

# The results of judo fights during the 2018-2019 World Championships

**Authors' Contribution:**

**A** Study Design  
**B** Data Collection  
**C** Statistical Analysis  
**D** Data Interpretation  
**E** Manuscript Preparation  
**F** Literature Search  
**G** Funds Collection

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## abstract

- Background:** The aim of the study was to analyze female and male competitors' results of judo fights during the 2018-2019 World Championships in the light of the new regulations of sports fights.
- Material and methods:** The research material involved the recording and analysis of athletes' fights during the 2018 World Judo Championships in Baku (Azerbaijan) and the 2019 World Judo Championships in Tokyo (Japan). In total, 1,659 fights were analyzed, including 997 bouts in the group of men and 662 bouts in the group of women. The collected material allowed analyzing the ways of resolving bouts by competitors in extreme weight categories, bouts completed in the regular time and in the extra time, and fights fought in qualifying rounds and in the medal zone (medal fights).
- Results:** There were no clear differences in the ways of resolving the bouts fought in the groups of women and men. In the group of heavy-weight categories, a certain predominance of attacks completed by *ippon* was found, while in the group light-weight categories by *waza ari*. Also fights that were completed in the regular time were most often resolved by *direct ippon* and two *waza ari = ippon*, while the fights completed in the extra time were definitely more often completed by *waza ari* or disqualification - *hansoku make*. During the elimination fights, competitors more often than during medal fights resolved bouts by disqualification, while competitors fighting for medals more often won through *waza ari* than the competitors fighting in the qualifying rounds.
- Conclusions:** The most important differences were observed in the results of fights completed in the regular time and in the extra time of fighting. The groups of athletes of light- and heavy-weight categories differed in the number of points obtained by *ippon* and *waza ari*. In the elimination and medal fights, the number of obtained *waza ari* was the most differentiating factor. During direct fights for medals, competitors resolved bouts the least often by *hansoku make*.
- Key words:** sports regulations, analysis of fights, assessment of attacks, disqualifications.

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## INTRODUCTION

Changes in the rules of judo fighting began in 2010, and since then there have been other modifications [1,2]. Since 2017, adjustments were made to the rules of judo fighting, which were in force during the 2018 and 2019 World Judo Championships, and which will apply during the Olympic Games in 2021 (the date of the Games was changed due to COVID-19). One of the most important changes concerns the regular fight time, which is currently 4 minutes for both female and male competitors [1, 3]. The judge's yuko assessment was abandoned, and new requirements have been defined for waza ari and ippon scores. In addition, warnings (shido) are not points and do not determine the outcome of the fight. Getting 3 shido warnings results in disqualification – hansoku make [1, 3, 4]. The judge's interpretation of the defense by the so-called "bridging" was changed. Until 2014, "bridging" was considered to be defense. In accordance with the regulations in force at the time, the judges did not award points or awarded waza ari. In 2014, this regulation was changed, and executing the so-called "bridging" was considered a dangerous element, endangering health, and, in the event of its implementation, the competitor was punished with hansoku make, i.e. disqualification. Since 2018, the execution of "bridging" in defense against a throw results in awarding ippon to the opponent and completing the fight before time [1, 3].

In light of the new regulations, the ways of resolving the fight also changed. The results of bouts are clearer, and the referee's decisions may refer to four scores (*ippon*, *waza ari + waza ari = ippon*, *waza ari*, *hansoku make*) [1]. Information on ways of resolving a fight can be a hint for coaches and athletes in programming the training process [5,6,7,8]. Implementation of changes in the rules of judo sport was important primarily for competitors who, through technical and tactical preparation, demonstrate their efficiency in fights [9-12].

## MATERIALS AND METHODS

The fights were recorded by video means and then transcribed graphically and analyzed [10,13]. The changes to the regulations introduced in 2017 were in force during the World Judo Championships held on September 20–27, 2018 in the capital of Azerbaijan – Baku and at the World Judo Championships held on August 25–September 1, 2019 in the capital of Japan – Tokyo. All individual bouts fought during the 2018 and 2019 World Championships were recorded and analyzed (in the group of men = 997 fights, in the group of women = 662 fights). A total of 1,659 bouts were analyzed. The currently binding sports regulations allow distinguishing ways of ending bouts by: *ippon*, *waza ari + waza ari = ippon*, *waza ari*, *hansoku make* [1]. The above methods of resolving fights in the group of judo players and female competitors were analyzed. Attention was also paid to the ways of ending fights in light-weight categories and in heavy-weight categories. Competitors were grouped into extreme weight categories: competitors of light-weight categories (men – 60 kg and 66 kg and women – 48 kg and 52 kg) and competitors of heavy-weight categories (men –100 kg and +100 kg and women –78 kg and +78 kg). The ways of ending bouts within the regular time – before four minutes and in the extra time – more than four minutes of the bout time were also presented. The next step in the analysis of the fight results was to distinguish these ways for the bouts fought in the medal zone (fights directly deciding about winning a medal) and in elimination rounds (other bouts in the competition).

## RESULTS

During the 2018 and 2019 World Championships, a total of 1,659 fights were registered and analyzed, of which less than half (47.7%) was completed with an effective technical attack awarded with ippon. 16.0% of the bouts were resolved with the *ippon* score

which was awarded following two *waza ari* attacks. Successful execution of a technique scored as *waza ari* decided about winning 22.7% of the bouts. During the analyzed competitions, the opponent's disqualification (*hansoku make*) could also decide about victory, which happened in 13.6% of the analyzed bouts. It should be noted that all recorded disqualifications during the competitions in question were imposed for triple shido warning that competitors received during one bout (Table 1).

Table 1. Ways of resolving bouts in the men's and women's groups during the 2018 and 2019 World Judo Championships

Categories	Fight	Ippon	W + W = Ippon *	Waza ari	Hansoku make
Men	997	492 - 49,3%	134 - 13,4%	229 - 23,0%	142- 14,3%
Women	662	301 - 45,5%	131 - 19,8%	147 - 22,2%	83 - 12,5%
<b>Total</b>	<b>1659</b>	<b>793 - 47,7%</b>	<b>265 - 16,0%</b>	<b>376 - 22,7%</b>	<b>225 - 13,6%</b>

\* W + W = ippon (waza ari plus waza ari = ippon)

In the group of men, the bouts resolved through ippon accounted for almost half of the fights (49.3%). The bouts resolved through *waza ari* accounted for 23.0% and through *hansoku make*, i.e. disqualification, 14.2% of the fights. In the group of men, the fewest fights were completed by accumulating two *waza ari* attacks, which resulted in *ippon* (13.4%).

In the group of women, similarly to the group of men, ippon decided about ending a fight before time to the greatest extent (45.5%). In 22.1% of the bouts athletes concluded bouts by *waza-ari*, and in 19.8% of the fights by two *waza ari* = *ippon*. The analysis of the fights also showed that *hansoku make* (disqualifying the opponent) concluded 12.5% of the bouts.

It was observed that both in the group of women and in the group of men, the highest percentage of bouts were resolved by a direct ippon attack. The number of bouts resolved by *waza ari* and *hansoku make* was quite similar in both groups of female and male athletes (Table 1).

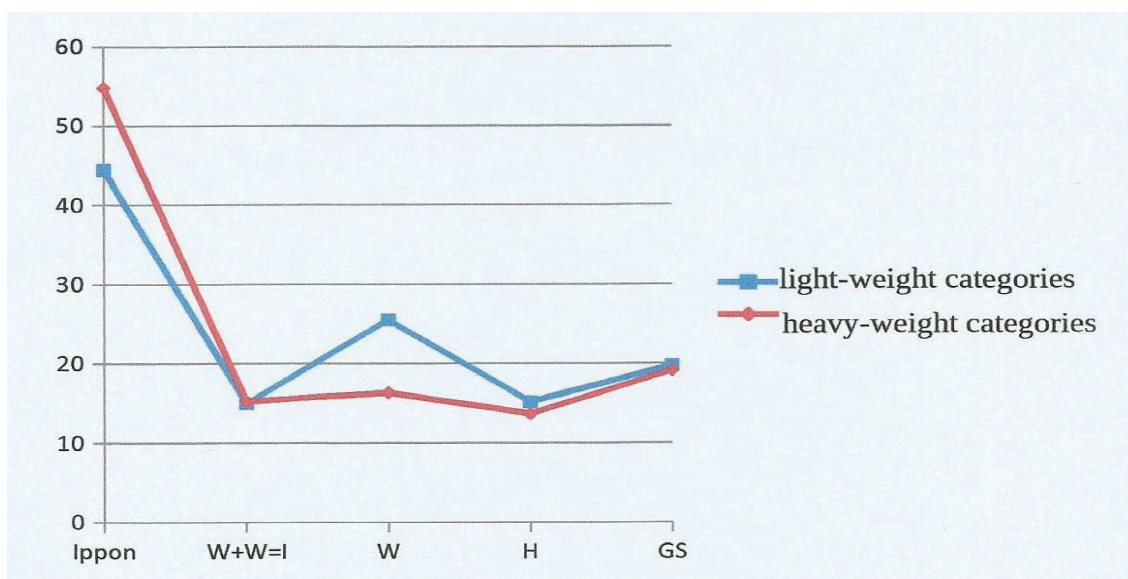


Fig. 1. Ways of resolving bouts by competitors of *heavy-weight* categories and *light-weight* categories

In heavy-weight categories and in light-weight categories competitors were more likely to resolve bouts by scoring *ippon* directly: male and female athletes of heavy-weight categories in 54.7%, and male and female athletes of light-weight categories in 44.4%. In light-weight categories resolving a fight by scoring *waza ari* accounted for 25.5% and in the case of heavy-weight categories for 16.3%. There were no obvious differences in other ways of resolving fights between competitors in light-weight categories and heavy-weight categories (*waza ari* + *waza ari* = *ippon*: competitors in light-weight categories - 14.9%, competitors in heavy-weight categories - 15.9%; *hansoku make* competitors in light-weight categories - 15.2%, and competitors in heavy-weight categories - 13.8%) (Figure 1).

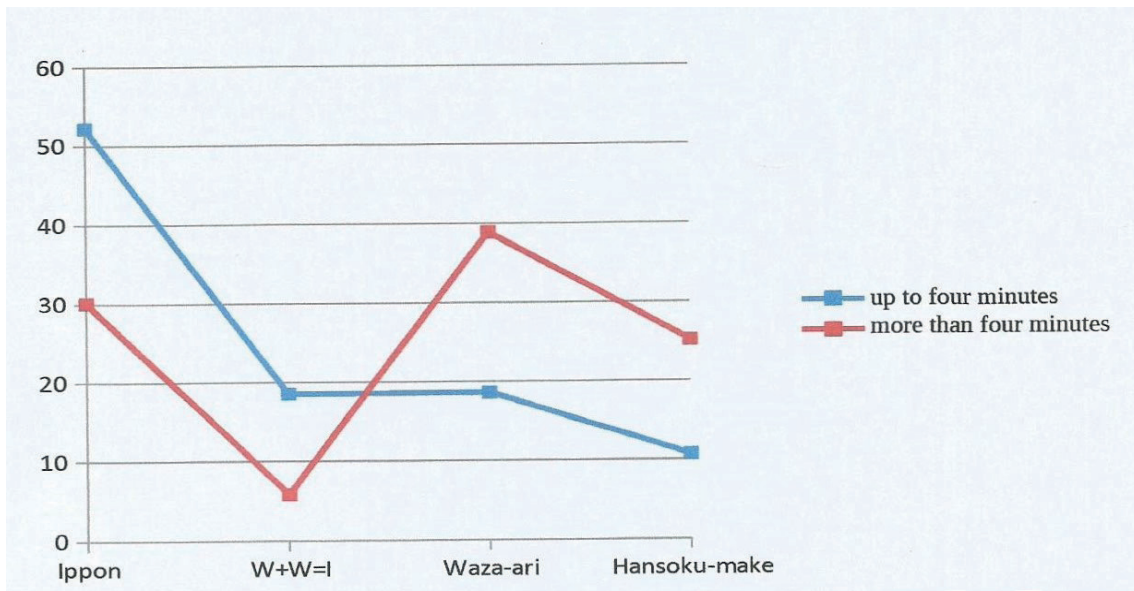


Fig. 2. Bouts resolved in the regular time (up to four minutes) and in the extra time (more than 4 minutes)

It was observed that fights were resolved by *direct ippon* in the regular time in 52.2% and by two *waza ari* = *ippon* in 18.5%. On the other hand, in the extra time 38.9% of the fights were resolved by *waza ari* and 25.2% by *hansoku make* (Figure 2). Of the fights won in the extra time as many as 37.2% were resolved in the 1st minute of extra time.

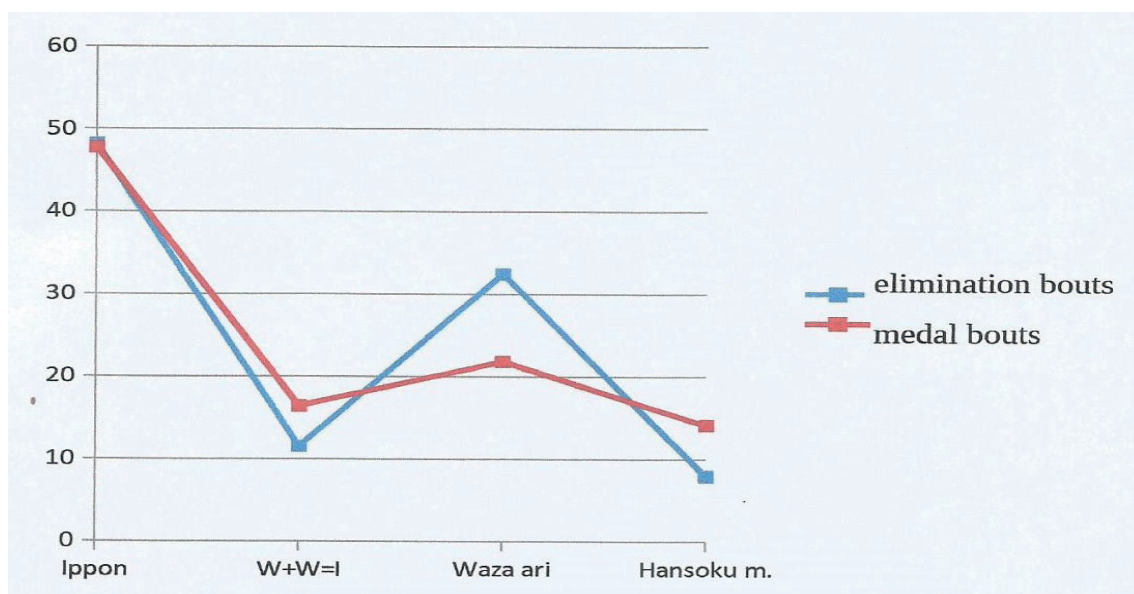


Fig. 3. Results of elimination bouts and medal bouts during the 2018-2019 Worlds Judo Championships

Both the elimination bouts and the bouts deciding about winning medals were most often resolved by *ippon* (47.8% and 48.2%, respectively). Competitors taking part in direct bouts for a medal more often resolved their fights by *waza ari* (32.4%) and less frequently by disqualification (7.8%) than the competitors participating in the qualifying bouts (21.7% and 14.1%, respectively).

## DISCUSSION

The 2018 and 2019 World Judo Championships allowed male and female competitors to win a bout in the case of an effective attack that scored *ippon*, or two *waza ari* scores, which, awarded in one bout, resulted in an *ippon* score. The fight could also be resolved by an effective technical attack scoring *waza ari* after the end of a four-minute bout or during extra time [14–16]. Less than half of all analyzed fights were resolved as a result of a direct attack that was awarded the *ippon* score. Despite competing at one of the most prestigious sports competitions in judo, as many as 86.4% of the 1,659 analyzed fights were resolved by executing an effective attack given an *ippon* or *waza ari* score.

When comparing the methods of resolving bouts, no significant changes were found between male and female athletes. In both of the studied groups, the greatest differences were found in the bouts resolved by means of two attacks scoring *waza ari* (equal to *ippon*). However, the greatest number of bouts was resolved by athletes who attacked to score direct *ippon*. Slight differences in the ways of resolving bouts (to the athletes' benefit) were found in the case of *hansoku make* and *waza ari*. Sports regulations in force since 2018 did not have a significant impact on the differentiation in ways of resolving fights during the 2018 and 2019 World Judo Championships in the group of men and women.

A more notable differentiation was found in extreme weight categories - "light and heavy-weight categories" of both the groups of females and males. The competitors of "heavy-weight categories" significantly outdid the competitors of "light-weight categories" in the efficiency of direct attacks scoring *ippon*, while the latter more often won their fights by successful attacks scoring *waza ari*. Winning attacks by *hansoku make* in the case of "light weight categories" and *waza ari* + *waza ari* = *ippon* in the case of "heavy-weight categories" slightly differentiated competitors of both of these groups.

Another analyzed aspect of ways of resolving bouts was their duration. The first group consisted of fights resolved in the regular time - up to 4 minutes; the second analyzed group included fights whose result was determined in the extra time - over 4 minutes. The division of bouts into those that were completed in the regular time and in the extra time differentiated the ways of resolving them. Fights completed within 4 minutes were more often resolved by direct *ippon* and *ippon* resulting from two *waza ari* in comparison to fights completed in the extra time. Fights that ended after the regular time had passed were more often resolved by the *waza ari* and *hansoku make* scores. It is worth noting that a significant number of fights completed in the extra time were resolved in its first minute. Therefore, one can wonder whether it was justified to shorten the fighting time from five to four minutes (in the case of men) [3, 16, 17].

The analysis of the ways of resolving the medal-deciding bouts and elimination (remaining) bouts showed that the greatest differentiation concerned the successfully executed *waza ari* attacks. The least differentiating way of winning bouts in fights for medals and elimination fights was the execution of an effective attack awarded the *ippon* score.

Assessing the methods of resolving bouts in the groups presented above, it can be stated that the attack awarded with direct *ippon* was the most commonly executed in the group

of competitors of “heavy-weight categories” and in the group of athletes who resolved their fights within the regular time. On the other hand, this way of resolving the fights was the least frequent in the group of athletes who won in the extra time and in the group of light-weight category athletes. Similarly to research by Nakamura et al. [5], athletes finished fights most efficiently with attacks that also resolved the bout by *ippon* resulting from two *waza ari* scores in the group of women and in the group of fights completed in the regular time. This way the least often decided about victory in the extra time of fight and during direct fights for medals. An efficient attack with the *waza ari* score that decided about victory the most often was recorded in bouts resolved in the extra time and in direct competition for medals. Bouts resolved by *waza ari* were the rarest among competitors of “heavy-weight categories” and during the regular fighting time. Disqualification, *hansoku make*, which decided about victory, most often took place among the competitors who achieved victory in the extra time of fight. This score of victory was the least frequent during bouts deciding about winning a medal and the bouts resolved in the regular time.

## CONCLUSIONS, PRACTICAL RECOMMENDATIONS

The uniform sports regulations introduced during the 2018 and 2019 World Judo Championships, which will also apply without further changes during the upcoming Olympic Games (Tokyo 2021), enable an objective assessment of how judo bouts are resolved.

1. There were no significant differences in the ways of resolving bouts between male and female contestants.
2. Competitors in “heavy-weight categories” more often won fights by means of a direct *ippon* attack than competitors in “light-weight categories”, while athletes from “light-weight categories” more often resolved their bouts by attack awarded *waza ari*.
3. The greatest differences in the ways of resolving the bouts were found in the case of analysis of fights completed in the regular and in the extra time. Bouts that were completed in the regular time (four minutes) were most often resolved by *ippon* (both in direct attack and as a result of two *waza ari*). They were also completed much more often by an effective technical attack. On the other hand, during fights whose completion required extra time, resolutions were made more often through *waza ari* and *hansoku make*.
4. During the fights directly deciding about winning the medal, the competitors resolved the bouts by a *technical ippon* or *waza ari* attack.
5. The introduced changes to the sports rules of judo fighting and the ways of judging them allow competitors to resolve bouts by efficiently executing judo techniques.

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