Abstract

Kickboxing is a combat sport with many forms of competition. The least restricted fighting formula in terms of the range of techniques used and the power used to perform them is the K1 Rules. According to these rules, all kickboxing punches and kicks are allowed with full power. Due to the associated spectacle, the popularity of the sport is steadily growing. The research community is also showing increasing interest, with more and more comprehensive analyses of K1 kickboxing bouts. This dissertation focuses on selected aspects of the analysis of kickboxing bouts with regard to physical fitness and physiological parameters. This research was carried out on groups of highly trained kickboxing athletes who compete under the K1 rules.

A comprehensive analysis of the bouts was conducted in terms of physical fitness, indices of technical and tactical training (activeness, efficiency, and effectiveness of attack), body tissue composition, and physiological parameters during the bout. The examinations aimed to evaluate the level of physical fitness were performed using selected tests from the International Physical Fitness Test and the European Physical Fitness Test. Verification of body composition was conducted using the bioelectrical impedance method. Physiological measurements were made using a specialized thermometer, pH meter, gasometer, heart rate monitor, and lactate analyzer. The results of the examinations and their detailed interpretations were published in eight thematically related scientific papers that constitute a complete analysis of the kickboxing bout conducted for this doctoral dissertation.

The results of this research include the values of indices of technical and tactical skills and show the related parameters of physical fitness and body composition which statistically significantly affect the value of the indices. Strongly increasing physiological stress and acid-base imbalance were found during the analysis of the bouts. Statistically significant changes in blood lactate levels and heart rate were demonstrated to increase with each round of the bout.

The published findings indicate a relationship of physical fitness and body composition with indices of technical and tactical skills. They also show statistically significant changes in physiological responses. They provide an opportunity to draw practical conclusions that affect the quality of kickboxing training and increase the range of options for coaching control.