Revista de Artes Marciales Asiáticas
Volumen *11*(2s), 28-29 ~ 2016
DOI: 10.18002/rama.v11i2s.4156
http://revpubli.unileon.es/ojs/index.php/artesmarciales

RAMA
I.S.S.N. 2174-0747

Physical fitness profiles of junior athletes practicing selected combat sports

Ewa POLAK*, Antoni SEREDYŃSKI, & Krzysztof PRZEDNOWEK
Faculty of Physical Education – University of Rzeszow (Poland)

5th IMACSSS World Scientific Congress Abstracts, Rio Maior (Portugal), October 6-8
Section: Biological, kinesiological and physiological aspects of MA&CS
Type: Oral communication

1. Introduction

Every sport has its specific requirements for physical fitness that depend on the stage of the training process. The physical fitness of the beginners is different than that required from juniors or top-level athletes. Attempts to determine the desired profile and to identify the key elements of physical fitness as well as characterizing top-level athletes in combat sports, are the subject of numerous scientific studies (Chaabène, Hachana, Franchini, Mkaouer, & Chamari, 2012; Chaabène et al., 2014; Pallarés, Gullón, Muriel, Diaz, & Izquierdo, 2011). The physical and physiological characteristics of young combat sports athletes were examined by other scientists (Boguszewski, Jakubowska, Adamczyk, & Białoszewski, 2015; Opstoel, et al., 2015). The aim of this study was *i)* to determine profiles of overall physical fitness of boys who practice three various combat sports: boxing, Kiokushin karate and freestyle wrestling; *ii)* to compare their physical fitness to those athletes of Subcarpathian Province team of juniors, who practice other sports; and *iii)*to compare obtained profiles to those that were suggested for high-level athletes.

2. Methodology

The study was carried out on 247 athletes from the Subcarpathian Province team of juniors. All boys were divided in four groups: 8 boxers (age: 14.9 ± 1.3; height: 174.6 ± 5.2 cm; weight: 64.0 ± 5.9 kg), 6 karatekas (age: 15.5 ± 0.8; height: 169.9 ± 7.3 cm; weight: 62.5 ± 8.2 kg), 13 wrestlers (age: 14.8 ± 2.3; height: 169.4 ± 12.8 cm; weight: 66.2 ± 19.5 kg), and 220 athletes practicing other sports (age: 13.7 ± 2.3; height: 165.9 ± 14.4 cm; weight: 57.0 ± 15.2 kg). These other sports were: acrobatic and trampoline gymnastics, canoeing, cycling, athletics, arching, alpine skiing, sports orientation, football, volleyball, swimming, diving, shooting, chees, fencing, table tennis, tennis and sailing. The International Physical Fitness Test (IPF Test) was used to determine overall physical fitness. This test consisted of eight trials. The characteristics of physical fitness determined for boys practicing combat sports were presented against to comparative group (athletes practicing other sports – hereinafter referred to CG). The comparison was based on the ratio in order to normalize the average results of the entire groups on the arithmetic mean of the CG. The results of each trial were converted into points on a scale of 1 to 100 (T scale) according to tables compiled for every age and gender. These score tables were developed on the basis of an extensive sample that was representative for the school age population of Poland. The use of points, as it was analyzed in the results, led to the elimination of differences in the age of the subjects. Statistical analysis obtained descriptive statistics for each trials in four sport groups. The one-way ANOVA analysis and Tukey's HSD testwere used to examine the differences in results among comparative groups. Significance level was set at $p<0.05$.

* *Email:* ewpol@op.pl

3. Results

The leading element of physical fitness is different for each combat sport. Boxers achieved the best results in locomotive speed (68.7 points), karatekas in strength of abdominal muscles (64.3), and wrestlers in agility (56.7). The results comparison of each test trial allowed to observe, that boxers were better than athletes of CG in locomotive speed (1.16 of standard deviation better than arithmetic mean of the CG results), running endurance (0.86), strength of upper limbs (0.81) and strength of abdominal muscles (0.46). Karatekas were better than athletes of CG in strength of abdominal muscles (1.03), strength of upper limbs (0.75), flexibility (0.66) and running endurance (0.62). The results, obtained by the wrestlers were the most similar to those that were obtained by athletes of CG. They achieved only slightly better results in test exercises measuring running endurance (0.34) and flexibility (0.18). The differences in the results that were significant at $p<0.05$ were observed for locomotive speed, running endurance, strength of upper limbs and strength of abdominal muscles. The analysis of average of overall physical fitness, defined by the total number of IPF Test points divided by the number of performed trials, showed that only groups of boxers and karatekas were better than the athletes of CG.

4. Discussion and conclusion

The results show that boys who practice boxing and karate achieved better overall physical fitness than boys who practice other sports. In part, it confirmed the results of research conducted by Opstoel et al. (2015). They examined athletes in 25 different sports and they found that training in combat sports (judo, karate and taekwondo) was aimed at raising the level of flexibility, explosive strength, balance, agility and motor coordination. The examined wrestlers achieved the level of physical fitness worse than the athletes of other sports. The profiles of physical fitness in each analysed combat sport presented by juniors were different from profiles determined for high-level athletes. Such comparisons may enable the coaches to determine which elements of physical fitness of athletes should be improved in the future stages of the training process.

Further research into the characteristics of physical fitness of children and youth that practice combat sports is required to enrich the current data set. Such research should focus on the connections to physical attributes and differences among the various sports. The possibility to analyse such data by the coaches can help them adapt training methodologies that meet the needs of individual athletes and create programs suitable for each stage of the training process.

References

Boguszewski, D., Jakubowska, K., Adamczyk, J. G., & Białoszewski, D. (2015). The assessment of movement patterns of children practicing karate using the Functional Movement Screen test. *Journal of Combat Sports and Martial Arts,* 6(1), 21–26.

Chaabène, H., Hachana, Y., Franchini, E., Mkaouer, B., & Chamari, K. (2012). Physical and Physiological Profile of Elite Karate Athletes. *Sports Medicine, 42*(10), 829–843.

Chaabène, H., Tabben, M., Mkaouer, B., Franchini, E., Negra, Y., Hammami, M., Amara, S., Chaabène, R.B., & Hachana, Y. (2014). Amateur Boxing: Physical and Physiological Attributes. *Sports Medicine, 45*(3), 337–352.

Opstoel, K., Pion, J., Elferink-Gemser, M., Hartman, E., Willemse, B., Philippaerts, R., Visscher, Ch., & Lenoir, M. (2015). Anthropometric Characteristics, Physical Fitness and Motor Coordination of 9 to 11 Year Old Children Participating in a Wide Range of Sports. *Plos One, 10*(5), e0126282.

Pallarés, J. G., Gullón, J. M. L., Muriel, X., Diaz, A., & Izquierdo, M. (2011). Physical Fitness Factors to Predict Male Olympic Wrestling Performance. *European Journal of Applied Physiology, 111*(8), 1747–1758.

Key words: Adolescents; sports training; combat sports; boxing; wrestling; karate.