151 - WAYS AND METHODS USED FOR THE DEVELOPMENT OF FORCE IN SWIMMING PARANAENSE

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INTRODUCTION

Competitive swimming contemporary is practiced in four styles: crawl, coasts, chest and butterfly. Modernly, the method of swimming education does not only aim at to teach the individual to support themselves and to move themselves in the water, but yes, conduziz it and to guide it in such way that it if adapte to a style, in order to be able to usufruct all the benefits that swimming provides. As Valdivieso (2005) has many years, the force training started to be an integral part of the preparation of the competition swimmers. However, during all this time many variations in the direction of the force training have appeared. Many studies, inquiries and, including, "fashions", they have inclined the trainers in the use of isotonics exercises with weights, isometrics or isocinetic, as also, leagues and machines frictional, as well as carrying through the light exercises with many repetitions and loads or few repetitions with high loads e, also, to consider convenient to carry through a work of force in the beginning of the season or to only carry through it during all the year.

The musculation, one of the oldest physical activities, with the advance of science it today exerts a very great degree of importance in the physical preparation of all the sportive modalities. In swimming it could not be different, therefore it is necessary, it are of the water, to carry through a muscular training aiming at the development of the force, of the power, of the muscular resistance and complete flexibility with the along lessons. It is evident that the lapsing of the program is specifies and the exercises must be chosen with this intention even so do not exist in the musculation a device that simulates swimming motor act (VALDIVIESO, 2005). For Maglischo (1999) the benefits of a work of physical preparation in the results in swimming are very difficult to be measured. But it is undeniable that many benefits can be taken off of a well made work in physical preparation are aquatics. Works for explosion, speed of reaction and muscular power great have resulted in performances for the competitions of short swimming pool and as Pussield (2004) the short swimming pool wants to say quality in the

beddings, or either, in the exits, in the turns and the arrivals. To work these beddings in the training must be routine, constant. The association between muscular mass and force is common, but increase of muscular mass will not be responsible for improvement in the performance of swimming (PUSSIELD, 2004). So that swimming they improve the speed performance, it is essential that the training respects the specificity principles, or either, the physical preparatory of a swimmer must be intent to the style which the athlete is specialist, therefore it needs appropriate training to its I swim of competition, respecting the muscular symmetry, the kinetic chains and the involved metabolism, e must still analyze well which is the best method of work to direct each athlete so that it has one real optimization of results. The force work must inside be crucial of a took time of training velocities and to know which is the half one more indicated to get resulted, it must influence in positive way in some aspects of paranaense swimming. By means of the displayed one, it was decided to investigate which more the used methods and ways for force development of paranaense swimming. A work badly directed, either for physical technician or preparatory, to a velocity swimmer it can compromise the swimming ability in such a way, how much the progression in swimming in function of possible decurrently injuries of errors or even though of an inefficacious work, hindering then, that the swimmer in full potential gets failures instead of victories. Being thus, if it made necessary to make possible a study that makes possible a ampler vision of the one than it comes being carried through in the State of the Paraná, so that the involved professionals in the area alert themselves, e gives to more importance to this so important situation of training that is the force work.

THEORETICAL REFERENCIAL

Training of force for swimming

According to Fleck and Kraemer (1999) the force training, also known as training with weights e/or with loads she is one of the forms to improve the physical conditioning of athlete.

For Kraemer and Hakkinen (2004) when is intended to get success in the performance of swimming is necessary high levels of force and power, including trainees that they come to prevent injuries through the force training, allowing then, that the swimming support voluminous and intense sessions of training. It is important that this training emphasizes the increase of the muscular size, mainly in the shoulders and the coasts, but it must be observed that the extreme increase can have a negative impact in the performance of swimming, as the capacity hydrodynamics and the aerobic capacity. The force training can produce changes in the corporal composition, in the muscular force and the motor performance and to provoke hypertrophy (FLECK and KRAEMER, 1999). However the objective of the training of force in swimming is to increase the production of power of the muscles that act as motor elementary schools in agreement the style of the swimmer, mainly when velocities "a time that the increase of the muscular force and the production of power of the muscles can be translated by increase of speed of it I swim when agreed with the practical one in swimming pool" (KRAEMER and HAKKINEN, 2004 p. 109).

The benefits of a related work of force swimming can be the reduction of the fatigue, the improvement in the efficiency of I swim it, beyond, the muscles to be able to effect I swim it in a lower percentage of its maximum capacity.

As Kraemer and Hakkinen (2004) for a velocity are important that during the force training the motor actions also are carried through in speed and to swim faster, the power production must be increased in order to surpass the drag force hydrodynamics, that it increases the speed of the swimmer in the water.

The programs of training of force for swimmers must take in account some aspects as: the specificity of the style of the swimmer; prevention of muscular disequilibria developed between agonists and antagonists; prevention of injuries in inclined areas; variation possibility; it improves in the level of ability of the swimmer.

Verkhoshanski (2001) tells that the perfection I continue morfofuntional (specialization) of the organism is one of the conditions of development of the process of rise of the porting level.

Research with swimming teams, they tell that in its majority, adolescents and daily pay-adolescents, they initiate work with weight between 15 and 16 years of age, although the preparation with lesser weights can thus initiate it the 13 years and with the arrival of the age, strong and conditional athletes for a programmed training form themselves (AXE, 1998).

Speed

As Bompa (2002) the term speed incorporates three elements, being reaction time (motor reaction to a signal) and as example the signal of departure of the swimming block; time of movement (the ability to move definitive member quickly) and speed of I swim (frequency of movements of arms and legs). To swim in speed consists of carrying through one sprint of distance shortness in maximum speed. The indicated airspeed training that the athlete must carry through intercalates shots, the 100% of its better time, especially in 25 and 50 m, with enough time for recovery of a cardiac frequency below of 100 bpm. Having as objective of this type of training to develop speed and muscular force, besides improving the capacity of scarcity of

oxygen (COLWIN, 2000).

"The secret of the speed is in resting of the exhausting work, not to lose the position in the water, to keep the resistance and to prepare "(AXE mentally, 1998 p.81)

For Bompa (2002) the combination of force and speed result in power and the combination of force and resistance result in muscular resistance that it results in the capacity to play you vary repetitions against a resistance as in swimming.

Characteristics of the tests of 50 meters

The used energy systems in tests of speed, as of 50 m. it is the alathic anaerobe that uses the ATP and the phosphate of creating (PC), that they are stored in the muscles in amounts small (COLWIN, 2000) and also the lactic anaerobe, that it uses the glycogen stored in the muscles and the liver (AXE, 1998).

The pure speed in swimming goes until first the 10 m, of the 10 m to the 25 m a rectilinear speed and after this meters starts the decay, depending on the preparation of each athlete. A velocity swimmer must praise in its sessions of training the daily use of series of speed, in order, to activate fast muscular staple fibres (AXE, 1998).

In 50 tests of m, all itens that they compose this test must minutely be observed, therefore an error... this test can be lost. Soon in the exit, to the sound of the departure signal so soon the athlete must jump, the reaction time must be accurate, as well as the turn and the arrival they must be perfect, so that the swimmer does not lose the test.

METHODOLOGY

This work is characterized as research of field and exploratory, aiming at to the search of the ways and methods used for the force development those swimming paranaenses. The population is formed by 13 technician of 44 swimmers of the masculine sort who had reached one, it enters the three first ranks in the State Championships of Winter, of Summer and in the Open Games Paranaense in the year of 2004 in the categories Junior I, Senior Junior II and, being the sample equivalent 84.6% of the technician (N = 11) of 90,9% of the swimmers (N = 40). The application of the research was carried through in the months of September and October, having each individually evaluated technician, during the intervals of competitions and also in congresses and meeting of swimming technician. The used instrument of research was a questionnaire structuralized with open and closed questions, applied to the technician of the athletes indicated in the population and it shows. The statistical treatment was made through the descriptive statistics, analyzed fashion and percentile and in form of tables and graphs.

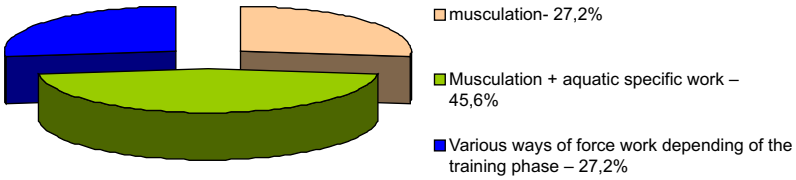
RESULTS

Through the instrument of collection of data (questionnaire) used, the related question the importance given to the training of force for a velocity athlete was answered by 18,2% that it is of extreme importance, already 72.7% of the technician interviewed who is of much importance and only 9.1% had answered to be of average importance.

The accomplishment of this work of force for velocities swimmers is executed habitually by the proper technician, what it represents in this research 36.4%, e still 45.4% is made by a professor of musculation academy, 18.2% only have in its team a physical preparatory which plays this role.

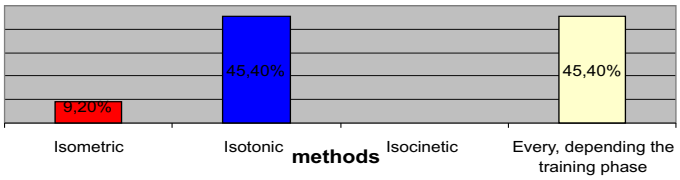
Of 63.6% of the technician that do not act directly in the work of force 1 (one) it makes the together took time to the professor of the academy of musculation to each start of macro cycle; 2 make the together took time to the professor of academy e/or physical preparatory to each start of middle cycle 2 make the together took time to the professor of academy e/or physical preparatory as the training I specify of water, in the periods of basic preparation, it specifies and competitive and 2 do not participate of the took time of the force training.

Graph 01 - Representation of the paraenses ways of force work used by technician.



Graph 01 represents the ways of paranaenses works which the technician comes using to guarantee the force of its athlete, in 27,2% they half use the musculation as main of attainment of force for velocities swimmers, 45,6% use beyond the musculation a work specify of water inside and 27.2% use varied ways, depending on the phase of the training, being able to be of base, it specifies or competitive.

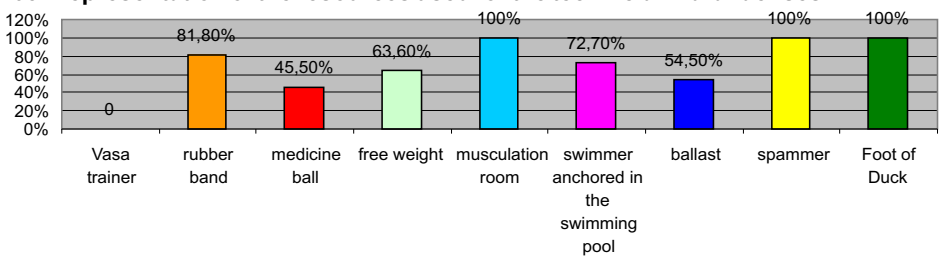
Graph 2 - Representation of the paranaenses methods of force work used by technician.



Through graph 02 it is possible to observe that only 9.2% use the Isometric, while that 45.4% use isotonics exercises and also 45.4% use in such a way the isometric work, the isotonic and also the isocinetic, depending on the phase of the took time of the training.

In relation to the types of exercise 9.1% they use circuit training and the general musculation, while that 45.5% use the musculation specifies for best swims and the general musculation, 27,2% use the general musculation, 18,2% use circuit training, the musculation specifies for best swims, pliometry and general musculation.

Graph 03- Representation of the resources used for the technician Paranaenses.



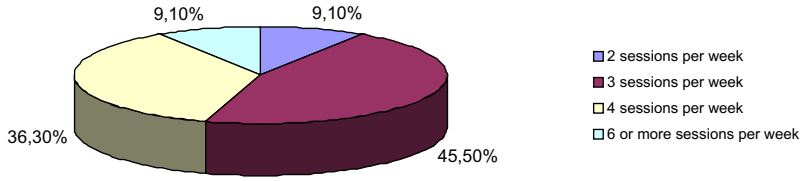
Through graph 3 it is possible to observe that 100% of the technician they use the musculation room, as well as they make use of the Spammer and the Foot of Duck, 81,8% use the rubber band, 72,7% make shots of speed with the swimmer moored in the edge of the swimming pool, 54,5% use ballast (to swim with shorts, t-shirt, pocket shimstock), 45,5% use medicine ball, 63,6% use free weight and none uses "vasa trainer", perhaps for being a device of high cost.

Table 01 - Representation of the time of each session of force training

Duration of each session of training / minutes	% of the technician
30	18,2
60	81,8

As table 01 in relation the duration of each session of training of force carried through for the swimmers, 81,8% of the technician affirm that in about 1 hour and 18.2% that it lasts about 30 minutes, having as fashion 60 minutes with frequency 9.

Graph 4 - Representation of weekly sessions of force training.



As graph 4, in relation to I number it of sessions of training of force carried

through for the swimmers, 45,5% of the technician affirm that they carry through 3 times per week, 36,3% carry through 4 times per week, 9,1% carry through 2 times per week and also 9.1% carry through 6 times per week, having as fashion 3 times per week with frequency 5.

Of the interviewed totality of the technician, 36,3% affirm that they cease the work force only one week before an important competition, e also 36.3% ceases the two weeks, 9,1% the three weeks, 9,1% four weeks and 9.1% do not cease the work force that precedes an important competition.

The technician believes that the ideal age to initiate a force work must be taken in account the maturational development of the swimmer, the great majority answered to the questionnaire that the best age is around the 15 16 years. However, 18,1% had answered that already it can be initiated to the 12 years with muscular resistance located and only to the 15 years maximum force and of resistance, lactic force and of speed, varying of athlete for athlete.

CONCLUSION

With the gotten results it can be concluded that the force work is considered very important by the technician and that the application of this is carried through habitually by they themselves or a professor of musculation, guided or not for the technician, but 18.2% of the sample possess physical preparatory, what it demonstrates the little investment in the modality.

Main half of work used for attainment of force in the velocities swimmers paranaense, for unanimity, it is the musculation work. However, most of the water technician mix this work with specific works inside as the period of the took time. Soon the worked method more is the isotonic; however in same ratio some technician makes the mix of the worked methods, isometric, the isotonic and also the isocinetic, all dependent of the phase of the training.

The used resources, for the entire technician, for acquisition of force they are the room of musculation and its devices, the foot of duck and palm. However the use of the rubber band is very common isocynethics exercises and also to moor the swimmer in the edge of the swimming pool so that this swims tied, thus working, force specifies of swimming. The great majority of the technician interviewed affirms to use the three four weekly sessions of training of force with duration of 1 hour for session. The force work is ceased before an important competition 1 the 2 weeks that precede it, but one paranaense technician does not cease the training, being this case if to analyze better, therefore the only athlete of this technician, in the population it shows, 3º got as better resulted one place in the State Championship of Winter. Therefore, it is possible to affirm that the force work is essential for a velocity swimmer when combined with the water work and that the periods of burnishing must be respected, the controversy to cease or it together work of force to burnishing is not better to be analyzed and argued subject in another study.

REFERENCES

BARBANTI, V. J. **Teoria e prática do treinamento desportivo**.São Paulo: EPU,1981
BOMPA, O. T. & CORNACCHIA L. J. **Treinamento de Força consciente**. São Paulo: Phorte, 2001.
BOMPA, T. O. **Treinamento total para jovens campeões.** São Paulo: Manole, 2002.
CARR, G. **Biomecânica dos Esportes.** São Paulo: Manole, 1998.
CATTEAU, R; GAROFF, G. **O ensino da Natação.** São Paulo: Manole, 1990.
COMISSÃO DESPORTIVA MILITAR DO BRASIL. **Histórico da natação.** https://www.Defesa.Gov.Br/Enternet/Sitios/Internet/Cdmb/CDMB/Mod_Nat.Htm Acesso em 07/04/2005
COLWIN, C. M. **Nadando para o século XXI.** São Paulo: Manole, 2000.
DANTAS, E. H. M. **A Pratica da Preparação Física.** 5ª ed. Rio de Janeiro: Shape, 2003.
FLECK S. J; FIGUEIRA JUNIOR, A. **Treinamento de força para fitness e saúde.** São Paulo: Phorte, 2003.
FLECK S. J; KRAEMER, W. J. **Fundamentos do Treinamento de Força Muscular.** 2ª Ed. Porto Alegre: Artmed, 1999.
FOSS, M.L; KETEYIAN, S.J. **Bases fisiológicas do exercício e do esporte.** Rio de Janeiro: Editora Guanabara Koogan S. A, 2000.
KRAEMER, W. J; HAKKINEN K. **Treinamento de Força para o esporte.** Porto Alegre: Artmed, 2004.
MACHADO, D. C. **Natação teoria e prática.** Rio de Janeiro: Sprint, 1998.
MAGLISCHO E. W. **Nadando Ainda Mais Rápido**. São Paulo: Manole, 1999.
McARDLE, W. D.; KATCH, F. I.; KATCH., V. L. **Fisiologia do Exercício: Energia, Nutrição e Desempenho Humano**. Rio de Janeiro**:** Guanabara Koogan, 1992.
PALMER, M.L. **A Ciência do Ensino da Natação**. São Paulo: Monole, 1990.
POWERS SK.; HOWLEY ET. **Fisiologia do exercício teoria e aplicação ao condicionamento e ao desempenho.** 3. ed. São Paulo: Manole; 1997.
PUSSIELDI, A. **Dicas e orientações práticas que podem especificamente melhorar a sua performance nos resultados em piscina curta.** http://www.bestswimming.com.br Acesso em 07/04/2005. Publicado em 21/09/2004
SAMPAIO, E. S. **Biologia aplicada a Educação Física**. Ponta Grossa: Editora UEPG, 1997.

SENAC-PR. **A historia da Natação Contemporânea.** http://www.ensino.pr.senac.br/curitiba/eduardo26/historia.htm Acesso em 07/04/2005.
SPRING, H; KUNZ, H. R.; SCHNEIDER, W.; TRITSCHLER, T.; UNOLD, E. **Força muscular- teoria e pratica.** São Paulo: Santos editora, 1995.
VALDIVIESO, F. N. **Treinamento Muscular fora d'água.** Disponível em: http://www.paradesporto.com.br/revista/pages/tecnico/artigo_0002.htmAcesso em 07/04/2005
VERKHOSHANSKI, Y. V. **Treinamento desportivo: Teoria e metodologia.** Porto Alegre: Artmed, 2001.
VILCHE, M. **História da natação.** Disponível em: http://webswimming.tripod.com/pesquisas/pesqhistoria.html Acesso em 07/04/2005
WILMORE, JACK H.; COSTILL, DAVID L. **Fisiologia do esporte e do exercício.** 2ª ed. São Paulo: Editora Manole, 2001.

WAYS AND METHODS USED FOR THE DEVELOPMENT OF FORCE IN SWIMMING PARANAENSE

ABSTRACT

The force work must inside be crucial of a took time of training swimming velocities and to know which is the half one more indicated to get resulted, it must influence in positive way in some aspects of paranaense swimming. The present characterized study as research of field and exploratory it has for objective to diagnosis the ways and methods used for the technician to develop the force in velocities athletes of swimming. The population shows is formed by 84,6% of the technician (N=11) of 90,9% of the swimmers (N=40) of the masculine sort who had reached one, it enters the three first ranks in the State Championships of Winter, of Summer and in the Open Games Paranaense in the year of 2004 in the categories Junior I, Junior II and Senior. The used instrument of research was a questionnaire structuralized with open and closed questions. Of the gotten results the force work is considered very important by the technician and that the application of this is carried through habitually by they themselves or for a professor of musculation guided or not for the technician. Main half of work used for attainment of force in the paranaenses velocity swimmers, for unanimity, it is the musculation work. However, most of the technician of water inside mix this work with specific methods for training of the force, as the time of the took time. Through this work it is possible to affirm that the force work is essential for a velocity swimmer, mainly when combined with an adequate work of training in the water and with the had respect to the periods of burnishing that precede an important competition.

Key- words: ways and methods, force work, swimming.

MOYENS ET MÉTHODES UTILISÉS POUR LE DÉVELOPPEMENT DE LA PUISSANCE DANS LA NATATION DE L'ÉTAT DU PARANA

RÉSUMÉ

Le travail de développement de la puissance durant la période d'entraînement des nageurs de sprint est crucial, tout comme savoir quel est le moyen le plus adéquat pour obtenir des résultats, et doit avoir une influence positive dans de nombreux aspects de la natation du Parana. La présente étude, que l'on peut caractériser comme étude exploratoire sur le terrain, a pour objectif la recherche et diagnostic des moyens et méthodes utilisés par les entraîneurs pour développer la puissance des nageurs de sprint. La population observée comprend 84,6% des entraîneurs (N=11) et 90,9% des nageurs (N=40) de sexe masculin qui furent classés dans les trois premières places lors des Championnats d'Hiver et d'Été des États ainsi que lors des Jeux Open du Parana en 2004 dans les catégories Junior I, Junior II et Seniors. Le support de l'enquête est un questionnaire comprenant des questions ouvertes et fermées. Il ressort des résultats obtenus que le travail de la puissance est très important pour les entraîneurs, travail habituellement réalisé sous leur direction ou celle des professeurs de musculation recommandés ou non par les entraîneurs. Le principal moyen qui permet le développement de la puissance des nageurs de sprint du Parana est, de manière unanime, la musculation. Néanmoins, la plupart des entraîneurs associent, selon la période, à cette musculation des méthodes spécifiques d'entraînement et de travail de la puissance qui s'effectuent dans l'eau. Le résultat de cette étude est qu'il est possible d'affirmer que le travail de puissance est essentiel pour un nageur de sprint, principalement lorsque il est associé à un travail d'entraînement effectué dans l'eau en respectant la période d'affûtement qui précède une importante compétition.

Mots-clés: moyens et méthodes, travail de la puissance, natation.

MEDIOS Y MÉTODOS UTILIZADOS PARA EL DESEMBOLVIMENTO DE FUERZA EM LA NATACION PARANAENSE

RESÚMEN

El trabajo de fuerza debe ser crucial dentro de un período de prática para nadadores veloces y saber cual es el médio más indicado para obtener resultados, debe influenciar de manera positiva en vários aspectos de la natación paranaense. El presente estúdio caracterizado como investigación del campo y observación tiene por objeto diagnosticar los médios y métodos utilizados por los técnicos para desemvolver la fuerza de los atletas veloces de la natación. La aglomeración demuestra que esta formado por 84,6% de los técnicos (N=11) de 90,9% (N=40) de gênero masculino que alcanzaron una entre las primeras delas três colocaciones en los Campeonatos Estaduales de Invierno y de Verano y en los Juegos Abertos Paranaense del año de 2004 en las categorias Junior I, Junior II y Senior. El instrumento de investigación utilizados fue un cuestionario estructurado con preguntas abiertas y cerradas. Los resultados obtenidos, el trabajo de fuerza es considerados muy importante por los técnicos y que aplicación de este es realizado habitualmente por ellos mesmo o por um profesor de musculatura orientado o no por un técnico. El principal médio de trabajo utilizado para obtener fuerza en los nadadores veloces paranaenses. Por lo tanto la major parte de los técnicos mezclan este trabajo com métodos específicos para en treinamiento de fuerza dentro del água, conforme la época de la periodisación. Através de este trabajo de fuerza es esencial para un nadador velocista, principalmente cuando combinado con un trabajo adecuado de treinamiento en la água y con el debido respeto a los períodos de refinamiento que antecede una competición importante. **Palabras-clave:** médios y métodos, trabajos de fuerza y natación

MEIOS E MÉTODOS UTILIZADOS PARA O DESENVOLVIMENTO DE FORÇA NA NATAÇÃO PARANAENSE

RESUMO

O trabalho de força deve ser crucial dentro de uma periodização de treinamento para nadadores velocistas e saber qual é o meio mais indicado para obter resultados, deve influenciar de maneira positiva em vários aspectos da natação paranaense. O presente estudo caracterizado como pesquisa de campo e exploratória tem por objetivo diagnosticar os meios e métodos utilizados pelos técnicos para desenvolver a força em atletas velocistas de natação. A população amostra é formada por 84,6% dos técnicos (N=11) de 90,9% dos nadadores (N=40) do gênero masculino que alcançaram uma, entre as três primeiras colocações nos Campeonatos Estaduais de Inverno, de Verão e nos Jogos Abertos Paranaense no ano de 2004 nas categorias Júnior I, Júnior II e Sênior. O instrumento de pesquisa utilizado foi um questionário estruturado com perguntas abertas e fechadas. Dos resultados obtidos o trabalho de força é considerado muito importante pelos técnicos e que a aplicação deste é realizada habitualmente por eles mesmos ou por um professor de musculação orientado ou não pelo técnico. O principal meio de trabalho utilizado para obtenção de força nos nadadores velocistas paranaenses, por unanimidade, é o trabalho de musculação. Entretanto, a maior parte dos técnicos mesclam este trabalho com métodos específicos para treinamento da força dentro d'água, conforme a época da periodização. Através deste trabalho é possível afirmar que o trabalho de força é essencial para um nadador velocista, principalmente quando combinado com um trabalho adequado de treinamento na água e com o devido respeito aos períodos de polimento que antecedem uma competição importante.

Palavras-chave: meios e métodos, trabalho de força, natação.