

The transformation of technical-tactical behaviors for hand techniques used in attacking below the belt after the 2010 International Judo Federation rule revision

Authors' Contribution:

- A** Study Design
- B** Data Collection
- C** Statistical Analysis
- D** Manuscript Preparation
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Abstract

Background & Study Aim:

Due to a 2010 rule revision, attack with the arms or hands below the belt is prohibited, with the penalty being *hansoku-make* for the first offense. This strict rule must have affected competitors' technical-tactical behaviors with regards to using hands and arms below the belt in contests. The purpose of the present study is transformation of technical-tactical behaviors for hand techniques attacking below the belt in men's contests before and after the 2010 rule revision.

Material & Methods:

436 men's contests from the 2009 Grand Slam Tokyo and the 2010 Grand Slam Paris were examined. DVDs of the Federation of All Japan Judo were used. Five hand techniques used in below the belt maneuvers as referenced in the *Kodokan* manual were investigated. The analysts unanimously decided if the techniques performed by competitors could be categorized within one of the five hand techniques studied.

Results:

Use of *kibisu-gaeshi* significantly decreased ($p < 0.05$). Use of *sukui-nage* used in countering an opponent's cross-guard grab significantly increased ($p < 0.05$). Use of *kata-guruma* not utilizing below the belt hand or arm grabbing significantly increased ($p < 0.01$). German, English, and Japanese contestants significantly decreased in their use of hand techniques below the belt ($p < 0.01$, $p < 0.05$, $p < 0.05$, respectively).

Conclusions:

Sukui-nage was increasingly used to counter the opponent's use of the cross-guard grab; the *kata-guruma* technique underwent a style transformation. On the other hand, *kibisu-gaeshi* could not be used effectively with the rule revision.

Key words:

combat sports • competition rules • throwing technique • offence strategy • team tactics

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BACKGROUND

The judo rules were revised by the International Judo Federation (IJF) four times in the last decade. These revisions occurred in 2003, 2006, 2009, and 2010. The 2010 rule revision introduced a significant revision to judo regulations which significantly limited the instances in which using hands and arms to grab and block

below the opponent's belt could be used. According to the IJF, the rule revision's purpose is to make judo more dynamic and to pursue traditional judo with the goal of taking *ippon-gachi* [1].

With the 2010 rule revision, attacks or defenses under the belt with hands and arms became a material offense, punishable by *hansoku-make* [2]. Despite such an

Table 1. Contest information.

	Tokyo 2009	Paris 2010
Dates	11–13 Dec 2009	6–7 Feb 2010
Cities	JPA Tokyo	FRA Paris
Countries	44	53
Contests	210	226
Participants	218	233

Reference: www.ijf.org.

important rule revision, some judo teams do not perform technical-tactical analysis either in the world class contests or domestic contests.

In order for Judo participants to place in the contests, it is necessary for them to analyze the influence of the rule revisions and determine how these revisions are likely to affect competitor tactics and how to alter their own techniques to account for rule revisions.

Knowledge gained through analysis can play an extremely important role not only as a basic documentation of tactic construction for the respective team, but also in constructing various coaching strategies. Finally, inspection of general skill level is not sufficient for improving placement in contests. Analysis of the rule revision's impact on skill transformation is necessary to raise attack effectiveness and skill defense.

Several studies analyzing the effects of the 2010 revision have been conducted. Adam, Tyszkowski and Smaruj [3] researched the effectiveness of Japanese competitors in their use of three kinds of *ashi-waza*: *kouchi-gari*, *uchimata*, and *oosoto-gari*. They concluded that the Japanese national team utilized the techniques superior to counterparts from other nations following the rule revision. Other research has been conducted with regard to the changes in contest time, frequency of taking *ippon-gachi*, and technical effectiveness [4–8]. However, the effects of the 2010 rule revision on below the belt hand attacks, attacking pattern against the opponent gripping positions, style transformation of technique forms, and exceptionally approved tactics regarding below the belt maneuvers have not been studied.

Therefore, this research was initiated to investigate technical-tactical actions and their skill transformation as they apply to below the belt attacks with the hands and arms. We did this by comparing data gathered from times before and after the 2010 rule revision.

MATERIAL AND METHODS

Subjects

436 men's contests from two tournaments were investigated. These tournaments were the IJF Grand Slam Tokyo (2009) and IJF Grand Slam Paris (2010). Digital Versatile Discs (DVDs) recorded by the All Japan Judo Federation Reinforcement Committee Science and Research Department were used. Contest information is shown in Table 1.

Analysts

Three analysts participated in this investigation. One of the analysts is "6th dan", and the other two analysts are "7th dan". All analysts are Certified Grade A referees by the Japan Judo Federation. Each analyst has at least 40 years in Judo practice, and they are all currently active in Judo instruction.

Procedure

Five hand techniques as defined by the "Kodokan" manual [9] were investigated: *sukui-nage*, *kata-guruma*, *kuchikitaoshi*, *kibisu-gaeshi*, and *morote-gari*. All attacks were analyzed using the analysis sheet revision developed by Hirose and Suganami [10]. Only those techniques identified by all three analysts as conforming to the technique as it is defined by the rules were analyzed.

1. The number of each technique performed from both contests was recorded.
2. The transformation analysis of the hand techniques.

Grabbing positions were categorized into two types:

- Normal attack grabbing position
- Countering the opponent's cross-guard grab

Exclusions to the 2010 rule revision

Exclusions to the 2010 IJF revision [11] exist with regards to attacking below the belt:

- Grips of legs are authorized when the opponent is in the position of cross guard
- Grips of legs in sequence of technique
- Grips of legs in counterattack

Technique form

As part of our procedure, we analyzed the transformative effects of the 2010 rule revision on the five techniques studied.

3. The five techniques were categorized according to competitors' nationality.

Countries whose competitors participated in more than 10 contests in the 2009 IJF Grand Slam Tokyo were analyzed with regards to how the country's competitors altered their tactics in the 2010 Grand Slam Paris.

The number of technique attempts was compared before and after the 2010 rule revision.

Statistical analysis

For the analysis [12], data was analyzed from 463 men's contests. Chi-square tests were used to determine the difference in the ratio of attempts for the hand techniques below the belt within the technical-tactical variables. A t-test was used to determine the difference of the number of attempts for the hand techniques attacking below the belt according to the country. Statistical significance was considered to be $p < 0.05$. Statistical Package for Social Science (SPSS) base 14.0 for windows was used to compute the statistics [13].

RESULTS

1. Technique by number and a breakdown of the total by technique.

Use of the five hand techniques studied increased from 107 in the 2009 competition to 129 in the 2010 competition. Change in the frequency of the five hand techniques combined was not significant when measured overall. However, when measured independently, use of *kibisu-gaeshi* underwent a significant decrease ($p < 0.05$). In addition, increased usage in *sukui-nage* and *kata-guruma* were not significant. Decreased usage in *kuchiki-taoshi* and *morote-gari* were not significant.

2. The contents of the five hand techniques

Sukui-nage

Counter attack against the opponent's use of the cross-guard grab

Comparison of data from 2009 and 2010 reveals increased use of *sukui-nage* as a counter-attack to the cross guard. Specifically, use of this technique increased from 43% in 2009 to 64% in 2010, resulting in a statistically significant increase ($p < 0.05$) in the use of *sukui-nage* to counter an opponent's cross-guard grab from 2009 to 2010.

Exclusions to the 2010 rule revision

Attacks by the direct single technique authorized exclusions increased slightly but not significantly between in 2009 and in 2010 contests (36% and 41%, respectively). Counter attacks decreased slightly but not significantly between the contests (55%, 52%, respectively).

Technique Form

Sukui-nage's form did not change significantly between the two contests.

Kata-guruma

Counter attack against the opponent's use of the cross-guard grab

Kata-guruma attacks did not significantly increase in number between the two contests in situations where the opponent utilized a cross-guard grab.

Exclusions to the 2010 rule revision

Use of the *kata-guruma* technique was mainly employed by the direct single technique both in 2009 and 2010 contests (90%, 87%, respectively). However, most instances of *kata-guruma* in 2010 were *not used as* exceptionally authorized technique.

Technique Form

Use of the *kata-guruma* technique to attack below the belt without using hands or arms significantly increased ($p < 0.01$) in number between the in 2009 and 2010 contests (52%, 87%, respectively).

Kuchiki-taoshi

Counter attack against the opponent's use of the cross-guard grab

In 2009 contest, 3% of *kuchiki-taoshi* in opponent's positions of the cross guard was observed, on the other hand, in 2010 contest, 18% of the *kuchiki-taoshi* in opponent's positions of the cross guard was observed. Use of *kuchiki-taoshi* in countering the opponent's positions of the cross guard increased slightly in number between the two contests, but the increase was not significant.

Exclusions to the 2010 rule revision

Use of *kuchiki-taoshi* as part of combination increased from 80% to 93% between the 2009 and 2010 contests. However, this was not statistically significant. On the other hand, direct attacks and counter-attacks decreased

Table 2. Comparison of the five techniques.

	2009 Tokyo		2010 Paris	
	%	n	%	n
Total	100	107	100	129
Techniques				
<i>Sukui-nage</i>	41	44	52	67
<i>Kata-guruma</i>	20	21	24	31
<i>Kuchiki-taoshi</i>	28	30	22	28
<i>Kibisu-gaeshi</i>	9	10	2*	2
<i>Morote-gari</i>	2	2	1	1

* p<0.05.

Table 3. Comparison of technical-tactical contents for five hand techniques (%).

	<i>Sukui-nage</i>		<i>Kata-guruma</i>		<i>Kuchiki-taoshi</i>		<i>Kibisu-gaeshi</i>		<i>Morote-gari</i>	
	2009	2010	2009	2010	2009	2010	2009	2010	2009	2010
Grabbing positions										
Normal	57	36	95	97	97	82	100	100	50	0
Cross guard	43	64*	5	3	3	18	0	0	50	100
Attacking pattern										
Direct single	36	41	90	87	10	4	0	0	100	100
Combination	9	7	10	10	80	93	100	50	0	0
Counter	55	52	0	3	10	3	0	50	0	0
Technical form										
Change	0	0	52	87**	0	0	0	0	0	0
No change	100	100	48	13	100	100	100	100	100	100

** p<0.01; * p<0.05.

from 10% to 4% and 10% to 3%, respectively. Both of these changes were not significant.

Technique Form

Kuchiki-taoshi's form did not change between the two contests.

Kibisu-gaeshi

Counter attack against the opponent's use of the cross-guard grab

All attacks using *kibisu-gaeshi* were used without the opponent being in a cross-guard position.

Exclusions to the 2010 rule revision

All attacks of *kibisu-gaeshi* were used as part of a combination in the 2009 contest.

50% of the attacks were used as counter-attacks. However, only 2 attacks were observed in 2010 contest, therefore we lacked sufficient data to analyze the change.

Technique Form

Kibisu-gaeshi's form did not change between the two contests

Morote-gari

Counter attack against the opponent's use of the cross-guard grab

Table 4. Comparison of countries in number of hand techniques per a contest (%).

	2009 Tokyo			2010 Paris		
	N	Contests	n/contest	n	Contests	n/contest
GER	10	11	0.91	4	18	0.22**
FRA	7	16	0.44	17	56	0.30
GBR	11	29	0.38	0	10	0.00*
KOR	11	31	0.35	10	24	0.42
JAP	11	86	0.13	0	35	0.00*

** p<0.01; * p<0.05.

No significant difference occurred between the two contests

Exclusions to the 2010 rule revision

All techniques in the two contests were direct attacks and not part of a combination, so this technique only met the requirements to be excluded from penalty in the opponent's use of the cross-guard grab.

Technique Form

Morote-gari's form did not change between the two contests.

3. The number of techniques by countries

Countries whose competitors participated in more than 10 contests in the 2009 IJF Grand Slam Tokyo were analyzed with regards to how the country's competitors altered their tactics in the 2010 Grand Slam Paris. Between the two contests, French and Korean competitors did not change in frequency with regards to the techniques studied. However; German, English, and Japanese significantly decreased in hand technique usage ($p<0.01$, $p<0.05$, $p<0.05$, respectively). Especially, English and Japanese had no attempts of hand techniques below the belt in 2010 contest.

DISCUSSION

We conducted studies on two contests that were close in terms of time. The contests were held two months apart, with the latter coming just one month after the 2010 rule revision. This was to eliminate as many extraneous factors as possible.

The results suggest that contestants continued to use hand techniques below the belt, even after the 2010 rule revision. Our study assumed that players prepared for the 2010 contest using techniques that were explicitly authorized.

According to the previous research of Tamura [4], use of *sukui-nage* significantly decreased in number between the 2008 European Championship and the 2009 Grand Slam Paris. However, in the 2010 contest after the *hansoku-make* penalty regarding attacks below the belt was introduced, the use of *sukui-nage* increased, although not significantly. We believe that the exceptionally authorized technique led to the increase in *sukui-nage* usage.

One of the most notable findings of *kata-guruma* was that the contestants in 2010 used *kata-guruma* without grabbing their opponent's legs. This technique form modification was detectable only in *kata-guruma*. Previous research of the *kata-guruma* performed by Mekic, Kajmavic and Rado [14] stated that competitors who can successfully perform left and right *kata-guruma* have high motor abilities and possess especially explosive strength as a fundamental physical characteristic. We assumed based on this theory that those competitors who utilized the altered *kata-guruma* technique made use of physical strength to alter the technical aspects without jeopardizing its effectiveness. Furthermore, according to the *nage-no-kata* [15], players have to grab their opponent's legs, which is the principal action for making *kata-guruma* successful. Modification made from a different angle without attacking opponent's legs for *kata-guruma* provided possible alternatives for further development for new techniques of *nage-waza*.

Although, previous *kuchiki-taoshi* techniques used in the 2009 contest were mainly *kouchi-gari*, *ippon-seoi-nage* increased in the 2010 contest; however, the increase was measured not significant. The transition from *kouchi-gari* to *kuchiki-taoshi*, as a continuous technique is sometimes difficult to discern. Therefore, players avoided attempting the continuous technique because of fear to be given *hansoku-make*. We concluded that competitors chose to use *ippon-seoi-nage* over *kouchi-gari* before using *kuchiki-taoshi* because the judge could easily determine that *ippon-seoi-nage* was a combination technique.

Because direct use of *kibisu-gaeshi* was not prohibited in the 2009 contest, *kibisu-gaeshi* was often used

in combinations with *kouchi-gari*. On the other hand, in the 2010 contest, direct attacks using *kibisu-gaeshi* were prohibited. As a result, the number of attacks of *kibisu-gaeshi* significantly decreased between the two contests ($p < 0.05$). *Kibisu-gaeshi* used in a combination attack requires very quick transitions from previous techniques to *kibisu-gaeshi* [9]. This makes it difficult for the judge to determine if the use of *kibisu-gaeshi* was part of a combination technique, which excludes it from penalization as mandated by the 2010 rule revision. We believe that this difficulty in determining the technique's use as part of a combination technique has caused competitors to avoid its use for fear of being penalized through *hansoku-make*.

Morote-gari will cease to be used because the 2010 rule prohibits hand techniques used to attack below the belt. We found only two attempts of *morote-gari* in the contest in 2009, and one in 2010. We concluded that players could not find an effective use of *morote-gari* in countering a cross-guard grab, counter attacks, or as part of a combination within the limits of the existing rules.

Use of the five hand techniques studied also varied by country when data from 2009 and 2010 were compared. German, English, and Japanese competitors significantly decreased their use of the techniques ($p < 0.01$, $p < 0.05$, $p < 0.05$, respectively). Especially, English and Japanese competitors did not utilize below the belt attacks in the 2010 contest. Adam M, et al [3] stated that Japan's Judo

competitors returned to the traditional judo style in the 2010 World Championship. It was concluded that the three countries did not consider use of the exclusions to the 2010 rule revision, and began to use tactics other than below the belt hand techniques.

CONCLUSIONS

The 2010 rule revision affecting hand techniques used in directly attacking below the belt had a great impact on contestants' maneuvers in the contests. As a result, the rule revision became the catalyst to promote the modification and variety in contestants' throwing techniques.

To consistently achieve superior contest results, coaches and competitors have to analyze both the positive and negative effects of these kinds of rule revisions on their strategies, creating new techniques and altering existing ones in response.

Analyzing existing data and predicting how competitors from each country could adapt tactics and strategies to future rule revisions could provide an advantage in placing in future international contests.

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