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SPECIALIZED STRENGTH TRAINING AS CONDITION OF ACCURACY OF MOVEMENTS IMPROVEMENT

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Abstract: A critical analysis of the problem of conjugate effect on the power capabilities and the ability to perform the precise movements is made. The stipulations, substantially different from deep-established in theory and practice concerning the correlations indicators of power and precision movements are formulated. The theoretical justification of the effectiveness of methods of variable and conjugate effect on motion function, based on the use of fitness devices - machines of controlled interaction (MCI), provide a wide and controlled varying of the value of the external resistance is presented. The paper presents a theoretical and experimental study of the effectiveness of methods of variable and conjugate effect on motion function, which opens up new prospects for the development and improvement of the conjugate power capabilities, along with the appearance of high performance which characterize the motion precision. The materials deepen the knowledge of methodology of applying fitness devices of controlling force action to extend the range of "controlled power" and improve on this basis of capacity to implement the exact movements. It also describes the methodology of complex application of variable modes of resistance to improve the abilities to control movements accurately.

Key words: strength training, precision of movements, methodology, machines of control affecting.

СПЕЦИАЛИЗИРОВАННАЯ СИЛОВАЯ ПОДГОТОВКА, КАК УСЛОВИЕ ПОВЫШЕНИЯ ТОЧНОСТИ ДВИЖЕНИЙ

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Аннотация. Проведен анализ проблемы сопряженного воздействия на силовые возможности и способности к точному выполнению движений. Сформулированы положения, существенно отличающиеся от утвердившихся в теории и практике изучения проблемы соотношения показателей силы и точности движений. Представлено обоснование эффективности методики вариативного и сопряженного воздействия на двигательную функцию, на основе использования тренажерных устройств – машин управляемого взаимодействия (МУВ), обеспечивающих широкое и управляемое варьирование величинами внешнего сопротивления. В работе представлено обоснование эффективности методики вариативного и сопряженного воздействия на двигательную функцию, которое открывает новые перспективы для сопряженного развития и совершенствования силовых возможностей, наряду с проявлением высоких показателей характеризующих двигательную точность. Содержащиеся в статье материалы углубляют знания о методике применения тренажерных устройств управляющего силового воздействия для расширения диапазона «управляемой силы» и совершенствования на этой основе способностей к точному выполнению движений, а также о методике комплексного применения переменных режимов сопротивлений для совершенствования способностей к точному управлению движениями. Материалы работы представляют собой определенный вклад в теорию и методику формирования способностей к точному выполнению движений на основе развития специализированных силовых способностей.

Ключевые слова: силовая подготовка, точность движений, методика, машины управляющего воздействия.

It is well-known that the motor function of a man is one of the most advanced and simultaneously the fittest in terms of the implementation voluntary condition control. At the same time quite a while (about half a century ago) the tremendous importance of force to achieve maximum results in sports

exercises of different nature became known. However, soon was revealed that the force successfully implemented in one motion, often turns out to be "powerless" in the other. Such specificity of force compelled to see in a new light the principle of funds special strength training matching in sports.

The marked specificity of force abilities gives grounds for assuming of the possibility of creating special conditions, rules, principles, and selection of the most effective means of special strength training to improve the efficiency of training process during the development and improvement of the movements of a certain kind. It is also easy to guess that it may have a special meaning for the training of motor actions, which are characterized by a significant manifestation of power capabilities, along with the presentation of the special requirements and to the accuracy rate movements.

It also follows that one of the conditions of further successful investigation of the problem and improvement of motor function is a development of a system of specialized strength training, which provides not just pumping power, but a goal in itself and also the possibility of its qualitative, the most rational and effective use. It should be reflected in terms of high efficiency and precision of movements for which strength training is implemented. However, a significant obstacle for the implementation of this approach is the presence of many unresolved and controversial issues.

The analysis of the studies shows that many aspects of this problem are not sufficiently generalized yet, and some of them have not yet been subjected to serious theoretical understanding. According to V.P. Luk'yanenko (1980, 1991), S.V. Golomazov (1997, 2003), A.A. Khezhev (2011), some of the methodological approaches used in the study of accuracy problem, require deeper foundation. A thorough analysis of existing methods of problem research and methods of abilities forming and improving to the exact movement performance, selection of the most effective and appropriate ones. The main result of this work is a synthesis of research aimed at evaluation of the effectiveness of complex application of variable modes of resistance to the conjugate effect on the increase of conditional capabilities and technical skills of sportsmen. In a number of our previous studies [5, 6, 7, 9, 10, and others.] the benefits which gives the use of a special class of fitness equipment from a series of machines of controlled interaction (MCI) are shown. They provide the possibility not only to create variable modes of resistance, which supply successful development of physical qualities, but also effective promotion of the ability to maintain and improve the accuracy of the motor. The peculiarities of the exercises with varying modes of resistance influence to the process of formation and improvement of the accuracy of the motor are revealed. Based on the accounting of these features the conditions promoting direction impact on improving skills to better manage muscle tension are defined. New ways to develop the ability to differentiate muscular effort in the performance of motor actions of different levels of complexity of coordination and developed. Unique opportunities of simulators which provide modeling of variable modes of resistance are revealed in the process of investigation. They create conditions which promote the increasing of efficiency of control action to

the process of formation of skills of effective use of newly acquired power capabilities by certain muscle groups at movements of various coordination complexity performances.

At the same time, the effectiveness of the integrated application of variable resistors to form a so-called "controlled power" and, on this basis, to improve the quality and accuracy of motor actions is proved. The fact that the focus on the power capabilities of a human, as basic and leading towards other physical abilities, can create conditions to optimize and intensify the process influences on the physical nature of man is experimentally proved. In such conditions, at the same time the effectiveness of development of motor actions on the basis of a more effective formation accuracy of their performance, the mechanisms of quality management significantly increases.

Analysis and generalization of our studies results [5, 6, 7 and others.) allow us to formulate important, in our opinion, judgments and regulations, which differ substantially from the widespread and deeply settled in the theory and practice of studying the problem of correlation indicators of power and precision movements. The most important ones are the following:

- Contrary to the opinion of informativeness lack and bad training of force characteristics of movements (differentiation and reproduction effort), formed in the practice of accuracy of movements studying; they can and should be treated as parameters of the highest ranks of information, as the least conservative and the most amenable to special training influence.
- At the core of movements accuracy manifestations (especially procedural) there is not one or even a few special "specialized" coordination abilities, but a very wide range of the most diverse (including purely conditional) abilities, specific composition of which is determined by the peculiarities of the structure and content of motor actions and also the specific features of the concrete motor task.
- In abilities training that determine the precision of movements, a special attention should be paid not to the standardization of external parameters of movements, as it is in the majority of existing guidelines aimed at the building of capacity to implement the precise movements, but to establish a reasonable variation of conditions for their implementation which support effective development of correction mechanisms.
- The questions of regularities study of the manifestation and improvement of abilities underlying the manifestations of movements' accuracy should not be a separate issue, but organically blend with the study of the regularities of formation and perfection of technic of specific motor actions.

The above provisions let us doubt in the productivity of the multitude guidelines in special literature which are aimed at the formation of precision of spatial, temporal and dynamic parameters of movements (generated at the models of abstract movements in simplified terms and under the control of consciousness), as a base for the successful development and improvement of various types of motor activity. In these recommendations, in fact, the possibility of formation of some "generalized ability" (by analogy, for example, general stamina, etc.) is suggested.

It should be admitted that following to such recommendations results in a completely sterile procedure of coaching in some "abstract" accuracy, which in most cases turns out to be unsuitable in the real conditions of household, work and sports activity.

Thus, one of the most important results of our studies is that they contribute to the definition of new, more effective ways in forming abilities to the exact movement performance through the development of specialized power abilities.

In particular, they contribute to the deepening of existing ideas about how to apply an exercise device of control force action to extend the range of "controlled power" and improve on this basis the capacity to implement the exact movements, and also about the methodology of complex application of variable modes of resistance to improve the capacity for accurate motion control.

From the submissions received, it follows that the main way to maintain the accuracy of movements; it is the process of improving its technique, carried out against the background of ensuring an adequate level of development leading for the motor action of physical qualities, with a focus on improving the binding strength abilities. The necessity for priority attention to the power is probably due to the fact that the basis for the accurate performance of any movement is precise control muscle activity.

Therefore, the basis for improvement of equipment movements should be based primarily on the improvement of the management capabilities of power, during which two objectives must be sold:

- Provision of "reasonable sufficiency" of power abilities which implies some functional redundancy in relation to the needs of a particular movement;
- Implementation of specialized strength training, aimed not so much at physical capacity increasing as for the formation of skills to implement it in a particular activity.

Therefore, improvement of equipment, development in accuracy of movements, in a great measure neither more less than as a result of the specialized strength training to perform this movement, carried out in accordance with special needs into account exactly.

These provisions laid down important methodological basis for the consideration of the process of motor learning and development of physical qualities in an indissoluble unity. Following these provisions will allow to avoid methodological errors relating to the review of sports equipment as a system of movements in isolation from the physical fitness of the environment in which their execution proceeds.

The above representation led to the conclusion that one of the main ways to intensify the effects in physical education is to create conditions for a de facto exclusion from the practice of the training process separating procedures aimed only at mastering the technique of motor actions or only development of physical qualities. This is in full accordance with the guiding principles presented in the works of the classical theory and methodology of high performance sport (Yu.V. Verkhoshansky, V.V. Kuznetsov, I.P. Ratov, V.M. Dyachkova etc).

The materials of our studies show that this approach is possible not only at the stage of improving motor actions, but also at the stage of original learning, providing the application of special fitness devices. This is facilitated by the possibility of determining the most rational parameters of loads using different modes of variable resistors for specialized strength training aimed at strengthening the development of motor actions, according to the criteria of quality and accuracy of their performance. Therefore, during the development of the technique of motor actions, primarily attention should not be paid to the outside of the movement, but to the dynamics of the morphological and functional changes in the structure of the body and related qualitative changes in the interaction of the organism with its environment, which together characterize the process of becoming a sports skills [1, 2]. This is the solution of the problem of intensification of the training process (not an increase in the volume and intensity of training, as think many specialists).

It is necessary therefore to organize the process of development of physical qualities that would allow us to reduce to a minimum the procedures of aimless and pointless inflation of physical conditions, when the development of a quality acts as a kind of end in itself. It also allows us to solve the problem of the selection of adequate means of special strength training, taking into account the specific features of the technique of motor actions and sportsman's level of physical fitness.

Implemented in our studies theoretical and experimental evaluation of the effectiveness of variable methods and conjugate effect on motor function opens up new prospects for further development and improvement of skills, the underlying manifestations of power capabilities, along with the manifestation of high performances which characterize motor precision.

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