

Notational analysis of the State championship of Bosnia and Herzegovina and Balkans championship in judo for male competitors

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Abstract

Main goal of this research is used notational analysis to define differences of the indicators of the situation efficiency among senior male from participants of the State championship of Bosnia and Herzegovina and Balkan's Judo Championships. Analysis has been done based on video scripts of 109 fights for BH senior's male and video scripts of 79 fights for Balkan senior's male in all seven categories. Matches have been monitored with 18 variables of situation's efficiency in Judo. For defining differences of indicators of situation's efficiency it has been used χ^2 (Chi Square) test. The results of the χ^2 tests implicate to the statistically important differences among seniors - male in analyzed indicators of the situation's efficiency. Both groups of the examined were more efficient with throwing techniques comparing to the floor techniques. Bosnian seniors male used more hand throwing techniques while male Balkan championship dominated with leg throwing techniques and grappling techniques. The most efficient techniques that seniors - male used from BH State competitors are: Ippon Seoi Nage, Tani Otoshi, Harai Goshi, etc, while male competitors from Balkans championship used: Uchi Mata, Sukui Nage, Ippon Seoi Nage, etc.

Key words: judo, notational analysis, male competitors

Introduction

Nowadays judo is very dynamic and demanding martial art where the fight is developing into two main areas: standing combat and floor combat. First: both areas of fight request different approaches in the process of training fighters for the championships; and second: necessity for the analysis of the situation's efficiency monitoring in judo can give quality information about acting manner of the fighters and their efficiency during the matches. Notational Analysis is an objective way of recording performance so that key elements of that performance can be quantified in a valid and consistent manner (ISPAS, 2011). Researches of the capabilities, distinctions and knowledge of fighters that are directed into notational analysis of the indicators of the situation's efficiency, which competitors realize during the competitions (Milanović, 1999; Milanović, 2009) represent good base for the applying researching results of situation's efficiency in judo.

The manner of leading the fight in judo requests from fighters extraordinary application of technical elements of judo into the right and left side at standing position and floor; same as possibility of combining of those techniques. Valuing importance of technical parameters of situation's efficiency is that they are collected in the conditions of real fights of two fighters in the most important competitions. Looking from the different aspects of preparatory time for the competition, situation's efficiency of some technical elements of judo is important. Same importance have proper

choice of application of the techniques in the competition and optimal approach to the application of those techniques through exercises in the situation's conditions of judo fight and through proper technology of training. In that context it is important to distinguish some researches that treat aspects of situation's efficiency. Weers (1996) confirmed that top-level judo fighters have capabilities to apply six throwing techniques in the standing position and two grappling techniques on the floor. There is huge number of the techniques in judo 99 (Kajmović et al., 2010) – throwing techniques, grappling techniques – but number of the techniques that won the competitions is little. For that reason situation's efficiency of the techniques is not same. Research of the Sterkowicz & Kasek (1983) appointed to that fact. Those researches confirmed that efficiency of the holding techniques Osae Komi Waza by senior female is higher comparing with male, but they are less efficient with hand throwing techniques; and both groups of examined have same typical efficiency of throwing Seoi Nage technique. Main goal of this research notational analysis as confirmation of indicator's differences of situation's efficiency for senior male from Bosnia and Herzegovina and male competitors from Balkan's championships in judo. It serves also for defining those factors that mostly contribute to the success of the results, on this two level of competitions for these two groups of examined.

Methods

Sample of the examined

Specimen of the examined is defined as a total of fights ($n = 109$) State championship of Bosnia and Herzegovina held in Kiseljak 2011 years (B&H) and total of fights ($n = 79$) from Balkan's Judo Championship, held in Trebinje (B&H) 2010 years for the male seniors competitors for all seven categories (60, 66, 73, 81, 90, -100 and +100). At the Balkan's Championships further national judo teams participated: Bosnia and Herzegovina, Serbia, Bulgaria, Rumania, FRY Macedonia, Albania, Greece, Turkey and Montenegro.

Sample of variables

Analysis of the parameters of situation's efficiency is based on official classification of judo techniques by 18 indicators of situation's efficiency (IJF – Waza list, 2010) as it follows.

- a) Groups of judo techniques: 1) Nage-Waza (Throwing techniques), 2) Katame-Waza (grappling techniques);
- b) Subgroups of judo techniques: 3) Te-Waza (Hand throwing techniques), 4) Koshi-Waza (Side throwing techniques), 5) Ashi-Waza (Leg throwing techniques), 6) Sutemi-Waza (Sacrificing throwing techniques), 7) Osa-Komi-Waza (Holding techniques), 8) Shime-Waza (Struggling techniques), 9) Kansetsu-Waza (Lever techniques);
- c) Quantitative indicators of judo fights: Technical points - 10) Ippon (10pts), 11) Waza -ari (7pts), 12) Yuko (5pts), 13) Koka (3 pts) - Penalties - 14) Shido 1 (-3pts), 15) Shido 2 (-5pts), 16) Shido 3 (-7pts), 17) Hansokumake/Shido 4 (-10pts).
- d) 18) Situation's efficiency of the separate throwing judo techniques and floor techniques.

Data processing methods

The frequencies and percentage values were counted for all the observing variables. For the confirmation of the differences between the frequencies it was used χ^2 test (Chi Square test) at the level of statistical importance 5% ($p < 0,05$) assisting with contingent tables (Petz, 1997). Testing importance of the correlation among monitored variables it was used coefficient of the contingency (C). For the measuring of the situation's efficiency of every particular judo techniques it was used formula (Sterkowicz, 1999):

$$I_{\text{eff}} = \text{Number of the official scores} / \text{Total number of the attacks} \times 100.$$

Results and Discussion

Based on the analysis of video scripts of 109 fights from State championship of Bosnia and Herzegovina and 79 video scripts of Balkan's championship held Bosnia and Herzegovina, it was presented 330 technical actions among which both groups presented 87,9% from the group Nage Waza, while a small number of the technical actions were presented from the group Katame Waza 12,1% (Table 1). Male seniors from Balkan's dominates with throwing techniques 91,7%, comparing to the male seniors from BiH 83,3%, that have more efficiency in floor techniques 16,7%, comparing to the male seniors 8,3%. The results of the χ^2 tests appoint to the existence of the statistics differences among monitored frequency of the throwing techniques, comparing to the grappling techniques ($p < ,0021$) with coefficient of the contingency ($C = ,13$).

Table 1. Notational analysis of the groups of the judo techniques

	Nage-Waza	Katame-Waza	TOTAL
BIH	125 (83,3%)	25 (16,7%)	150 (45,5%)
BALKAN	165 (91,7%)	15 (8,3%)	180 (54,5%)
TOTAL	290 (87,9%)	40 (12,1%)	330 (100%)

$$\chi^2 = 5,33; \text{ df} = 1; p < ,0021; C = ,13$$

Comparing the situation's efficiency of the applied judo subgroups techniques among male from State championship of Bosnia and Herzegovina and seniors from Balkan's championship (Table 2) from 330 presented techniques, to the group of Te Waza (hands) belongs 32,7% and Ashi Waza (legs) 30,0%. Osae Komi Waza (holdings) is presented by 8,2%, Sutemi Waza (sacrificing) is presented by 13,9%, while Koshi Waza (side) was presented by 11,2%, Kansetsu (lever) by 2,7% and Shime (struggling) by 1,3% of the applying efficiency in combats. Monitoring the structure of the situation's efficiency male seniors from State championship of Bosnia and Herzegovina showed that they dominates with hand techniques by 38,0%, comparing to the Balkan's male seniors by 28,3%, side by 10,7% comparing to the Balkan's male seniors by 11,7%. Male seniors from Balkan's championship had higher frequency of the leg throwing techniques of 37,8% comparing to the B&H males of 20,7%, in holding techniques they had 12,0% comparing to the males that had efficiency of 5,0%. B&H senior also had higher efficiency in applying lever by 3,3% comparing to the Balkan's senior by 2,2%, while struggling techniques are almost equally used 1,3% and 1,1%.

Results of χ^2 tests ($\chi^2 = 15,7$) appointed to the existence of the differences ($p < ,015$) in the frequency of the situation's efficiency for the applied subgroups of judo techniques between B&H male and Balkan's male competitors. Coefficient of contingency ($C = ,21$) doesn't show big differences among monitored variables. Comparing those indicators with indicators (Sterkowicz, 1998) of the Olympic games in Atlanta, they appointed that competitors dominate in throwing techniques (Te Waza), holding techniques (Osae Komi Waza), side throwing techniques (Koshi Waza) and leg throwing techniques (Ashi Waza); while they use struggle throwing techniques (Sutemi Waza) very little.

Table 2. Notational analysis of the subgroups judo techniques

	BIH	BALKAN	TOTAL
Te-Waza	57 (38,0%)	51 (28,3%)	108 (32,7%)
Koshi-Waza	16 (10,7%)	21 (11,7%)	37 (11,2%)
Ashi-Waza	31 (20,7%)	68 (37,8%)	99 (30,0%)
Sutemi-Waza	21 (14,0%)	25 (13,9%)	46 (13,9%)
Osae-Komi-Waza	18 (12,0%)	9 (5,0%)	27 (8,2%)
Kansetsu-Waza	5 (3,3%)	4 (2,2%)	9 (2,7%)
Shime-Waza	2 (1,3%)	2 (1,1%)	4 (1,3%)
TOTAL	150 (45,2%)	180 (54,5%)	330 (100%)

$$\chi^2 = 15,7; \text{ df} = 6; p < ,015; C = 0,21;$$

Analyzing 430 realized quantity parameters of Judo points and penalties (Table 3), 27,9% was realized by Ippon, 12,6 by Waza-ari, 23,3% by Yuko, 18,4% with penalty Shido 1 and 2,5% with Hansokumake. B&H male showed better efficiency with 28,5 Ippons comparing to the Balkan male with 27,4% Ippons, while male presented 20,8% and male 25,7% of Yuko. During the fights B&H senior received less Shido penalties 17,4% then Balkan's competitors 19,3%, so as with strongest Hansokumake (disqualification) 3,9%, while Balkan male had 1,3%.

Results of χ^2 tests show that there are statistically important differences ($p < ,05$) in frequency of the realized quantity parameters between B&H senior and Balkan's judo seniors, and coefficient of the contingency ($C = ,17$) appoints that correlation among monitored variables exists. Comparing these facts with research of quantity parameters (Sterkowicz, 1998) from the Olympic games in Atlanta, the most of actions were awarded with point Koka for both examined groups, while the most frequent penalty was Shido.

Table 3. Notational analysis of quantitative parameters

	BIH	BALKAN	TOTAL
Ippon	59 (28,5 %)	61 (27,4%)	120 (27,9%)
Waza – ari	23 (11,1%)	31 (13,9%)	54 (12,6%)
Yuko	43 (20,8 %)	57 (25,7%)	100 (23,3%)
Shido 1	36 (17,4%)	43 (19,3%)	79 (18,4%)
Shido 2	21 (10,1%)	23 (10,3%)	44 (10,2%)
Shido 3	17 (8,2%)	5 (2,1%)	22 (5,1%)
Hansokumake/S4	8 (3,9%)	3 (1,3%)	11 (2,5%)
TOTAL	207 (48,1%)	223 (51,9%)	430 (100%)

$$\chi^2 = 12,1 \quad df = 6 \quad p < ,05 \quad C = ,17$$

Analyzing first ten the most efficient separate judo techniques (Table 4), which BIH seniors presented are: Ippon Seoi Nage, Sukui Nage, Seoi Nage, Tai Otoshi which represent hand (Te) techniques; Uchi Mata, De Ashi Barai and O Uchi Gari as techniques from leg (Ashi) throwing group; Harai Goshi as side (Koshi) throwing techniques; Tani Otoshi as sacrificing (Sutemi) techniques; Kesa Gatame as holdings (Osae). Male seniors from Balkan's championship, the most efficiently applied techniques is Uchi Mata, O Uchi Gari, O Soto Gari as most effective represents of leg (Ashi) throwing techniques; Sukui Nage, Ippon Seoi Nage, Seoi Nage and Sode Tsurikomi Goshi as hand (Te) throwing techniques; Kesa Gatame as holding techniques (Osae); Tani Otoshi as sacrificing (Sutemi) throwing techniques.

Comparing these facts with researches of the most efficient techniques from the Olympic games in Atlanta (Sterkowicz, 1998), male competitors dominates with hand techniques of Seoi Nage, Kata Guruma, Sukui Nage, Kuchiki Taoshi, Tai Otoshi, etc. Uchi Mata, O Uchi Gari, Ko Uchi Gari, O Soto Gari, Ko Soto Gake of leg throwings; Tomoe Nage and Tani Otoshi from sacrificing throwings; from lever techniques Ude Hishigi Juji Gatame and holdings Yoko Shiho Gatame, emphasize to the different application of the judo techniques at the various levels of the competition.

Conclusion

Obtained results could contribute to the better understanding of the monitoring and analyzing of parameters of situation's efficiency in judo for seniors in all level of competition. Notational analysis as way of monitoring and controlling of the efficiency of the relevant technical-tactical parameters in judo that are expressed by seniors could be directly applied into coaches educational and training process so that optimal choice of content and load for training could be assured. On that way it could be also compared with higher demanding levels of competitions, all in terms of achieving better quality of judo, as a martial art.

Table 4. The most efficient judo techniques used by male seniors at the B&H and Balkan's championships

MALE B&H		RANK	MALE BALKAN	
%	Judo Techniques		Judo Techniques	%
10,3	Ippon Seoi Nage	1	Uchi Mata	13,7
9,1	Tani Otoshi	2	Sukui Nage	9,3
6,9	Harai Goshi	3	Ippon Seoi Nage	8,8
6,0	De Ashi Barai	4	O Soto Gari	8,2
6,0	Kesa Gatame	5	Sode Curi Komi Goshi	6,6
5,2	Uchi Mata	6	Tani Otoshi	6,0
5,2	O Uchi Gari	7	Harai Hoshi	4,9
5,2	Sukui Nage	8	O Uchi Gari	3,8
4,3	Tai Otoshi	9	Kesa Gatame	3,8
4,3	Morote Seoi Nage	10	Seoi Nage	3,8

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