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ANALYSIS OF ATTACK TECHNIQUES OF HIGHLY SKILLED FEMALE KARATEKAS WITH HEARING HEARING IMPAIRMENTS

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Purpose: to determine the frequency of kicks by highly qualified female karatekas with hearing impairments, as well as their effectiveness.

Material and Methods: the method of video recording and the method of analysis of literary sources were used in the study. The performance of 8 female athletes in 8 duels was investigated, 276 attacking actions were analyzed.

Results: it was found that high-skilled karate athletes most often use Jodan (top-level, head-on) kicks, followed by Jodan kicks in the second place; Jodan kicks hitting the target (7.2% of the target) bring Ippon to the athlete which means 3 points, while Yuko (1 point) hits 17.27% of the target. The average time between strikes is 4.7 seconds, however, most of the time between strokes is from 1 to 3 seconds.

Conclusions: optimization of individual training of highly qualified female karatekas can be done by changing the proportion of kicks in the way of increasing amount of kicks in the upper sector (Jodan), at the cost of kicks in the middle sector (Chudan), which according to the study are the least effective.

Keywords: karate, highly skilled female athletes, deaf, competitive activities.

Introduction

Karate is a sport, a martial art that is part of the Deaflympics program. The requirement for athletes to participate in the Deaflympics is that the athlete must have 55 dB hearing loss in the best ear. Participation and victory in these competitions is the highest sports result for female karatekas with hearing impairments.

Improving the system of training highly qualified karatekas requires trainers and athletes to constantly search for new methodological approaches to the organization and content of the educational process [1]. Athletes must have the ability to high pace, the variability of technical actions, the ability to withstand the psychological stress that occurs during the fight [1]. The works of sports researchers are devoted to improving the physical qualities of highly qualified athletes based on the requirements of competitive activity [9-10].

Many domestic and foreign scientists studied the biomechanical criteria of the optimal karate technique, in particular, the frequency and effectiveness of fighting action was studied [2]. So, D. N. Samuylov investigated the volume and effectiveness of kicking actions in kumite of highly qualified athletes and showed the proportions of legs and hands kicks, in different levels, as well as the execution of a series of kicks [1]. V. Busol and S. Vishnevetsky [2] investigated the types of percussion and the extent of their use in competitions at various levels. The effectiveness of kicking technical actions in the kumite of the absolute world champions [3] was also investigated and recommendations were given on the number of kicks delivered, the number of kicks that reached the goal, and the efficiency ratio of technical actions. The above indicates that the analysis of competitive activity of highly qualified karatekas is extremely relevant for further research and development of training programs for athletes of various levels.

As for highly skilled female karatekas with hearing impairments, according to our knowledge, a study of their competitive activity has not been conducted. A rather small number of publications abroad was devoted to the training process of karatekas with hearing impairments [4-7]. According to Akınoğlu B., Kocahan T. [8] there are very few studies conducted with the participation of deaf athletes around the world,

despite the development and long history of Deaflympic sports. Given the above, there is a need for additional coverage of the problems of the training and competitive process of deaf athletes.

Purpose of the study: to determine the frequency of kicks by highly qualified female karatekas with hearing impairments, as well as their effectiveness.

Material and Methods of research

To conduct the study, we used the method of analysis and generalization of literature on the research problem, the method of filming and subsequent analysis, descriptive methods of mathematical statistics that allowed us to determine average values (X), standard deviation (SD), minimum (min) and maximum (max) values. The karate fights of the open category of women at the 2017 Deaflympics were analyzed. The study involved 8 highly skilled female karatekas.

Results of the research

As a result of the study, it was revealed that female karatekas of high qualification at the Deaflympic Games 2017 most often used kicks in the Jodan sector (upper level, a blow to the head), in second place kicks in the Jodan sector (Table 1).

Table 1

Most frequently performed highly qualified female karatekas kicks with hearing impaired in the 2017 Open Weight category of the Deaflympics.

	N	X	Me	Min	Max	SD
Number of kicks made by leg in the Jodan sector	14	4,1	2,5	0	13	4,2
Number of kicks made by leg in the Chudan sector	14	3,8	3	0	10	3,5
Number of kicks made by hand in the Jodan sector	14	5,7	5	1	15	3,7
Number of kicks made by hand in the Chudan sector	14	1,6	1	0	6	1,8

Remark: the table shows the results of one athlete for 1 kumite.

Since the data we obtained did not correspond to the normal distribution, the table shows the average value, median, minimum and maximum values, and standard

deviation. Thus, we can observe a large run from the minimum number of kicks to the maximum. So, the smallest value of the kicks at the Jodan level with the hand is equal to one, and most of all - fifteen. The indicated is explained by the activity of each female athlete. Female karatekas, who conduct active attacking actions, force rivals to defend themselves and conduct a significantly smaller number of attacking techniques.

After analyzing all the kicks, it was revealed that various kicks (Tsuki - direct and Uchi - circular) in the Jodan and Chudan level account for 46.6% of kicks, 29.2% of kicks in the Jodan sector, and kicks in Chudan sector - 24.2% (see Figure 1.).

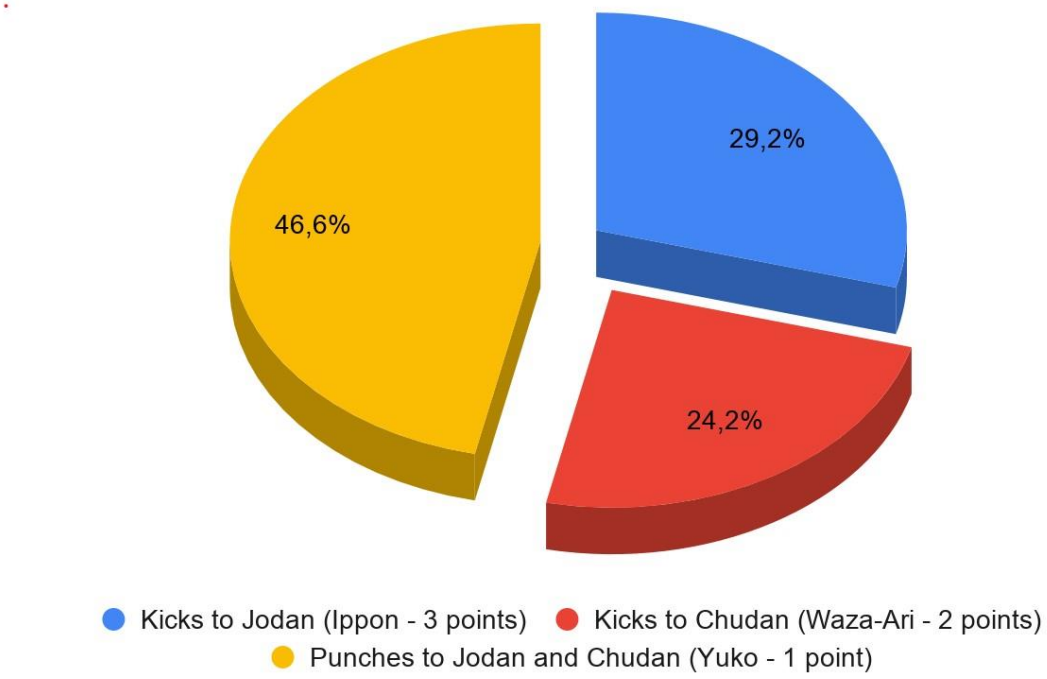

Fig. 1. Percentage of kicks (n = 276) delivered by female karatekas during the Deaflympics (open category)

The analysis of accurate kicks (Fig. 2) showed that kicks in the Jodan sector achieve the goal in 7.25% of cases among the studied contingent of athletes, giving them Ippon - 3 points. Kicks in the Chudan sector achieve the goal in 3.51% of cases, the karatekas gets a Waza-Ari score of 2 points. Kicks in the Jodan and Chudan sectors kicks the target in 17.2% of cases, giving the athlete who successfully carried

out this attacking action, Yuko - one point. It should be noted that in successfully conducted attacking actions were those for which the athletes received points from the judges and therefore met the requirements of the karate rules, namely:

a) good form;

b) sports attitude;

c) concentration;

d) readiness to continue the battle;

e) correct timing;

e) correct distance.

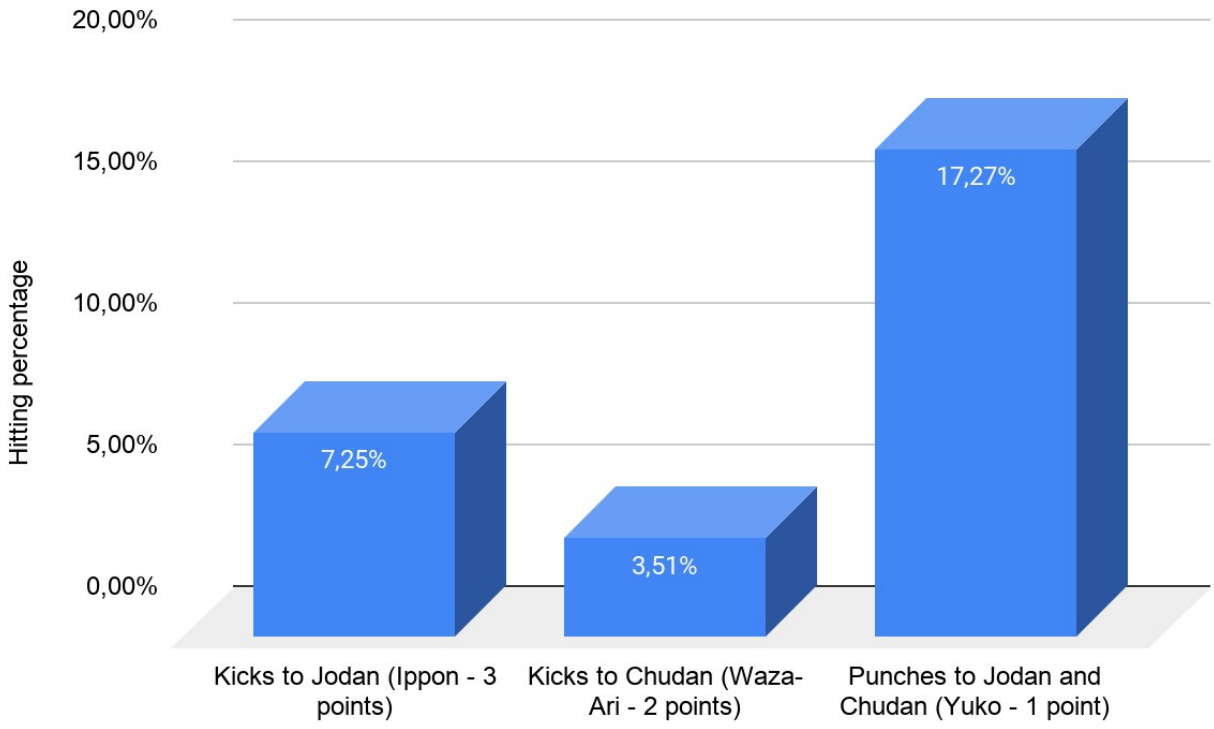

Fig. 2. Percentage of successfully carried out attacking actions (n = 276) of female karatekas of the open category at the 2017 Deaflympics

During the study, the time intervals between the kicks were found, the data are shown in Table 2 and Figure 3. This information helps to determine the density of the kumite at high karate competitions among women with hearing problems. So, the average value is 4.7 s, the standard deviation is 7.1; the minimum value is 0, which means several kicks in a row, without a break, the maximum value is 43 s.

Table 2

Time intervals between kicks in highly qualified female karatekas with hearing impaired

	N	X	Min	Max	SD
Time interval between kicks, s	219,0	4,7	0,0	43,0	7,1

For a more informative display of data on the time intervals between kicks, the data are presented in Figure 3 as a Gaussian distribution.

From Figure 3 it is seen that most often between kicks in karate, the length of the gaps is from 0 to 3 seconds. The above indicates a high density of the duel and related requirements for the physical, tactical and technical training of highly qualified female karatekas with hearing impairments.

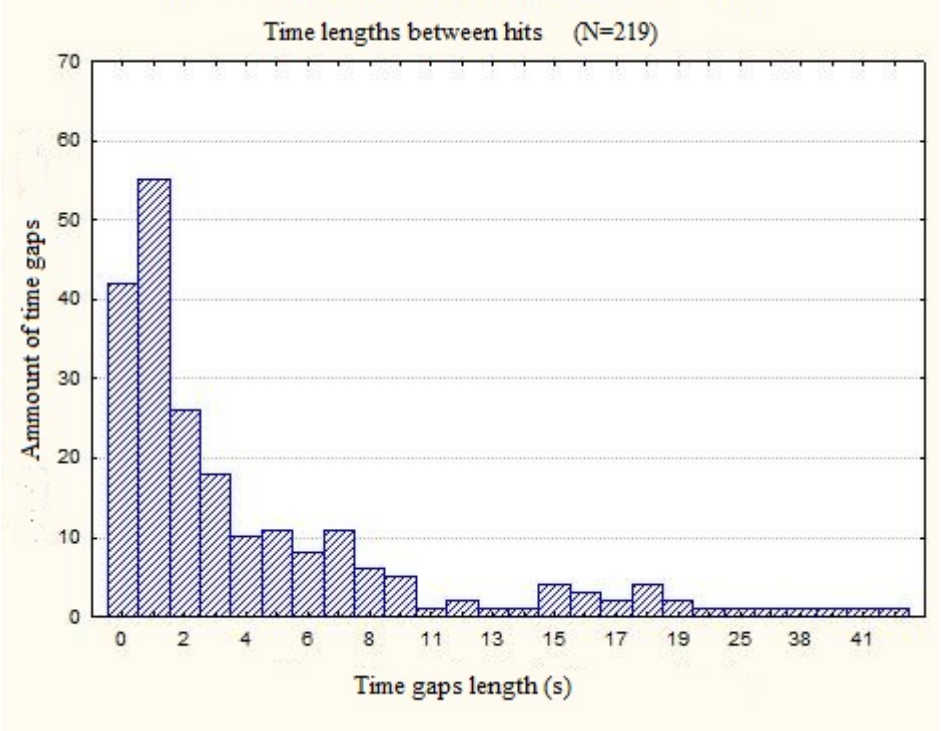

Fig. 3. The time intervals (s) between the kicks of female karatekas of high qualification of the open category Deaflympic Games 2017

Conclusions / Discussion

According to the results of the study, highly skilled female karatekas most often use hand kicks in the upper and middle sectors (Jodan and Chudan). Also, these attacks most often bring a positive result in 17.27% of cases. It should be noted that

kicks to the upper sector (Jodan), reaching the goal in 7.2% of cases, bring the Ippon athlete 3 points, while kicks Yuko (1 point).

Based on the data obtained, it is possible to optimize the individual training of highly qualified female karatekas by changing the proportion of kicks in the direction of increasing kicks to the upper sector (Jodan), by reducing kicks to the middle sector (Chudan), which according to the study is the least effective.

When studying the density of kumite, it was found that on average the interval between kicks is 4.7 seconds. But most often there are intervals between kicks from 1 to 3 seconds. Given the above data, the training process can be adjusted so that the physical technical and tactical training of highly qualified female karatekas meets the requirements of competitions at the highest level.

Prospects for further research are the development of individual training programs for highly qualified female karatekas with hearing impairments for the XXIII Deaflympics to be held in 2021.

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