Pujszo Małgorzata, Pujszo Ryszard, Stępniak Robert, Adam Marek. The course of the backward attacks in judo, after the first change of the rules, based on The World Championship from 2009 and 2011 in over 100 kg category. A pilot study. Journal of Education, Health and Sport. 2016;6(6):223-234. eISSN 2391-8306. DOI http://dx.doi.org/10.5281/zenodo.55180
http://ojs.ukw.edu.pl/index.php/johs/article/view/3566

The journal has had 7 points in Ministry of Science and Higher Education parametric evaluation. Part B item 755 (23.12.2015).
755 Journal of Education, Health and Sport eISSN 2391-8306 7

The authors declare that there is no conflict of interests regarding the publication of this paper.
Received: 05.05.2016. Revised 25.05.2016. Accepted: 25.05.2016.

The course of the backward attacks in judo, after the first change of the rules, based on The World Championship from 2009 and 2011 in over 100 kg category. A pilot study

Pujszo Małgorzata[1], Pujszo Ryszard[2], Stępniak Robert[3], Adam Marek[4]

[1]Students Science "WyKoNa" Kazimierz Wielki University, Bydgoszcz, Poland
[2]Centre for Education, Physical Education and Sport, Kazimierz Wielki University. Bydgoszcz, Poland
[3]Institute of Physical Culture, Kazimierz Wielki University, Bydgoszcz, Poland
[4]Department of Combat Sports, University of Physical Education and Sport, Gdańsk, Poland

Correspondence: Stępniak Robert Ph.D
Instytut Kultury Fizycznej,
Uniwersytet Kazimierza Wielkiego,
ul. Sportowa 2,
85-091 Bydgoszcz, Polska
email: <robi1969@wp.pl>

Summary

The aim of this article was to verify if the course, dynamics and time-structure of the judo fight in light of backwards attacks were changed after the radical change of the rules. It was presented the pilotage analyse of the fights containing the backward attack - based on the video recording from the World Championships in Rotterdam in 2009 (before the change of the rules) and The World Championships in Paris in 2011 (after the change of the rules) only in heaviest category

The total of 97 male fights in over 100 kg category were verified. The analysis of backward attacks conducted through the video recording of the fights from The World Championships in Rotterdam in 2009 (before the change of the rules) and The World Championships in Paris in 2011 after the first change of the rules showed identical frequency of backward attacks and identical number of fights terminated before the set time because of those attacks. However, the time structure of the fight showed the fight in a totally new picture. That, in turn, brings new challenges for the coaching staff and imposes the changes in defence tactics.

Key words: judo, backward attack, World Championship.

Introduction

The key issue seems to be the popularity of a given discipline which is the basis of the existence of that discipline. It consists of two closely linked areas: participants of sport disciplines and supporters. Paradoxically those two areas create a dilemma for sport promoters whether to create "supporters sport" or "participants sport" (Holland, 2015). The economic criteria, including the ones connected with athletes' life, will impose the searching for other solutions (Wicker, et al., 2012).

The popularity of different sport disciplines is determined by historical and cultural backgrounds and successes achieved by players representing the highest level during the most important competitions including Olympic Games (Rząd and Napierała, 2014). Nowadays the key to popularity of sport disciplines and their participants is the media coverage. It influence not only the technical and newspaper aspect but also pageantry. It causes the evolution of many sport disciplines.

One of the most often used method of image changing technique is the change of the existing rules (Boguszewski, 2010; Loosemore, et al. 2007; Scott, et al. 2000). This tendency applies to judo as well- one of the global sport with several dozen years tradition of competing during World Championship and Olympic Games.

The most important changes in judo were as follow:

- modification of the judoga collar style, widening the sleeves to let participants easily grip during the fight,
- change in appearance of tatami, different colours for the competition area and safety zone,
- change in competition rules, for example: it is not permitted to directly grab the legs with hand, which eliminated a number of techniques such as kuchciki - taoshi, kibicu - gaeshi, morote – gari (a hand-leg attack is permitted as a combination of attacks, counter- attack or used during "one-sided" opponent's grip).
- different interpretation of the course of the fight by judges to boost the fight by using warnings and penalties for the athletes (Boguszewski, 2011).

Judo evolution connected also with the change of the rules requires continual professional development of the coaching staff based on the latest scientific advancements. There are psychological, biomechanical and physiological aspects researched together with checking the

efficiency of some techniques used (Filaire et al., 2001, Degoutte et al., 2003, Almansba et al., 2010; Boguszewski, 2006; Zaggelidis and Lazaridis, 2013).

In last case, as seems the most valued from the training point of view, are the observations of the most important world event. The explanation is so called “champion model” which in case of judo, a discipline that psychological, motoric, technical and tactical components decide on the success, seems to be justified (Adam et al., 2012; Adam et al., 2014; Franchini et al., 2011). In professional coaching work there are many different measuring methods used, also the ones that use different kinds of registrants (Prieto et al., 2014). It should be noted that the analysis of the structure of fighting performed by the "masters" is the purpose of scientific investigations carried out not only in judo (Rodríguez Sánchez 2015).

The analysis of the video recording of the combat is nowadays a standard procedure in coaching of many disciplines. Their efficiency was proved in researches (Carson, 2008). They permit to conduct the detailed researches essential in planning a coaching work.

The above mentioned aspects lead to astute comparison analysis techniques that have been used then and nowadays after the change of the rules, what was the aim of this article. It was decided to compare only the backward attacks (with deflexion on heels) in qualitative (number of attack) and quantitative (the number of points scored by a backward attack) terms that were performed during The World Championship in 2009, before the change of the rules, and in 2011 after the change of the rules. The comparison was showed in succeeding minutes of the fight generating the picture of the fight from the backward attacks perspective.

Changing the rules in the most, limited the backwards attacks (as primary or secondary). This limited the technical possibilities of fighters and may cause that the fight will be less of dynamics, and not interesting. The authors decided to test whether this problem really may be.

Materials and methods

The data was gathered directly while analysing the video recording of all 38 judo fights in over 100 kg division during The World Championship in Rotterdam in 2009, and 59 fights from The World Championship in Paris in 2011. The two year difference between the researches was justified by the change of the rules in 2010 (time for judges and participants to become familiar with the changes).

The number of fights during The World Championship in 2011 was bigger than in 2009 because the change in rules allowed bigger number of participant to take part in it. The fights

were filmed by a specially trained person who was authorised by Polish Judo Association, equipped in digital camera that allows detailed analysis of the fight. Then the fights were analysed by two independent from each other judo coaches. The standard computerized equipment was used to read the video recording (freeze-frame, zooming, slow motion picture, rewinding the recording, 32 inch screen, screen resolution- 1280/960).

The aim of the recording was to accept or no backward attacks, their numbers, and duration of attacks, points' value of the attack or points' value of warnings for an opponent.

The statistic reliability of the analysis received from two coaches was calculated with the use of PQStat. V. 1.4.4 programme. The Cohen- Kappa index was 91.56%.

The authors decided to conduct a pilot case study and verify if the change of the rules has shown any relation between the number and quality of backward attacks (described by given indicators) and if dynamics and time structure of the fight seen from that perspective has changed as well.

According to the authors, experienced coaches and judo practitioners, the ban on attacking opponents legs with a hand limits the players to the greatest degree of his/her backward techniques, versatility of movements and in future even the defence character of judo training. That ban can also decrease the dynamic of the fight and the diversity of techniques used.

The statement that it can lead to "the straightening of the silhouette" and thereby the raise of the watching attractiveness has not been proved by any former simulation. The limitation of the defence techniques can lead in future to limitation of the quality of the techniques and skills used by coaching staff and can cause troubles in job finding in so called defence formation of other sport disciplines.

The authors chose for their pilot case study over 100 kg division, as they believed this division should be always treated and studied separately because of athletes physical features and connected with them the physiology of their body.

The way designed for the judokas requires thorough verification. The following analysis is the first attempt of it.

The analysis covers only the parts of the fights where backward attacks occurred. The backward attack was defined as the one in which an opponent becomes deflected on heels and made to perform a defence action and retrieve the balance or to knocked down to the mat. The fights without any backward attacks were ignored, the counter throws for backward attacks did not happen. One fights from each year 2009 and 2011 were excluded because of the disqualification issue or difficulties in interpretation.

The analysed material covered:

1. Scored backward attacks
2. Non- scored backward attacks
3. Non- scored backward attacks which directly caused penalty and gave points to an attack player
4. Time elapsed to scored attack or penalty for an opponent

The attack efficiency indicator (Ea) and fight effectiveness indicator (Sa) were calculated.

The attack efficiency indicator was calculated according to the formula:

$$Ea = (\frac{l_0}{l_1 + l_0}) \text{ *100}$$ Equation. - 1

l_0 - the number of scored backward attacks

l_1 - the number of non- scored backward attacks

The fight effectiveness indicator was calculated according to the formula:

$$Sa = (\frac{S_0}{L_w})$$ Equation. - 2

S_0 - the amount of points scored through backward attacks in all fights

L_w – the number of all analysed fights with backward attack occurrence

The minute structure of the fight was presented on the graphs and the strength of the relation was describe by the determination index R^2.

The statistic characterization was developed with the use of 'Statistica', Excell 2007- parametric F-test for variations, t- parametric test for difference significance, graphs) and PQStat. v.1.4.4 (The statistic reliability of the analysis received from two coaches

Results

The basic data gathered from the research was presented in Table 1.

Table 1. The descriptive statistics of judo fights with backward attacks occurring during The World Championship in 2009 and 2011.

Year of The World Championship	Total number of fights	Number of fights with backwards attack (L_w)	% number of fights with backwards attack	Number of fights ended before time by backwards attack	% number of fights ended before time by backwards attack
2011	59	50	86,2	17	34,0
2009	38	33	86,8	13	34,2

The data gathered in Tab.1 suggests that despite the different number of fights fought (as a result of different number of participants) the percentile number of fights with the backward attack and the percentile number of fights that ended ahead of time with the use of the backward attack stayed at the similar level.

The calculated values taken from the analysis of the video recordings (judo fights with backward attacks occurring during The World Championships in 2009 and 2011) have been presented in Table 2.

Table 2. The calculated values gathered from the researched material- judo fights with the backward attack occurring during The World Championship in 2009 and 2011.

Year of The World Championship	E_a	S_a	l_1	l_0	S_0	L_w
2011	9,28*	4,53*	264	27	222	50
2009	16,02*	8,48*	215	41	280	33

* Values in the same table columns differ at the statistically relevant level $p< 0,05$.

The minute distribution of all totalized scored backward attacks occurring during The World Championships in 2009 and 2011 is shown in Table 3.

Table 3. The minute distribution of all totalized scored backward attacks occurring during The World Championships in 2009 and 2011.

Year of The World Championship	Min 1.- total number of scored points	Min 2.- total number of scored points	Min 3.- total number of scored points	Min 4.- total number of scored points	Min 5.- total number of scored points
2011	64	52	50	42	12
2009	0	49	77	80	69

The amount of effective points scored for backward attacks occurring during The World Championship in 2011 in the minute distribution is presented on Figure 1.

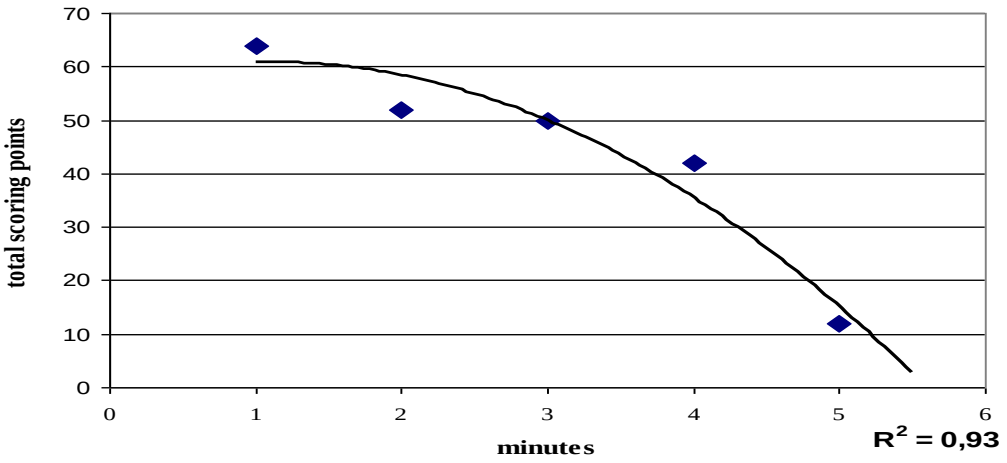

Figure 1. The amount of effective points scored for backward attacks occurring during The World Championship in 2011 in the minute distribution.

The values presented on Fig.1 show that the highest number of points for backward attacks was scored in the first minute and another minutes highlighted the decreasing tendency of those attacks.

The amount of effective points scored for backward attacks occurring during The World Championship in 2009 in the minute distribution is presented on Figure 2.

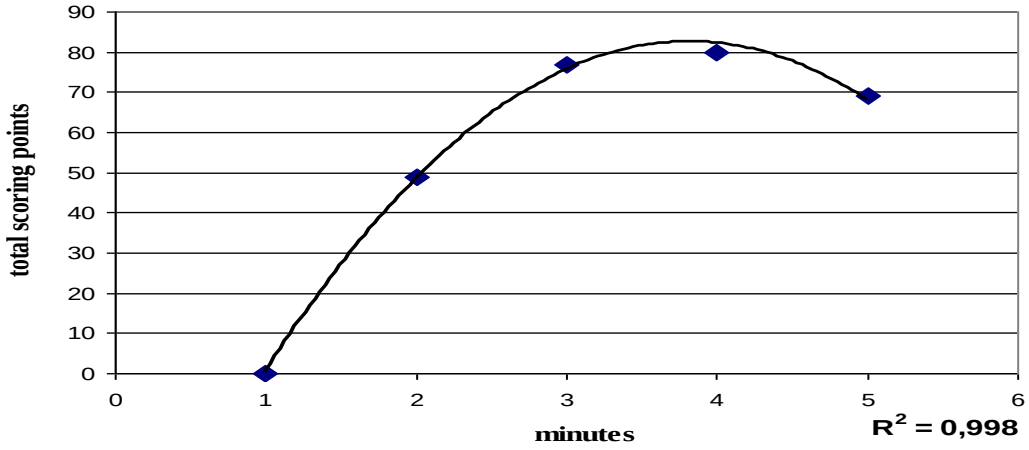

Figure 2. The amount of effective points scored for backward attacks occurring during The World Championship in 2009 in the minute distribution.

The values presented on Fig. 2 show that none of the monitored athletes scored points for backward attacks in the very first minute. Another minutes of the fight: second, third and fourth highlighted the increasing tendency of scoring with a small fall in the last minute.

Discussion and conclusion

The analysis of the research findings show the lack of changes in proportion of the number of backward attacks. That suggests that the change of the rules excluding some of the techniques as a source of dangerous attack both in preparatory and direct character did not affect the picture of the fight. The percentage of the fights with backward attacks were similar and despite the difference in the number of fights there were no statistically relevant differences (Tab.1). There were also no differences in the fights ended ahead of time noted down.

Important from the training point of view are the fight effectiveness indicator (Sa) and efficiency indicator (Ea) (Adam, 2008). They allow to lay down the technical and tactical preparation applied to both individual athletes and also to a given feature during the most important competitions (Adam et al., 2011; Sterkowicz et al., 2007), including also The World Championship in 2011 (Adam, 2012a). This type of analysis- based on the previously mentioned ‘champion model’, was already conducted and concerned the presentation of the tactical and technical profile of the most prominent judo athletes (Adam, 2012b; Adam and Majdan, 2011; Adam and Szczepańska, 2011).

The data presented in Tab. 2 show that both indicators have higher values for the research conducted in 2009 and differ at the statistically relevant level from the values from 2011. The low level of efficiency indicator (Ea) in all weights category in World Championschip in 2011 were also confirmed by other authors (Stankovićm et al. 2015).

That suggests the fall of both effectiveness and efficiency of backward attacks which is the consequence of lower dynamics.

The analysis of actions taken by judo athletes had already been researched and mentioned in literature. Researches covered the recording of all technical and tactical actions without division on directions of an attack (forward and backward) (Sikorski et al., 1987; Sterkowicz and Franchini, 2000; Sterkowicz and Maślej, 1999). Presented the minute distribution of the fight (Tab.3, Fig.1 and Fig.2) concerning- as per established methodology of research only backward attacks, clearly shows totally different dynamics of the fights in compared sport events. Before the change of the rules (2009) the highest number of points had been scored at the end of the fight- in fourth and fifth minute. Completely different picture of points scoring was noticed during The World Championship in 2011, where the most effective were attacks at the beginning of the fight and with the time elapsing there was a dynamic fall in techniques effectiveness. This regularity should be investigated on two levels. First applies to achieving the goal, which was to change the rules. Second applies to training implications.

The dynamics and action effectiveness, higher in the first part of fights- after the change of the rules did not result in increase of percentage of the fights ended ahead of time that were the consequence of backward attacks. That did not influence, as intended, the dynamics of judo fights in this weight division. However, the fall of both indicators effectiveness and efficiency was noted down. That suggests the statement, that taking into account also the effective time structure, the increase of the false attacks, non-effective or with low effectiveness (poorly scored) during first part of the fight- as a result of the change of rules.

The results of this analysis can be, as suggested, the implications for the training purposes. Especially the ones connected with the time structure of the attack effectiveness. On one hand decreasing of the effectiveness in the course of a fight suggests some flattening or equalizing the heavy weight athletes' motoric preparation. On the other hand, taking into account pure attacks effectiveness, there are some provisions for mental preparation. Especially in focusing at the beginning of the fight and the will to keep it and use it for effective attacks at the end of the fight.

Conclusions

1. The change of rules did not influence the boost of a judo fight in a heavy weight division, which was measured by the number of backward attacks and the number of fights ended ahead of time. There was a fall in both the efficiency and effectiveness of the attacks used.
2. The farther analysis is suggested to verify the sense of rules changing with the emphasis on effectiveness of a judo fight and what follows it, its pageantry.

References

Adam M, Smaruj M, Tyszkowski S. The diagnosis of the technical-tactical preparation of judo competitors during the World Champions (2009 and 2010) in the light of the new judo sport rules. Archives of Budo, 2011; 7(1):75-9.

Adam M, Smaruj M, Pujszo R. The individual profile of the technical-tactical preparation of the World judo Championships in 2010-2011. Ido Movement for Culture. Journal of Martial Arts Anthropology, 2012a; 12(2): 50-59.

Adam M, Majdan J, A profile of Joanna Majdan's individual technical-tactical preparation. Baltic Journal of Health and Physical Activity, 2011;4: 269-276.

Adam M, Szczepańska A. An individual profile of Aneta Szczepańska's technical-tactical preparation. Journal of Combat Sports and Martial Arts, 2011;2: 125-131.

Adam M. A Profile of Adriana Dadci's individual Technical-Tactical Preparation. Baltic Journal of Health and Physical Activity, 2012b; 1: 35-43.

Adam M, Tyszkowski S, Smaruj M. The Contest Effectiveness of the Men's Natoinal Judo Team of Japan and Character of Their Technical-Tactical Preparation during the World Judo Championships 2010. Baltic Journal of Health and Physical Activity, 2011; 3(1): 65-74.

Adam M. Ocena przygotowania techniczno-taktycznego zawodników judo. Sport Wyczynowy, 2008; 1-3; 40-47.

Adam M, Smaruj M, Laskowski R. A Technical and Tactical Profile of the Double Olympic Judo Champion: A Case Study. International Journal of Sports Science and Coaching, 2014; 9(1): 123-138.

Almansba R, Sterkowicz S, Sterkowicz-Przybycien K, Belkacem R. Maximal oxygen uptake changes during judoist's periodization training. Archives of Budo, 2010; 6(3): 117-122.

Boguszewski D. Fight dynamics of the double Olympic Champion in judo (1988, 1992). Journal of Human Kinetics, 2006; 16: 97-105.

Boguszewski D. Działania ofensywne finalistów mistrzostw Polski w judo w latach 2005-2008. Sport Wyczynowy, 2010; 4/536; 71-9.

Boguszewski D. Relationships between the rules and the way of struggle applied by top would male judoists. Archives of Budo, 2011; 7: 27-32.

Carson F. Utilizing video to facilitate reflective practice: Developing sports coaches. International Journal of Sports Science and Coaching, 2008; 3(3): 381-390.

Degoutte F, Jouanel P, Filaire E. Energy demands during a judo match and recovery British Journal of Sports Medicine, 2003; 37: 245-249.

Filaire E, Sagnol M, Ferrand C, Maso F, Lac G. Psychophysiological stress in judo athletes during competitions, The Journal of Sports Medicine and Physical Fitness,2001; 41(2): 263-8.

Franchini E, Del Vecchio FB, Matsushigue KA, Artioli GG. Physiological profiles of elite judo athletes. Sports Medicine, 2011; 41(2): 147-166.

Holland A. How to Make Judo Bigger and more Popular than BJJ and MMA! http://theselfdefenceexpert.com/how-to-make-judo-bigger-and-more-popular-than-bjj-and-mma/ [20.05.2015].

Loosemore M, Knowles CH, Whyte GP. Amateur boxing and risk of chronic traumatic brain injury: systematic review of observational studies. BMJ, 2007; 335: 809.

Prieto I, Gutiérrez-Santiago A, Lage MÁP. Knowledge of Errors in the Teaching-Learning Process of Judo-Techniques: Osoto-Guruma as a Case Study. Journal of Human Kinetics, 2014; 41(1): 253-263.

Rodríguez Sánchez, A. R. (2015). La herencia del Pequeño Dragón: Análisis de las contribuciones realizadas por Bruce Lee al fenómeno del combate. Tesis doctoral, Directores Dr. D. Gonzalo Ramírez Macías Dr. D. Joaquín Piedra de la Cuadra Departamento de Educación Física y Deporte Universidad de Sevilla, 1-364.

Rząd Ł, Napierała M. Wpływ sukcesów Adama Małysza na popularność skoków narciarskich. Journal of Health Science, 2014; 4(10): 221-248.

Sikorski W, Mickiewicz G, Majle B. Struktura czasowa walki judo, Sport Wyczynowy, 1987; 7: 13-16.

Scott JR, Oppliger RA, Utter AC, Kerr CG. Body weight changes at the national tournaments—The impact of rules governing wrestling Weight management. Med. Sci. Sports Exerc, 2000; 32(5): S131.

Stanković, N., Cuk, S., Milosevic, N., & Stamenkovic, S. (2015). The course of the judo fight at the 2011 World championship. Facta Universitatis, Series: Physical Education and Sport, 107-113.

Sterkowicz S, Franchini E. Techniques used by judoists During the World Championships and Olimpic Tournaments 1995-1999. Human Movement. 2000; 2:24-33.

Sterkowicz S, Lech G, Almansba R. The course of fight and the lavel of sports achievements in judo. Archives of Budo, 2007; 3: 72-81.

Sterkowicz S, Maślej P. Analiza przebiegu walki judo na podstawie jej struktury czasowej – badania porównawcze. Sport Wyczynowy, 1999; (7-8): 33-37.

Wicker P, Breuer C and von Hanau T. Understanding the income determinants of German elite athletes in non-professionalised sports', Int. J. Sport Management and Marketing, 2012; 11(1/2): 26–43.

Zaggelidis G, Lazaridis S. Muscle Activation Profiles of Lower Extremities in Different Throwing Techniques and in Jumping Performance in Elite and Novice Greek Judo Athletes. Journal of Human Kinetics, 2013; 37(1): 63-70.