

## Estimation degree of changes influence in competition rules on the contests ratios of judo wrestlers of lightweight categories in Russia and Kyrgyzstan

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Published online: October 31, 2017

(Accepted for publication September 25, 2017)

DOI:10.7752/jpes.2017.s4209

**Abstract:** The article deals with the comparative contests ratios of judoists - men representing the Russian Federation and Kyrgyzstan at national and international competitions. The competition bouts of 146 athletes competing in weight categories up to 60 and 66 kg were analyzed for 2 time periods: from 2003 to 2009 and from 2010 to 2015. Moreover, the separation for periods is associated with the introduction of significant changes in the rules of judo competition aimed to encourage athletes to conduct a dynamic and attacking struggle. The purpose of the research was to reveal the fitness of the athletes to conduct an active attack on the modified rules of the competition. Besides, the results of the analysis conducted by the authors show that the judoists in the category up to 60 kg in the second time period is a significant increase in such competitive factors as the number of common technical (P <0.01) and successful (P <0.05) groundwork. It should also be noted the decrease in time intervals between attacking actions is an average of 16 seconds and a decrease in the number of lost technical actions of athletes in a wrestling (P <0.001). Meanwhile, the athletes competing in the category up to 66 kg showed a significant decrease in both the total (P <0.01) and the successful (P <0.001) number of technical actions in the wrestling. Some increase in the rates is fixed in the number of moves performed by wrestlers in the ground fighting but the data does not contain significant differences. In general, the experts believe that the majority of athletes of this weight category formed a defensive style of fighting which does not correspond to the views of experts and judges on the modern judo. The trainers and athletes should make certain adjustments to the tactics of constructing a competitive bout.

**Key words:** judo; analysis of demonstration; contest ratios; weight categories: 60 and 66 kg; changes in the rules; the quality of the struggle; competitive bouts.

### Introduction

Rapid development of combat and combat sports requires specialists and trainers to use modern and effective approaches to training high-level athletes capable of successfully competing with and defeating their rivals. Nevertheless, this requirement applies to the fight of judo in which many methods and means of training and competitive training need serious and qualitative changes (Bocioaca, 2014). This is confirmed by the analysis of the scientific literature devoted to various aspects of judo training and competitive activity (Osipov, Kudryavtsev, Iermakov, et al., 2017; Peset, Ferrer-Sapena, Villamón, et al., 2013). According to their scientific works, experts argue that the significant growth of sportsmanship of martial artists and the development of sports science make it absolutely necessary to conduct comprehensive scientific research in judo in order to improve the performance of athletes' competitive achievements (Challis, Scruton, Cole, et al., 2015). What is more the experts note that high competitiveness in judo today according to the experts' opinions requires high-intensity technical actions from athletes which require the optimal physical condition (Torres-Luque, Hernandez-Garcia, Escobar-Molina, et al., 2016; Zaggelidis, Mavrovouniotis, Argyriadou, et al., 2013). Such an effect can be achieved only with a significant optimization of the process of training judoists for the competitive activities.

What is more the specialists note that modern judo rules impose very high demands on the dynamics of conducting competitive bouts and encourage an active fight against a large number of technical actions (Osipov, Kudryavtsev, Struchkov, et al., 2016; Krstulović, Zuvella, Katić, 2006). In view of these conditions, the coaches build the process of training of the qualified judokas in such a way that their wards outperform their rivals in physical strength, speed and endurance (Osipov, Kudryavtsev, Kuzmin, et al., 2016; Manolachi, 2015; Drapsin, Drid, Grujic, et al., 2010). At the same time, the process of tactical and technical training of athletes to conduct an active attack during the entire competition is given insufficient attention (Osipov, Kudryavtsev, Struchkov, et

al., 2016). Although, according to some experts' opinions, the value of the level of tactical and technical preparedness of judoists will be a fundamental factor for achieving success in competitions (Bocioaca, 2014). It should be recognized that modern sports judo despite the already extensive knowledge of the structure and methods of training of the qualified athletes in this form of wrestling presents a wide field for further scientific research. To a large extent, regular changes in the rules of judo competitions introduced by the International Judo Federation (IJF) from 2010 to the present (Franchinini, Takito, & Calmet, 2013) will contribute to the further scientific search.

Furthermore, it was revealed that all the above-mentioned problems of training of the highly skilled judokas are able to achieve significant results at international competitions which to some extent present in Russian judo. The analysis of many scientific works of Russian judo experts (scientists, experts, well-deserved trainers of the country, well-known athletes) shows that the experts identified a number of problem areas that do not allow Russian athletes to realize fully their potential in the competitive arena. At the same time, the experts are convinced that the most problematic area in training of the athletes the specialists called training and competitive activity of wrestlers (Osipov, Kudryavtsev, Fedorova, et al., 2017). It is noticeable that to improve the quality of judo training for an attacking and dynamic struggle encouraged by the new competition rules the serious scientific analysis of all competitive activities of athletes should be conducted. Such an analysis will allow trainers and specialists to orient better themselves in choosing the optimal means and methods for physical and tactical and technical training of wrestlers.

It is important to note that in 2009, the International Judo Federation (IJF) approved the introduction of significant changes in the rules of judo competition. It is known that even minor changes in the rules of the competition have a direct impact on the level of preparation of athletes for competitive activities and tactics of conducting bouts. Besides, the prohibition of technical actions with the capture of the enemy below the belt, the imposition of immediate punishment for a fake attack (tightening an opponent on the ground), the practical ban on holding unilateral seizures without conducting an immediate attack, the increase in the time allocated for an active struggle in the ground fighting would undoubtedly have had a significant impact on the level of tactical, technical and physical preparedness of judoists (Miyake, et al., 2016). Unfortunately, some experts note that a significant part of Russian athletes and coaches have not been fully prepared for such changes in the rules of wrestling as a result of which the competitive results of the majority of the Russian judoists (men and women) showed deterioration (Osipov, et al., 2014; Tel'uk, 2014). If in 2009 the national team of the Russian Federation was one of the teams-leaders of the world championship then in 2010 the indicators of the Russian national team deteriorated noticeably (Adam, et al., 2011). One of the reasons for the deterioration of competitive results the experts called insufficient level of activity of athletes during the whole match. Russian scientists note there is rather low activity of the majority of domestic athletes last minute of the competitive match. According to O. Koptev, the lowest density of performance of technical actions of judoists is observed for 20-50 seconds before the end of the time of the fight not counting the 10-second finish spurt of one of the wrestlers (Koptev, 2015). The inability of athletes to make real attempts to perform technical actions every 20-25 seconds of a competitive meeting is revealed (Osipov, 2015). These results indicate a lack of functional readiness of athletes. The problem of insufficient level of functional readiness of a significant part of Russian sportsmen-martial artists to competitive fights is also singled out by many domestic specialists (Osipov, 2007). When planning training activities the Russian coaches do not always take into account the initial level of technical and tactical preparedness of native judokas (Koptev, 2016). Changes in the rules led to the refusal to use many technical techniques (throws with a capture below the belt, passages to the feet, etc.), the performance of which was considered almost ideal for many wrestlers representing Russia and the CIS countries. Judoists who actively used similar techniques and the arsenal of other technical actions were insufficient.

All of the above indicates the need for in-depth scientific research and the search for new approaches to competitive training of judo players capable of conducting a competitive attack stimulated by changes in the rules of judo competitions.

### **Material & methods**

It is clear from these observations that the main goal of the authors' research was to reveal the level of readiness of judokas representing Russia and Kyrgyzstan to conduct a dynamic attacking battle encouraged by the latest changes in the rules of the competition. The time interval of the research was more than 12 years (3 Olympic cycles of training athletes), from 2003 to 2015. The total number of athletes participating in the research was 146 athletes. The level of sports qualification of wrestlers is 106 masters of sports of Russia and Kyrgyzstan, 32 are masters of sport of international category in judo, 8 are honored masters of sports. Athletes competed in weight categories up to 60 and up to 66 kg. Such a selection of weight categories is explained by the large number of high-level athletes competing in them. Consequently, a significant number of competitive fights between them will allow for a qualitative and reliable analysis of the level of competitive training of the wrestlers.

It would be unfair not to mention the fact that the analysis of the quality of competitive judo activities was conducted by determining the quality of the competitive struggle of the athletes under study. The quality of the competition was estimated by comparing the competitive coefficients of judo in two stages: 2003-2009 and 2008-----

2010-2015. The time intervals were determined by the authors taking into account the changes in the judo competition rules that were occurred in 2009. In addition, competitive coefficients included: the total number of technical actions of athletes in the standing position (X-1); the number of successful technical actions in the standing position (X-2); the total number of technical actions of wrestlers in the ground fighting (X-3); the number of successful technical actions of athletes in the ground fighting (X-4). Also, the amount of technical actions lost by judoists in standing position (X-5) and groundwork (X-6) was taken into account. Separately, the time interval between attempts to conduct technical actions among the athletes under study (the attack interval - X-7) was taken into account.

Another good thing in our studies is that to identify the competitive coefficients and evaluate the quality of the competitive struggle of the judoists studied the authors of the article used the method of analyzing video recordings of competitive performances by the athletes. Analysis of the quality of tactical and technical actions and the level of competitive readiness of wrestlers by viewing video recordings of their competitive fights is widely used by scientists and experts in the field of sports judo (Boguszewski, 2014). One should note here that to the total number subjected to the analysis of competitive fights were 3014 meetings. For qualitative evaluation, 10 experts were invited - judges of the international judo category that have the experience of judging in international competitions and are well versed in the nuances of rules and changes in them. The opinion of these experts was decisive in determining the competitive coefficients of the studied wrestlers. Student's t-test was used in a comparative analysis of the results of expert assessments.

## Results

Perhaps we should point out the fact that in our studies the analysis of the quality of the competitive struggle of the athletes under study in the weight category up to 60 kg showed certain results. The total number of technical actions of wrestlers in the standing fight averaged over the bout:  $10.55 \pm 0.42$  in the first study period and  $9.85 \pm 0.28$  in the second study period. It is true that the number of successful techniques performed by athletes in stand-up fight is equal to the average for a duel:  $4.00 \pm 0.30$  in the first study period and  $3.38 \pm 0.25$  in the second period. The ratio of these indicators does not contain significant differences.

Moreover, it should be noted that the results on the evaluation of the quality of technical actions by the judoists in the groundwork showed that statistically significant differences were found between the total number of technical actions of wrestlers in a groundwork ( $P < 0.01$ ) and the number of successful technical actions in a groundwork ( $P < 0.05$ ) in favor of athletes of the second period of research. Judo wrestlers in the groundwork in the first period of research on average for the duel performed:  $1.00 \pm 0.08$  technical actions and  $0.45 \pm 0.06$  successful techniques as well as  $1.38 \pm 0.08$  technical actions and  $0.62 \pm 0.06$  successful technical actions in the second study period.

Doubtless, the number of technical actions lost by judoists on average for a competitive duel in the standing position is  $3.27 \pm 0.16$  in the first period under study and  $1.92 \pm 0.14$  in the second period. The statistical reliability of the differences in the results obtained was quite high ( $P < 0.001$ ). In the groundwork the examining athletes skipped an average of  $0.18 \pm 0.04$  technical actions in the first study period and  $0.23 \pm 0.05$  techniques in the second period. There were no statistically evident differences in the results.

Besides, the study of the dynamics of the volume of time intervals between attempts to conduct active technical actions of the athletes under study showed that the time interval between attempts to conduct receptions is on the average:  $45.83 \pm 2.43$  seconds in the first period of studies and  $29.19 \pm 0.89$  seconds in the second period. The reliability of differences in the results obtained is quite high ( $P < 0.001$ ). The general results of assessing the quality of competitive judo activities in the category of up to 60 kg by comparing the competitive rates of athletes are presented in Table 1.

**Table 1. Comparative analysis of the competitive coefficients of judoists of the Russian Federation and Kirghizia (60 kg) in the study time periods (2003 - 2009 and 2010-2015)**

Contest ratios	1 period 2003 - 2009	2 period 2010 - 2015	Statistical accuracy
X - 1	$10,55 \pm 0,42$	$9,85 \pm 0,28$	-
X - 2	$4,00 \pm 0,30$	$3,38 \pm 0,25$	-
X - 3	$1,00 \pm 0,08$	$1,38 \pm 0,08$	$P < 0,01$
X - 4	$0,45 \pm 0,06$	$0,62 \pm 0,06$	$P < 0,05$
X - 5	$3,27 \pm 0,16$	$1,92 \pm 0,14$	$P < 0,001$
X - 6	$0,18 \pm 0,04$	$0,23 \pm 0,05$	-
X - 7	$45,83 \pm 2,43$	$29,19 \pm 0,89$	$P < 0,001$

Analysis of the competitive coefficients of judoists performing in the weight category up to 66 kg revealed the following indicators. The total number of technical actions of wrestlers in stand-up fight on average for the meeting was:  $11.00 \pm 0.40$  in the first period of studies and  $9.43 \pm 0.34$  in the second. The difference

between the indicators was statistically significant ( $P < 0.01$ ). The number of successful technical actions in the standing fight averaged  $3.50 \pm 0.20$  in the first period and there were  $2.29 \pm 0.15$  in the second period of research. The statistical reliability of the differences between the results was quite high ( $P < 0.001$ ).

It should be noted that the comparison of the results of the total number of technical actions in the groundwork among judoists of this weight category did not allow revealing statistically significant differences between them. In the first period of research, the athletes on average performed  $0.80 \pm 0.08$  holds during the bout and in the second period there were  $0.93 \pm 0.07$  holds. Evaluation of the successful number of technical actions in the groundwork testifies that there were  $0.70 \pm 0.07$  actions in the first period of studies and  $0.21 \pm 0.05$  holds in the second period which were detected. The difference in the values in the periods was statistically significant ( $P < 0.001$ ).

Furthermore, it was revealed that in the first period of research the total number of technical actions lost by athletes in the standing fight on the average for the duel was  $2.60 \pm 0.14$  holds and in the second period there were  $1.57 \pm 0.12$ . The reliability of the differences between the results is high ( $P < 0.001$ ). In the first period in the groundwork the wrestlers missed an average of  $0.50 \pm 0.06$  holds and in the second about  $0.21 \pm 0.05$ . The reliability of the differences between the results is high ( $P < 0.001$ ).

The time interval between attempts to carry out technical actions averaged  $47.19 \pm 1.82$  seconds were in the first study period and  $34.48 \pm 1.14$  seconds were in the second. The difference between the results is reliable ( $P < 0.001$ ). The main results of research on the quality of competitive wrestling for judoists under study - 66 kg are presented in Table 2.

**Table 2. Comparative analysis of contest ratios of judoists of the Russian Federation and Kirghizia (66 kg)**

Contest ratios	1 period 2003 - 2009	2 period 2010 - 2015	Statistical accuracy
X - 1	$11,00 \pm 0,40$	$9,43 \pm 0,34$	$P < 0,01$
X - 2	$3,50 \pm 0,20$	$2,29 \pm 0,15$	$P < 0,001$
X - 3	$0,80 \pm 0,08$	$0,93 \pm 0,07$	-
X - 4	$0,70 \pm 0,07$	$0,21 \pm 0,05$	$P < 0,001$
X - 5	$2,60 \pm 0,14$	$1,57 \pm 0,12$	$P < 0,001$
X - 6	$0,50 \pm 0,06$	$0,21 \pm 0,05$	$P < 0,001$
X - 7	$47,19 \pm 1,82$	$34,48 \pm 1,14$	$P < 0,001$

## Discussion

An analysis of the results obtained by the authors showed that judoists who performed in the weight category up to 60 kg after changing the rules of the competition could reliably improve such competitive factors as the total number of holds performed in the groundwork (X-3) and the successful number of techniques in the groundwork (X-4). This increase, according to the authors, was made possible by increasing the time for active groundwork in the new rules of the competition. Also it is necessary to allocate a reliable ( $P < 0.001$ ) decrease in the number of technical actions lost by sportsmen in the fight standing in the second period of research (X-5). It can be assumed that the reduction of this indicator became possible both because of the increase in the time allocated to athletes to actively fight lying down, and due to the cancellation of some estimates for certain technical actions, due to which judoists should strive for a qualitative amplitude throw.

Unfortunately, the studied judoists could not increase the overall (X-5) and successful (X-2) number of technical actions performed in the standing fight. A certain decrease in these coefficients was revealed in the second study period. The reason for these results can also serve as changes in the rules of the competition not allowing athletes to use any throws with a capture below the belt and passages to the opponent at the feet which was so famous for the Soviet school of judo. The impossibility of using their favorite techniques greatly influenced the growth of the data of the competitive coefficients of the athletes under study. The coaches and athletes should pay close attention to this fact. Foreign specialists pay special attention to the need to increase the number of attacking technical actions and to increase the effectiveness of the combat techniques (Jagiello, Dornowsky, & Wolska, 2014).

It is important to note that a fairly significant reduction in the time intervals between the attacking actions of athletes in the weight category up to 60 kg has been revealed. The attack interval decreased in the second study period by an average of 16 seconds compared to the first period. This rather serious increase in the number of attacking actions should help fighters in achieving meaningful sporting results. Only a large number of attacking actions can bring success to the athlete in modern judo says I. Segedi (Segedi, Sertic, & Rozac, 2014).

It is clear from these observations that estimating the results of the competitive coefficients of judoists performing in the weight category up to 66 kg the authors concluded that the athletes significantly decreased both the total (X-1) and successful (X-2) number of technical actions in standing wrestling in the second period of research. There was some increase in the number of technical techniques performed in the stalls. However, most of these attacks, according to experts assessing fights are false not carrying a direct threat to the opponent and designed to delay the meeting. A reliable ( $P < 0.001$ ) dynamics of a decline in the successful number of

techniques performed by wrestlers in the supine struggle was revealed in the second study period. The number of lost technical actions in the stalls in the second period also decreased. However, a significant decrease in the number of technical actions lost during the second research period was also revealed. The attack interval in this case was significantly ( $P < 0.001$ ) higher than in the first period. The difference was about 13 seconds. This may indicate the performance by athletes of a large number of false attacks in the absence of real attempts to conduct judo techniques.

Therefore, the results obtained make it possible to assert that the judoists have developed a defensive style of fighting. Most of the attacking actions are performed in the rack. Considerable attention is paid by the athletes to protection from attacking the actions of the opponent and do not try to risk conducting real attacks in the stalls. Unfortunately, the defensive style of the fight is not welcomed by the new rules of the competition. From which we can conclude that the majority of the athletes under study are not fully adapted to the changed rules and that the wrestlers are not ready to conduct an active competitive struggle. It should be recognized that achieving significant success in modern judo is possible only with a high density of active attacking actions throughout the entire competitive match. An example can serve as an analysis of tactical and technical actions of one of the most successful judokas of our time - Teddy Riner's. It is estimated that the number of active attacking actions of this athlete significantly exceeds the number of technical actions of his rivals in the weight category (Adam, & Wolska, 2016). Some experts even suggest introducing a new element for assessing the quality of competitiveness of judoists in assessing the measurement of the dynamics of the actions of athletes during an offensive and use it along with other evaluation criteria (Boguszewski, 2014).

## Conclusions

Studies show that the adaptation of lightweight athletes from Russia and Kyrgyzstan to the changes in the rules of the competition and the need to conduct a dynamic, aggressive and attacking fight against a large number of attacking actions during the entire competitive duel takes place with some difficulties. Specialists are required to pay attention to the lack of technical actions in the fight standing in judo categories up to 60 kg and an explicit defensive style of fighting in athletes in the category up to 66 kg. It is also necessary to improve the quality of protection against attacking actions of rivals in the stalls of judo weight class up to 60 kg. The authors believe that such scientific research is necessary to improve the quality of competition among athletes from CIS countries in the context of gradual and significant changes in the rules of judo competitions held by the IJF in recent years.

**Conflicts of interest** - If the authors have any conflicts of interest to declare.

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