure 4. Moving Sideways Test



Source: https://www.google.com.br/search?q=imagens+de+crian%C3%A7as+realizando+o+teste+de+KTk&biw

For the KTK test, there are age standard values for the MQ for children that range from five to fourteen years-old (GORLA & ARAUJO, 2007).

The KTK test has an individual reliability of 65 to 87, getting, but with an overall reliability of 90 (GORLA & ARAUJO, 2007), which demonstrates the credibility of it.

The values obtained in all tests are compared to the reference KTK test tables.

RESULTS AND DISCUSSION

The results found after the data collection, tabulation, and analysis, are now presented, as it follows:

Table 1: KTK test results for Swimmers and Non-Swimmers

Groups	Age	n	MQ	Classification
Swimmers	.....	15	60,46	Inability for Coordination
Non-Swimmers	9,5 ± 0,70	15	46,93	Inability for Coordination

The MQ is a global indicator for the motor coordination capacity, which results from the values obtained in each KTK test. Calculations are made considering the normative values for each test, adjusting the results for each age range (MORE; LOPES 2007.).

Table 1 shows that both groups did not obtain satisfactory rating, ie. were classified with inabilities in the coordination, according to the KTK test reference table. Moreover, interestingly, the results for the group of swimmers showed to be lower than the

group of non-swimmers, that is, although this group exercises regularly, it demonstrates inability to coordinate. This can be explained by many variables, such as the methodological procedures for the practice of swimming during classes, which may not be based on coordinative works. The development in water should happen according to the maturational process of the children, with the improvement of their reflexes and coordination in general. But the analysis of such variables does not take part on the objectives of this study.

According to Piaget (1976, cited in Freitas, 2000), education should enable children a broad and dynamic development, from the sensor motor period to the abstract operation. The school should begin with children's assimilation schemes, proposing challenging activities that would cause imbalances and successive readjustments, promoting the discovery and construction of knowledge. For each children development stage, there are neuromotor abilities for performing movements in the water.

According to DELGADO (2000), for children that are learning how to swim, in general, the lessons should be carried out respecting ages and abilities according to their development, and thus not enforcing early learning, which could reflect negatively on the children's development.

Neira (2003) states that

[...] We can not forget that there are a number of principles in which the different educational streams should be in agreement with: the learning process depends on the unique characteristics of each individual, and these correspond, in part, to experiences each one has lived ever since the birth date; the way we learn and the pace of learning vary according to the abilities, motivations and interests of each individual; the way we produce learning is the result of natural and individual processes.

Another study carried out by Santos et al (2011) verified the coordination of children who practiced (G1) and did not practice (G2) swimming, through the KTK test. Some of the results found were: a) in terms of general coordination, most of the sample (75%) was classified as normal; b) when comparing both groups, there were no statistically significant differences ($p < 0.05$) between G1 and G2, despite the G1 children aged 6, 9 and 10 had shown higher values than G2; c) the results found by both groups in the four KTK tests, although not statistically significant ($p < 0.05$), showed that G1 children had their coordinative capacity - speed (Sideway Jumping), coordination of legs, dynamic energy and strength (One Leg Jumping), laterality and time structuring (Moving Sideways) - better developed than G2; G2 only showed the coordinative capacity – (Balance Backwards) - better developed (SANTOS et al, 2001).

Lopes (2006) conducted a similar study in Portugal, and found no association between the practice of regular physical activity and motor coordination in children, which can be explained not by the lack of daily physical activity, but probably due to lack of variety of such activities, since this is largely influenced by motor experience, not only in terms of quantity, but also quality of motor stimulus to which individuals are exposed (MAIA; LOPES, 2007).

In another study, this one developed in southern Brazil by Castilha (2014), aimed to test the coordination skills of two different children groups (20 individuals in each), same age groups as the one in this study, but instead of swimming, they were capoeira practitioners children – practicing for at least 3 months, 2 training sessions of 45 minutes each week, and non-capoeira practitioners, also using the KTK test. The results showed coordination levels scored 100 for the capoeira practitioners, and 91 for non-capoeira practitioners, results which were classified within the normal coordination range, according to the KTK test classification table (GORLA & ARAUJO, 2007). In percentages, the results showed 50% of coordination for the group of capoeira practitioners, and 27% for the group of non-practitioners, according to the percentage table sum of MQs, also proposed by Gorla & Araújo (2007). These results meant that the regular practice of capoeira could possibly contribute positively towards the improvement of the overall coordination in scholars, given the multifaceted feature of this sport.

CONCLUSION

The survey showed intriguing results regarding the general coordination levels for the swimming practitioners. Possibly, intervening variables, which were not controlled in this study, may have influenced such results. Therefore, it is suggested that further studies are developed with the groups concerned, and with the control of other variables, as well as the replication of this study with other sample groups, and other sports, in order to increase the scientific evidence on the coordinative aspects regarding swimming practitioners.

Moreover, the information shown in this study can serve as a guideline for Physical Education teachers to design better pedagogical interventions, emphasizing and encouraging the practice of swimming especially in the early school years, so that the children are able to understand and have the possibility of developing their motor practices autonomously.

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COORDINATIVE CAPACITY OF SWIMMING AND NON SWIMMING CHILDREN PRACTITIONERS

ABSTRACT

The greater the diversity of body movements is worked in children, the better their motor repertoire in adulthood will be, which will culminate with numerous benefits of both motor and intellectual order. Therefore, the Physical Education professional can use swimming as a tool for assisting the development of motor coordination in children. Objective: Evaluating the motor coordination of children that practice and don't practice swimming. Materials and Methods: The instrument used to collect the data was the Body Coordination Test for Children KTK (Körperkoordinationstest Für Kinder). The sample consisted of 30 children, ages between 9 and 10 years (mean 9.5 ± 0.70), practitioners and non-practitioners of swimming, both genders, duly registered to two private educational institutions in the city of Manaus/AM/Brazil. Results: The results showed no significant differences between the 2 groups surveyed: the group of non-swimmers showed an average Motor Quotient (MQ) of 60.46, while the group of swimmers showed an average MQ of 46.93. Interestingly, the results found in swimmers students proved to be unsatisfactory, with low level of coordination, although this group exercises regularly. Conclusion: It was concluded that the group of swimmers showed results below the group of non-swimmers for motor coordination, according to KTK test. Therefore, it is suggested that other instruments are applied to these groups, as well as to others, in order to investigate the reason for these results.

Key-words: swimming; motor development; school.

LA CAPACITE DE COORDINATION DE ENFANTS PRATICIENS ET NON PRATICIENS D'LE NATATION

RÉSUMÉ

Plus la diversité des mouvements a travaillé chez les enfants, mieux sera leur répertoire de moteur à l'âge adulte, qui culminera avec de nombreux avantages, à la fois moteur qu`intellectuel. Par conséquent, le professionnel d'éducation physique peut utiliser la natation pour aider à l'apprentissage moteur des enfants. Objectif: évaluer le développement moteur enfants, pratiquants et non pratiquants la natation. Matériels et méthodes: L'instrument utilisé pour recueillir les données a été le test de coordination du corps pour les enfants KTK (Körperkoordinationstest Für Kinder). L'échantillon se composait de 30 enfants âgés de 9 à 10 ans (moyenne 9,5 ± 0,70), pratiquants et non pratiquant nageurs des deux sexes, dûment enregistré dans deux établissements d'enseignement privés de la ville de Manaus / AM. Résultats: Les résultats ont montré aucune différence significative entre les 2 groupes étudiés. le groupe des non-nageurs a pointé un Quotient Moyen (QM) de 60,46, tandis que le groupe de nageurs a montré une moyenne de 46,93 QM. Fait intéressant, les résultats trouvés dans les nageurs étudiants se sont avérés satisfaisants, avec un faible niveau de coordination, bien que ce groupe pratique l'exercice régulièrement. Conclusion: Il a été conclu que le groupe de nageurs apportent des résultats inferieurs aux groupe de nageurs pratiquants la coordination motrice, selon le test KTK. Par conséquent, il est suggéré que les autres instruments sont appliqués à ces groupes, ainsi que d'autres, pour déterminer pourquoi ces résultats.

Mots-clés: Natation; le développement moteur; école.

CAPACIDAD COORDENATIVA DE ALUMNOS PRATICANTES Y NO PRATICANTES DE NATACIÓN

RESUMEN

Cuanto mayor sea la diversidad de movimientos trabajados con los niños, mejor se alcanzará su repertorio motor en la edad adulta, que culminará con numerosos beneficios, tanto de orden motora cuanto intelectual. Por lo tanto, el profesional de Educación Física puede utilizar la piscina para ayudar en el aprendizaje motor de los niños. Objetivo: Evaluar el desarrollo motor de niños practicantes y no praticantes de natación. Materiales y Métodos: El instrumento utilizado para la recogida de datos fue el teste de coordinación corporal para niños KTK (Körperkoordinationstest Für Kinder). La muestra fue constituida por 30 niños entre 9 y 10 años (media 9,5 ± 0,70), de ambos sexos, debidamente inscritos em dos instituciones educativas privadas de la ciudad de Manaus/AM, Brasil. Resultados: Los resultados no mostraron diferencias significativas entre los 2 grupos estudiados: el grupo de los no nadadores señaló um Quociente Motor (QM) medio de 60.46, mientras que el grupo de nadadores señaló um QM de 46.93. Curiosamente, los resultados encontrados en los estudiantes praticantes de natación no resultaron satisfactorios, con un bajo nivel de coordinación, aunque este ejercicio se practica con regularidad en este grupo. Conclusión: Se concluye que el grupo de nadadores mostraron resultados menores que del grupo de no nadadores para la coordinación motora, según la prueba de KTK. Por lo tanto, se sugiere que otros instrumentos sean aplicados a estos grupos, así como em otros, para investigar el por qué de estos resultados.

Palabras-clave: Natación; desarrollo motor; escuela.

CAPACIDADE COORDENATIVA DE ALUNOS PRATICANTES E NÃO PRATICANTES DE NATAÇÃO

RESUMO

Quanto maior a diversidade de movimentos trabalhados em crianças, melhor será seu repertório motor na fase adulta, que culminará com inúmeros benefícios, tanto de ordem motora quanto intelectual. Para tanto, o profissional de Educação Física pode usar a natação para auxiliar na aprendizagem motora de crianças. Objetivo: avaliar o desenvolvimento motor de crianças praticantes e não praticantes de natação. Materiais e Métodos: O instrumento utilizado para coleta dos dados foi o Teste de Coordenação Corporal para Crianças KTK (Körperkoordinationstest Für Kinder). A amostra foi composta por 30 crianças entre 9 e 10 anos (média 9,5 ± 0,70), praticantes e não praticantes de natação, de ambos os gêneros, devidamente matriculadas em duas instituições de ensino privadas da cidade de Manaus/AM. Resultados: Os resultados encontrados não apontaram diferenças significativas entre os 2 grupos pesquisados: o grupo de não praticantes de natação apontou um Quociente Motor (QM) médio de 60,46, enquanto o grupo de praticantes de natação apontou um QM médio de 46,93. Curiosamente, os resultados encontrados nos alunos praticantes de natação mostrou-se não satisfatório, com baixo nível de coordenação, apesar deste grupo praticar exercício físico regularmente. Conclusão: Concluiu-se que o grupo de praticantes de natação apontou resultados inferiores ao grupo de praticantes de natação para coordenação motora, segundo o teste KTK. Diante disso, sugere-se que outros instrumentos sejam aplicados a estes grupos, e também a outros, a fim de investigar o porquê destes resultados.

Palavras- Chave: natação; desenvolvimento motor; escola.