157 - CORRELATION ANALYSIS OF TWO KIND OF SWIMMING STARTS AND THE FINAL TIME IN THE 50 METERS FREESTYLE IN MEN AND WOMEN

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INTRODUCTION

Swimming is a sport considered as complete either in the motor aspects, biomechanical, kinesiological, physiological and psychological.

In accordance with Alvarenga and Lopez (2002) the high level sport becomes each more competitive time. In swimming to surpass marks in the championships is one of the factors that depend on variable techniques, like the movements of the arms, legs, turns and starts.

The performing of the start techniques is one of half the most efficient ones for attainment of better incomes in the swimming races (SANTOS, 2002).

Maglischo (1999) affirms that the athletes are worried with the perfection of starts. Such aspect is a serious omission, therefore, the times of the starts represents about 25% of the total time in the 25 meters races, 10% in the 50 meters races and 5% in the 100 meters races.

The best way to perfect such techniques, beyond the training is also to verify the type of start used for the swimmer and to compare with the final time of the race. In this case the 50 meters race is considered a sprint, and, part of the total time is the start (RIBEIRO, 2005).

Of this form it is possible to determine the differences between the starts and which measured that can be carried through concerning the same ones, beyond if later executing to the determinative analyses for reduction the time of the races or analysis of the movements carried through in the corporal segments, that assist in the basic starts as characteristic for a victory or defeat in swimming (COUNSILMAN, 1984; MAGLISCHO, 1999).

There is a technological advance of materials and methods, and it can be verified in biomechanical aspects in the sports. It is occurred in swimming, and the biomechanics provides diverse measured, due to the data that can be collected using tape recorder, total time of the race, kind of start and kinetic factors, like angles of the corporal segments, pressure, flight distance and other factors (RIBEIRO, 2005).

The application of these scientific knowledge in the planning and accompaniment of the training have been using the biomechanics aspects, and its stimulate the professionals to search new techniques and the researches when verifying the kinetic and kinematic aspects to the swimming starts (ALVARENGA and LOPEZ, 2002).

There are two kinds of starts used in swimming, the grab start and track start. The grab start is characterized for parallel feet, arms to the front of the body and hands in the part frontal of the start block (ALVARENGA and LOPEZ, 2002). This start has a corporal stability, that is a neuromechanic response to maintenance of the corporal balance.

The erect position is determined by the feet as being the support base that includes the area under and between the feet (ENOKA, 2000).

The track start is an adaptation of the grab start. It presents a difference in the preparatory position on the block, related to the feet position and the employed technique. The track start has become more popular between to the swimmers. The technique consists with one foot in the frontal part of the block, with the other foot on the posterior place. The hip has a position more raised and next to the front of the block (SANTOS, 2002).

The other mechanical factors, according to El-Baharawi et al. (2002), is the dominance of the types of techniques between the swimmers is related. The grap starts are had as the main technique of start inside of the sprint tests in swimming. The factors associates between the starts are in relation to the preference of the type of start between the semifinalists and finalists swimmers when choosing the type of start that will go to use.

Such aspect can be verified when comparing them in the 50 meters swimming races during the competition phases. In these, it can be evidenced significant differences between the groups, only in the final times and the time of start of the test until the 15 meters (IKUTA et al., 2002).

In the study lead for Pussieldi et al. (2003) it was verified the block time and the kind of start used. In relation to the grab start and track start; the grab and holding the fist or center of gravity dislocated to the front differences had not been found, but it enters the comparisons of the track start and center of gravity dislocated to the front or holding the first had been found statistical differences for the changeable block time (BT) for the track start.

Blanksby, Nicholsons and Elliott (2002) had compared the grab start, track start and center of gravity dislocated to the front or holding the first and, had not been found statistical differences for the time of until 10m after the signal of departure in elite swimmers.

Of this form, one becomes possible to verify if the analyses biomechanics procedures are tested and as if they proceed, besides establishing the kinematics parameters (type of start and gotten time) related to the starts and variable.

MATERIALS AND METHODS

Had participated of this study 68 individuals, being 36 women and 32 men. The age average for the men was of 23,59 ± 3,85 years and to women was 20,6 ± 3,74 years. All belong to the Swimming Brazilian Federation (CBDA). Being considered individuals of high level or elite swimmers, therefore, they participate of national championships, for example, the Troféu Brasil. The other factor to be considered is that the 28 and 22 seconds to participated in the 50 meters races to take part.

The sample had anonymous character, to preserve the image of the athletes.

The study had approval of the CBDA and Minas Gerais State Federation (FAM) and was carried through during the Troféu Brasil 2005.

To the tape recorder was used a Video camera JVC (Compact - System Digital VHS 300 x Zoom, Digital Signal Processing, Model In GR - AXM 225 V); official start blocks (50 x 50 cm), as FINA determination; 50 meters swimming pool; electronic timing system (Systems Colorado - Model 6), that it informed the final time and the swimmers classification.

The video camera was located and lined up the 2 meters perpendicularly to the swimming pool, or either, in the lateral part of the swimming pool. This position in a bidimensional perspective allowed to tape and to focus the start blocks and the

swimmers positioning during the start, as well as the job of the two starts (grab and track) used in the 50 meters races of this championship.

After the register of the images, these had been analyzed at three moments. The first moment consisted of numbering the start blocks and identifying the used start kind. At as the moment, the numeration of (1) Grab start was established (2) Track start. The third moment allowed to verify the start number in accordance with the number of the blocks and if the carried through type of start was corresponding to one better advantage for the attainment of the best time in the final classification.

The posterior taping analyses had allowed to carry through statistical procedures, through establishing of the employed type of start (GS or TS) gotten at the three moments of taping analysis and, after that to be compared with the final time of each swimmer gotten for the electronic official timing data. In this way, through the correlation of Sperman, it was allowed to verify if it had difference in the final times between the swimmers who had used the grab start and track start, and if it established to the comparisons between averages and error standard of the average of the times gotten between the groups of the types of grab start and track start, through Test t, for the men and women.

For the analyses was established the level of significance for p= 0.05. Being used statistical package SPSS 11.0.

RESULTS AND DISCUSSION

During the tape analyses it can be verified how many swimming they had carried through the two kinds of starts. Such data present that of the 33 men swimmers, 11 had grab start and 22 the track start. Already the women, 7 had the grab start and 29 the track start.

In this study the preference of the type of start for the swimmers was not considered as evaluation instrument, but it can be evidenced that it has majority prefers to carry through the track start, for being considered by many trainers as most efficient and faster. With this, it is probable that during the training such type of start is trained and used later in the competitions. But, it can be considered as analysis parameter that the track start was used had to the best positioning of the swimmer in the start block, for the antero-posterior removal of the feet (SANTOS et al., 2002).

In this sequence of the same reasoning, Maglischo (1999) presents that the two main advantages of the track start are the swimmers can enter in the water fastest, because its center of gravity is dislocated onward almost directly, for beyond the start block, until reaching a point where he starts "to fall" for the water. In the case of the start, the gravity center is dislocated for bigger distance after the swimmer having left the start block, and after that for low, until the water, perhaps increasing the time consumed for the swimmer to reach the entrance position. The legs of the swimmer can hurl more the onward body with two impulses, and not one.

With the results gotten for the tape, in this study were possible to carry through the comparison of the starts with the final time of each swimmer, through the averages of the values gotten between the starts and the classification time. For this, it was used correlation of Sperman, in order to verify if it had difference in the final times between the swimmers and the type of employed start (Grab or Track).

However, it did not have significant correlation, since the values had been different in relation to the level of significance of p= 0,05.

TABLE 1

Spearman Correlation for values between the starts and the time gotten for the 50 meters races for men and women.

Gender	Sperman Correlation	
Men	r= -0,135	p= 0,453
Women	r= 0,027	p= 0,876

Through Test t for independent not variable had been analyzed the averages and error standard of the average enters the gotten times in the different types of start for the parameter of p= 0.05. In this analysis the not variable the kinds of start (Grab start or Track start) used and the time of these through the comparison of averages and the shunting line-standard, did not present statistical difference in the start from above in relation the 50 meters races in both genders and, through the gotten final time. Of this form, it does not have significant correlation for the used kind start and the gotten time, in the 50 races in both genders of the Troféu Brasil 2005.

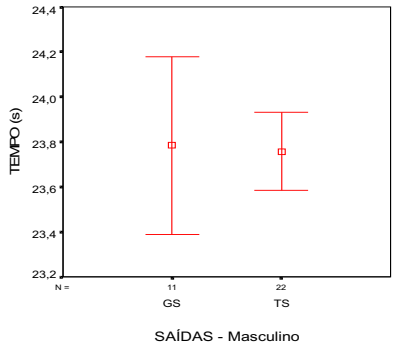

FIGURE 1 - Average Comparison of the times in the 50 m to men (GB=Grab Start; TS = Track Start)

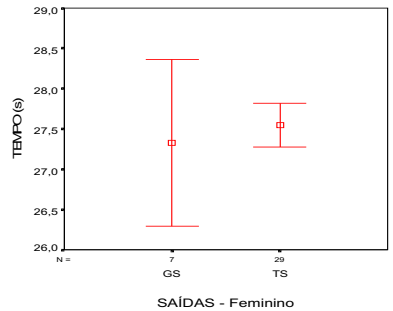

FIGURE 2 - Average comparison of the times in the 50 m to women (GB=Grab Start; TS = Track Start)

However, in other studies as of Ikuta et al. (2002) to if comparing finalists and semifinalists in tests of 50 meters of swimming during the competition phases, they had been able to evidence significant differences between the groups, only in the final times and the time of start of the test until the 15 meters.

Such fact cannot be evidenced, in this study, since it did not have statistical difference for the values gotten between kindf start and time for both the gender in the 50 meters races for the p= 0,05, considering only total the final time and in the distance covered of the 50 meters.

Comments, according to El-Baharawi et al. (2002) they present other aspects related to the mechanical factors of the start techniques from above between the swimmers, beyond only the kind start and that the kinematics, dynamics and data of muscles electromyography during the movement.

But, in our study the use of more technological resources was not possible to verify and until comparing such aspects.

However, as Bauer (1999) that it considers the biomechanics a science of the measurement and that requires technologies to collect given, the related technological resources to swimming, allow to analyze and to focus the techniques and descriptions of the start and the possible comparisons of the analyses of the data with more detailing.

In accordance with Vilas-Boas et al. (2003); such aspects are tested, therefore they allow, besides verifying given and kinematics parameters and in the case kinetic to perceive which they are and as they intervene or they assist in the movement. As Santos (2002) the techniques performing of from above start in swimming, allow getting better incomes in the tests of swimming.

CONCLUSIONS

It can be concluded that for the not variable start and time gotten (final classification) for both genders, had not been statistical different, during the Troféu Brasil Swimming Championship of 2005. Also, it did not have significant correlation between the start chosen and the time reached (final classification) in the 50 meters races in both genders.

But, the verification of the analysis of the aspects of the biomechanics, kinematics (start) and (time) is widely tested and allows to associate these aspects in other kinematics and kinetics variable of the start from above in swimming, such as anthropometrics values, data of force and pressure of the legs, and the job of slew related the start.

The start are parts of swim it to be executed by the athletes and must be emphasized since the stages of learning, in the pedagogical processes even in high level, during the training, in order to allow to improvements and performances in the championships, objectifying conditions of efficiency to the swimmers to carry through with security the start as income strategies technician.

However, unhappily it has absence of bibliographical material related to the aspect of the starts and its particularity ties as efficiency, anthropometrics aspects, training, factors and relation with the start used.

Of this form, the necessity of new studies is still seen and research in the area that will allow to better information and data for other studies and advances in the biomechanics, since the same one is considered as science of the human movement that not only allows to characterize the movement, but, also to quantify the same and to develop new aids they are they in field, the laboratories of research and the championships.

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CORRELATION ANALYSIS OF TWO KIND OF SWIMMING STARTS AND THE FINAL TIME IN THE 50 METERS FREESTYLE IN MEN AND WOMEN

ABSTRACT

In the competitive swimming we observe two kinds of starts: grab start (GS) and track start (TS). The starts vary as the preference and the training that the swimmer carries through or determination techniques. Issurin and Verbitsky (2002) affirming that the techniques of start in swimming can present when comparative particular advantages between itself. Maglischo (1999) and Coulsiman (1984) confirm that the execution of a good start is basic to a good result. The start techniques in championships can be used in the training with the objective the perfection (VILLAS-BOAS E FERNANDES, 2003). The main of this study was to verify two types of starts used for the swimmers in the 50 meters freestyle in both genders, and to correlate with the performance during the Brazilian Swimming Championship 2005. The sample was of 36 women and 33 men. The tape film analyses was made in a second time and was compared with the final time of each swimmer, verified through the Correlation of Sperman. No had been found significant statistical differences in the starts in both genders in the Brazilian Championship, through the final time analysis; also correlation was not found between the employed start kind and the final time. Therefore, we concludes that it does not have significant correlation and significant difference between start chosen and the final time reached in the 50 meters freestyle in both genders.

Keys - words: Start of grab start; track start; correlation

ANALYSE DE CORRÉLATION DU GENRE DEUX DE DÉBUTS DE NATATION ET DU TEMPS FINAL DANS LES 50 MÈTRES DE STYLE LIBRE CHEZ LES HOMMES ET DES FEMMES

ABSTRAIT

Dans les espaces concurrentiels de la natation on observe deux types de sorties: de lui encavateur (GS) et voie (SOLIDES TOTAUX). Les types changent comme préférence et formation que le nageur exécute ou des techniques de détermination. Issurin et Verbitsky (2002) affirmant que les techniques de la sortie dans la natation peuvent présenter quand des avantages particuliers comparatifs entre elle-même. Maglischo (1999) et Coulsiman (1984) affirmant que l'exécution d'une bonne sortie dans la natation est de base pour un bon résultat. La relation - des techniques de la sortie et les tentatives de la classification dans les essais concurrentiels peuvent être employées dans la formation avec l'objectif de perfection (VILLAS-BOAS E FERNANDES, 2003). L'objectif de cette étude était de vérifier - des types de sorties utilisées pour les nageurs dans les essais 50 mètres que je nage exempte masculin féminin et, et pour se corréler avec l'exécution, par des pelliculages des essais pendant le Trophée Brésil de la natation 2005. L'échantillon était de 36 femmes et de 33 hommes. Le postérieur d'analyses des pelliculages, type utilisé de sortie (GS ou SOLIDES TOTAUX) et comparé à la période finale de chaque nageur, avait été vérifié par la corrélation de Sperman, s'il avait la différence dans les temps finals entre les groupes GS de natation et des SOLIDES TOTAUX, par l'essai t. Aucun eu été différences statistiques significatives trouvées dans les sorties de ci-dessus des essais féminins et masculins pour le Trophée du Brésil, par l'analyse du temps final établi ; également la corrélation n'a pas été trouvée écrit le type utilisé de la sortie et du temps final atteint. Par conséquent, on conclut qu'il n'a pas la corrélation et la différence significative écrit le type choisi de sortie et le temps atteint dans les essais de 50 mètres que je nage exempte pour les les deux les sortes.

Mots-Clefs: Départ agrippé; depart athlétisme; corrélation

ANÁLISIS DE LA CORRELACIÓN EN LOS TIPOS DE SALIDA DEL TACO Y EL TIEMPO FINAL DE LOS 50 METROS NADO LIBRE PARA HOMBRES Y MUJERES

RESUMEN

En la competiciones de natación se observa dos tipos de salidas: de agarre (GS) y de atletismo (TS). Los tipos varían como la preferencia y el entrenamiento que el nadador hace la técnica. Issurin y Verbitsky (2002) afirman que las técnicas de salida en natación pueden presentar ventajas cuanda comparatidas entre sí. Maglischo (1999) y Coulsiman (1984) afirmam que la ejecución de una buena salida en natación es básica para un buen resultado. La relación de las técnicas de salida y las tentativas de la clasificación en las pruebas competitivas se pueden mejorar con el entrenamiento con el objetivo de la perfección (VILLAS-BOAS E FERNANDES, 2003). El objetivo de este estudio fue verificar los tipos de salidas utilizadas por los nadadores en las pruebas 50 metros nado libre de hombres y mujeres, y correlacionar con el rendimiento con las películas hechas durante el Trofeú Brasil Natación 2005. La muestra fue de 36 mujeres y de 33 hombres. Los analisis de las películas, y el tipo empleado de salida (GS o los TS) fue comparado con el tiempo final de cada nadador, y fue verificado a través de la correlación de Sperman, si tenía diferencia en los tiempos finales entre los grupos GS y TS, a través de la prueba t. No fueron encontradas diferencias estadísticas significativas en las salidas de las mujeres y hombres en el Troféu Brasil, con el análisis del tiempo final establecido; y también para el tipo empleado de salida y el tiempo final alcanzado. Por lo tanto, se concluye que no hay correlaciónes sgnificativas y diferencias significativas para el tipo elegido de salida y el tiempo alcanzado en las pruebas de 50 metros nado libre para ambos los generos. **Palabras claves:** Salida de agarre; salida de atletismo; correlación

ANÁLISE DA CORRELAÇÃO DOS TIPOS DE SAÍDAS DE CIMA E O TEMPO NOS 50 METROS NADO LIVRE MASCULINO E FEMININO

RESUMO

Na natação competitiva observam-se dois tipos de saídas: de agarre (GS) e de atletismo (TS). Os tipos variam conforme a preferência e o treinamento que o nadador realiza. Issurin e Verbitsky (2002) afirmam que as técnicas de saída em natação podem apresentar vantagens particulares quando comparadas entre si. Maglischo (1999) e Coulsiman (1984) afirmam que a execução de uma boa saída em natação é fundamental para um bom resultado. A relação das técnicas de saída e tentativas de classificação nas provas competitivas pode ser utilizada no treinamento com o objetivo de aperfeiçoamento (VILLAS-BOAS E FERNANDES, 2003). O objetivo deste estudo foi verificar os tipos de saídas utilizados pelos nadadores nas provas 50 metros nado livre masculino e feminino, e correlacionar com o desempenho, através de filmagens das provas durante o Troféu Brasil de Natação 2005. A amostra foi de 36 mulheres e 33 homens. As análises posteriores das filmagens, tipo de saída empregado (GS ou TS) e comparadas com o tempo final de cada nadador, foram verificadas através da Correlação de Sperman, se havia diferença nos tempos finais entre os nadadores grupos GS e do TS, através de Teste t. Não foram encontradas diferenças estatísticas significativas nas saídas de cima das provas femininas e masculinas para o Troféu Brasil, através da análise do tempo final estabelecido; também não foi encontrada correlação significativa entre o tipo de saída empregado e o tempo final alcançado. Portanto, conclui-se que não há correlação e diferença significativa entre o tipo de saída escolhido e o tempo alcançado nas provas de 50 metros nado livre para ambos os gêneros.

Palavras-chave: Saída de agarre; Saída de atletismo; correlação.