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## EVALUATION OF THE SIGNIFICANCE OF PSYCHOMOTOR QUALITIES IN TAEKWONDO

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### ABSTRACT

The psychomotor qualities are among the basic sports-technical and technical-tactical characteristics of Taekwondo. They are an important element of motor activities and determine their specific quantitative and qualitative attributes.

The report presents the results of assessing the importance of various psychomotor qualities of Taekwondo athletes. The model characteristics of psychomotor qualities in Taekwondo, derived from expert evaluations, are the basis for determining the most important sports qualities and creating a training methodology stimulating the development and improvement of these qualities. The model characteristics obtained through the expert evaluations are a kind of standard for the ideal Taekwondo athlete.

**Key words:** speed, accuracy, amplitude, sense of time

### INTRODUCTION

A great number of technical actions in taekwondo and their variations are executed with feet, hands, and their combinations in certain positions and are applied in attack, defense, and counter-defense. They are included in various technical-tactical combinations (1).

Being a competitive discipline, taekwondo is characterized with high activity and dynamics of the bout. During the match, the time and spatial characteristics of the athletes are constantly changed. Taekwondo differs from other martial arts mainly because of its high kicks performed on the basis of a complex biomechanical structure and predetermined by the highly developed flexibility of the lower extremities and the elasticity of muscle fibers. Sports mastery in taekwondo is determined by the degree of development of athletes' speed-strength qualities,

speed endurance, intermuscular coordination, and other factors (1).

All sports are divided into groups depending on the means, methods, and forms of sports competition. Due to its characteristic features, taekwondo is considered a dual-combat sport. It is among the sports characterized by variability of motor activity like all sports games and combat sports – wrestling, boxing, kickboxing, fencing, etc. According to this classification, taekwondo is among the sports characterized with a limited manifestation of motor activity, athletes' physical and volitional qualities influencing to the greatest extent sports achievements (2).

In sports pedagogical practice, some specialists use the term physical qualities to denote qualitative characteristics of motor skills, while others use motor skills. Both terms are usually used as synonyms. There is no contradiction as regards their content. Nevertheless, Ashmarin (3) attempted to make the terms more specific depending on the factors influencing the quality peculiarities of people's motor activities. If we

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mean the morphological factors or we make a biomechanical characteristic of the movements, we should use the term physical qualities. If we, however, mean the central nervous regulatory mechanism for movement management, we should use the term motor skills. Ashmarin used a third similar term – psychomotor skills when we talk about the quality peculiarity of a motor action from the point of view of psychological qualities (e.g., the regulation of volitional processes).

Psychomotor skills are the basis of motor skills. They determine their quality characteristics. The term psychomotor skills reveals the unity between the physiological and psychological mechanisms of a person's motoric. The usual psychomotor skills mentioned are strength, agility, and endurance (4). Psychomotor skills manifest sensor and motor components of the neuromotor mechanism, which regulates and manages the speed, accuracy, and timing of people's movements and actions (5).

The main attributes used in the studies of an athlete's psychomotoric from the point of view of sports psychology are strength, speed, dexterity, tempo, rhythm, coordination, and speed of reactions (they are viewed as a product of a person's qualities, not as independent parameters).

**The aim of this research** was to reveal the significance of the psychomotor skills of taekwondo competitors and to include them in the model characteristic of taekwondo in the Olympic event.

### Participants

This research was done among twenty-three coaches, assistant coaches, instructors, and judges as experts in the significance of the factors determining taekwondo competitors' preparedness.

### METHODS

**Questionnaire** - a standardized method for revealing the significance of the elements from the sports-technical sphere peculiar to taekwondo. The possible answers to all the questions were formulated in advance, and the experts had to mark the one corresponding to their personal opinion. The questionnaire includes various

qualities (indicators) and a 10-degree scale to evaluate their significance. The significance of the qualities being assessed increases from 0 to 10 points. The scores from 0 to 2 points signify insignificance; the scores from 3 to 4 points indicate little significance; the scores from 5 to 6 represent average significance; the scores from 7 to 8 indicate great importance; the scores from 9 to 10 show considerable significance. Only the end values "0" and "10" are present in the visual analog scale. The other degrees are marked with dividing lines. We assume that the so-created scales stimulate the experts to show their expert attitude more adequately when evaluating the psychomotor skills.

The questionnaire includes five groups of characteristics: anthropometric; general physical; specific motor; technical-tactical, and closely related indicators from psychomotoric. In this research, we present the results of the evaluation of the significance of psychomotor skills.

The group of characteristics related to psychomotoric includes: speed of reactions; accuracy of movements; reaction to a moving object; amplitude of the movements; tempo; rhythm; coordination of the movements; a sense of distance; a sense of time.

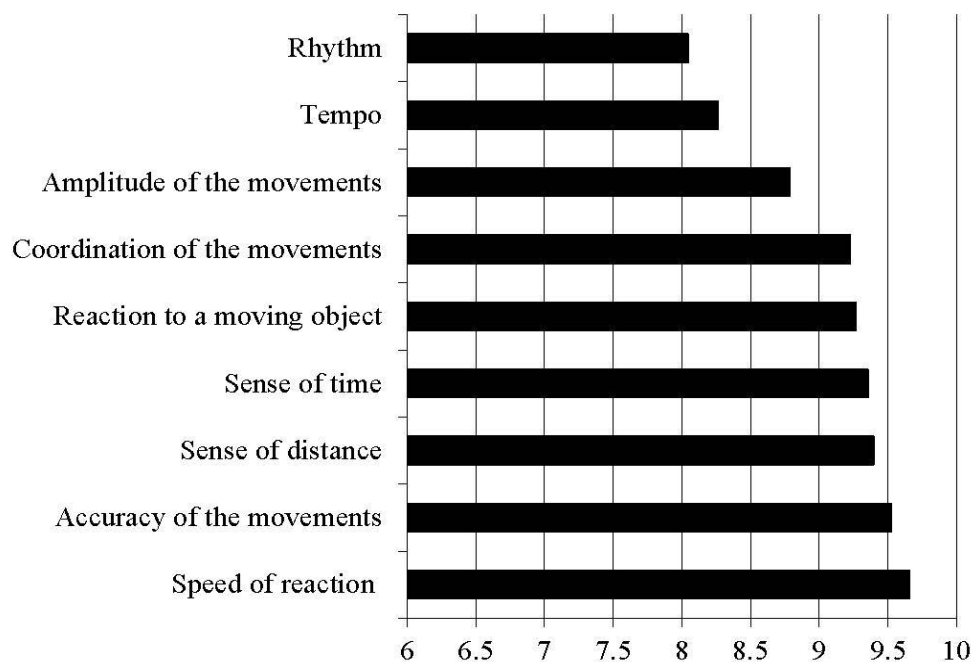
### RESULTS

To reveal the significance of the psychomotor skills of taekwondo athletes, we applied variation and factor analyses.

The results from the variation analysis of the expert opinions determined the indicator "speed of reaction" as the most significant in taekwondo ( $M=9.65$ ;  $Min=7$ ;  $Max=10$ ;  $SD=0.77$ ). The significance of this indicator is determined to a great extent by the peculiarities of taekwondo. This sport is characterized with a very high speed of movements, the need for exceptional accuracy of defensive and offensive actions, and at the same time with, economy, preservation of strength, and high efficiency. These characteristics are greatly dependent on the accuracy of movements, the sense of distance, and the sense of time. These indicators take the next places in the ranking. They are in the basis of speed and adequate reactions (**Figure 1**).

The indicators amplitude of the movements (M=8.78), tempo (M=8.26), and rhythm (M=8,04) showed insignificantly lower values. Similar results for the significance of these

indicators were obtained for kickboxers (6). As a whole, psycho motoric is very significant in kickboxing - M=9.05.



**Figure 1.** Mean values of expert evaluations of the indicators for psycho motoric

The characteristics taken from the field of psycho motoric have a specific significance for the rest of the indicators from the sports program of taekwondo. They put different emphases on the efficiency of the various sports-technical and technical-tactical characteristics. But their influence on them is not definitive. We assume that the characteristics from the sphere of psycho motoric are grouped in specific sets and their influence is not so differential but rather complex.

To reveal the structure and interrelations between the indicators from the sphere of psycho motoric, we used the method of factor analysis.

The factor analysis of the components of psycho motoric revealed two major, general factors (**Table 1**). The first factor is determined by the variables tempo, coordination of the movements, rhythm, and a sense of distance. The second factor unites reaction to a moving object, speed of reaction, accuracy of the movements, amplitude of the movements, and sense of time.

**Table 1.** Factor structure of the components of psycho motoric

	Factors	
	Factor 1	Factor 2
tempo	<b>.94</b>	
coordination of the movements	<b>.89</b>	
rhythm	<b>.87</b>	
sense of distance	<b>.87</b>	
reaction to a moving object		<b>.89</b>
speed of reaction		<b>.88</b>
accuracy of the movements		<b>.88</b>
amplitude of the movements		<b>.72</b>
sense of time		<b>.44</b>

The indicators from the sphere of psycho motoric are determinants for a wide range of other sports-technical characteristics of taekwondo. They lie in the foundation of their mastery and effective use in competition.

### CONCLUSION

The indicators in the sphere of psycho motoric reflect the dynamic aspects of the nervous system and the unity of psychic and motor activities. The psychic components of motor actions are very stable in time. They are genetically inherent and related to the topological peculiarities of a person. Their latent period is critical in sport, especially for motor actions. The latent period of motor actions is determined by the peculiarities of the nervous system and the speed of neuro impulses. The analyzed peculiarities of psycho motoric make it a major factor for the selection and sports orientation in taekwondo. Adequate early sports orientation is a premise for purposeful and efficient preparation and the basis for significant sports achievements.

However, whether the experts' evaluations reflect their subjective attitude or not, we should

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approach the results with caution. The model characteristics determined by the experts should be compared to the ones athletes possess and demonstrate in competition.

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