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**FACULTY OF SPORT AND PHYSICAL EDUCATION,
UNIVERSITY OF NOVI SAD**

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IN COMBAT SPORTS”**

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ANAEROBIC CAPACITIES IN TAEKWONDO

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From a global perspective, combat sports are one of the most popular and fastest growing group of sports in the world, and striking martial arts hold an important place within this group. Out of a total of 25 permanent "core" sports included in the program of the Summer Olympic Games there are four martial arts, two of which belong to the family of striking martial arts (taekwondo and boxing). The World Taekwondo Federation (WTF) is one of the world's largest organizations judging by the number of its members (207 member countries), and taekwondo is one of the most popular sports in the world judging by the number of practitioners. The research studies suggested that the high level of motor abilities and functional skills, with speed and anaerobic capacities in particular, are essential for success. However, studies mostly utilize *non-specific* tests for anaerobic capacity measurement. The second limitation is the lack of verification of metric characteristics on the sample of examinees practicing striking martial arts, as well as the reference tables with the results sorted by age, sex and weight category. Taekwondo is a polystructural acyclic sport dominated by rapid techniques comprising leg kicks to the body and head of the opponent, while the movement patterns include the use of both leg and hand techniques, feinting, jumps while in a fighting stance, linear and lateral movement in the fighting arena, as well as movement on the circular trajectory. During taekwondo competitions the competitors are put in a situation of having to participate in 5 or more fights in a single day, so the anaerobic

endurance is, in addition to the fundamental aerobic endurance, the dominant type of endurance necessary for achieving successful results. During the fight there are no constant activities lasting longer than 30 seconds; however, due to the frequent intervals featuring high-intensity activities, the anaerobic activities predominate. A high level of general and specific anaerobic endurance is required in order for the competitors to be able to take part in one or more fights with as low decline in speed and reaction time as possible. Recent research indicates that the lactate level does rise to 12 to 14 mmol/l during the fight. In practice, a large number of standardized field and laboratory tests are administered to evaluate the endurance of athletes. In practical use, the tests are divided with regard to the place of testing – into laboratory and field tests, and with regard to their type – into specific and non-specific. With regard to the type of stress, they are divided into fixed and progressive stress tests, and with regard to the manner of execution into continuous and discontinuous tests. Anaerobic energy capacity-endurance is the ability to resist fatigue during dynamic activities of submaximal or maximum intensity. Anaerobic energy capacities can be divided into the anaerobic-alactate and the anaerobic-lactate capacity. In order to develop the specific endurance of taekwondo athletes, two methods can be utilized: the intensive interval method and the maximum interval method. Unfortunately, we have not yet encountered validated specific measuring instruments (tests) in the domain of the taekwondo sport that can accurately measure the level of specific anaerobic capacities. The task of future research is to construct and validate a specific field testing procedure with good metric characteristics, which will specify the level of specific anaerobic capacities in taekwondo in a quality manner and have a high degree of applicability. In the meantime, the choice of diagnostic tests and methods to be applied is left to the coaches who need to take into account numerous factors, such as the age and number of athletes, financial capabilities, level of fitness, the timing of testing in the annual curriculum etc. The presented set of tests is certainly not a definitive list of tests used, because a list of all tests is neither possible nor necessary to make, seeing as the aim of this work was to inform us of the possibilities for the diagnosis of anaerobic capacities of taekwondo athletes. The most important issue for coaches is to be able to choose from a large database of tests and methods the ones that will enable them to accurately and reliably measure, as well as to control and improve the fitness level of anaerobic capacity of taekwondo athletes.

Keywords: functional diagnostics, endurance, functional training