

# Effective ways of struggles applied by teenage female judoka during Spanish Judo Cadets Championship

## Authors' Contribution:

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

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**Source of support:** Departmental sources

**Received:** 11 December 2009; **Accepted:** 9 February 2010; **Published online:** 23 March 2010

## Abstract

### Background and Study Aim:

To analyse the most efficient technical actions used by national-level female judokas of the cadets category (15 and 16 years), in each of the weight categories, advantages and sanctions obtained throughout the development of combats and distribution of the results achieved in each of the four-minute rounds. The objective is to establish the judokas' technical profile according to weight categories.

### Material/Methods:

The sample consists of 116 female judokas between the age of 15 and 16, divided into seven weight categories, who participated in a total of 166 combats during the Spanish Championships. The acquisition of data was carried out by the referees selected for the study follow-up throughout the development of competition, who filled in the official entry form of each of the combats. A descriptive analysis was performed on the statistical software SPSS 14.

### Results:

The results show that the most frequently used techniques by female judokas, the dynamic structure of the combat and the number of sanctions is similar to the ones used by high-level judokas. However in this age category the most frequent technical groups are generally the *te-waza* group with *seoi-nage* as the most efficient technique, and the *sutemi-waza* with *tani-otoshi* as the most representative technique, followed by sanctions.

### Conclusions:

Spanish female judokas, irrespective of the weight category, achieve the higher effectiveness of the fight in the vertical posture (*tachi-waza*) than in the horizontal posture (*ne-waza*).

### Key words:

judo technique • effective ways of judo struggle • specific judo terminology

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## BACKGROUND

The aspects to be considered in the judokas' training are diverse and complex, given that it is a dynamic combat sport, with a high technical-tactical complexity and intense work, arranged by weight categories and conditioned by the uncertainty caused by the opponent and made up of two main areas: *tachi-waza* or projection technique, whose application is characterized by a great coordination, speed, agility, strength of the upper and lower body

[1] and *ne-waza*, or judo work that needs a great extension strength, flexion and trunk rotation, static strength of the upper and lower limbs and flexibility [2,3] points out that in this category there are difficulties in terms of rigour and studies to standardise the observation of the physiological and temporary-structure variables, which probably accounts for the scarcity of researches on this matter.

According to Mansilla et al [4] the factors leading to success in judo competition are very complex. The intrinsic

The judo technique (in the jargon: **technical actions**) – the detailed way of the solution of motive tasks during the fight of judo (throwing, grappling, etc) – in the text briefly: **technique**.

Effective ways of judo struggle – use of such technique of the fight (throwing, grappling, etc) or utilization of the sanctions (**penalties**) put on the rival by the referees which will provide the victory (or before the outflow of the regulation time, or by the obtainment of the advantage during the fight). The connection of these elements with different factors is defined the **tactics of the fight**.

and regulation characteristics of this sport make that the physical-energetic needs required during competition might vary according to combat. Same happens with the application of an efficient technique *tokui-waza*, particularly due to the great variety of techniques and tactical situations that may arise in each combat. Therefore, it is necessary to conduct studies on the sports event participation in order to prepare contestants to face and solve the problems arising throughout the judo combat. Since the Tokyo Olympic Games in 1964, some studies have been made with the aim of extracting information on the most successfully used technical elements. From this point of view, and within the studies referring to sports performance in judo, we have focused on those which analyse the technical aspects throughout the combat development. There are many authors [5–18], who focus their studies on the technical actions analysis, the combat structure and the judokas' physiological profile according to these parameters, providing interesting data for the training construction, such as the grappling techniques as follow-ups to throws, technical actions, the most common technical actions according to weight categories, time organization of the combat, referees penalties, etc.

Somehow the classic judo techniques such as *osoto-gari*, *hari-goshi*, *uchimata*, *seoi-nage* and *tai-otoshi*, are usually made by most contestants, showing a great efficiency.

Both the introduction of new application techniques and the possibilities are usually adapted to the competition characteristics, the regulations parameters, and the judokas' peculiarities in order to obtain a small technical advantage. Judoist with a short and a little ectomorphic lower limbs, light category related to the explosive profile, show a greater mechanical fluency when executing the arm techniques (*te waza*) or those who use the hip (*koshi waza*) as point of support. Judokas with long and more ectomorphic lower limbs, related to the endurance profile, show a greater mechanical ability to execute techniques of *ashi-waza*. These references provide us with the necessary data to adapt the gestures to the judokas' structure and the demands of the combat [19–21].

The analysis of the most efficient technical actions and, in its case, the most common one in each of the weights will provide more efficient judo data according to weight category. If we add to this the combat profile with regard to the different actions time, we will have a valuable tool for the design of the training plans and teaching of the technique, being this an aspect that may be approached throughout the learning process and development of judo, according to the judokas' liking and attitudes, weight categories, type of opponent, received teaching etc. [22].

The objectives to be attained in this study:

- to identify the technical characteristics of national-level female judokas in each of the weight categories,
- to provide coaches and young athletes with some clear guidelines in the training approach which allow them to develop their possibilities to the maximum.

## MATERIAL AND METHODS

The study group consists of 116 female judokas participating in the Cadets' Spanish Championship, aged 15 to 16 and divided into seven weight categories, who took part in 166 combats (Table 1).

**Table 1.** Study group according to weight categories.

Weight category	Number of participants	Number of combats
–44	14	21
–48	16	22
–52	18	26
–57	17	24
–63	17	25
–70	18	24
+70	16	24
<b>Total</b>	<b>116</b>	<b>166</b>

The variables measuring was attained through the direct observation of the Spanish Judo Federation's referees who filled in the official entry form of the Children and Junior Spanish Championship's combat development.

### Procedure

The day before the competition took place a meeting with selected referees of the Junior Spanish Championship, intended to give an accurate instructions such as the way in which they should carried out the observation and fill in the official entry form of the development of each of the judo combats. An observant referee was situated in each of the competition mats.

The competition was supervised by the person responsible for the technical project throughout its development. When the competition was finished the official entry forms were collected. The different weight categories were analysed by the same variables (the most frequently used techniques for the achievement of the technical advantages and the minute of the combat in which the advantage took place). In each figures we show the results of *te-waza*, *koshi-waza*, *ashi-waza*, *sutemi-waza*, *osaekomi-waza*, *kansetsu-waza* and *penalties*, in the same order.

The study presents the techniques score of the judoist who won by *koka*. This score has been replaced by the new competition rules. However authors decided to show in this article, because with this score the judoist would win the contest.

A descriptive analysis was performed on the statistical software SPSS 14.

## RESULTS

### Female cadets –44 kg

In this category, the combats were characterized by the achievement of 26.5% of the advantages through the *ashi-waza* (*kouchi-gari* 38.5%; *ouchi-gari*, 23.1% and *kosoto-gake*, 15.4%), followed by the *sutemi-waza* 22.4%, (*tani-otoshi* 100%), and sanction (14.3%) were the most common techniques in each of the groups (Figure 1).

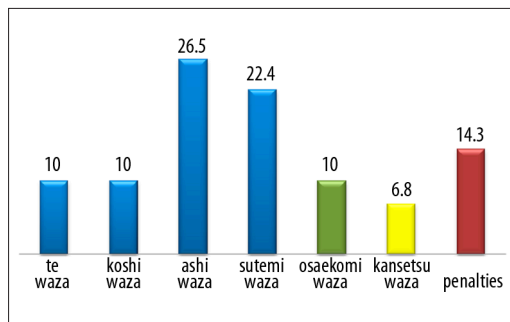


Figure 1. Groups of judo techniques used by the female cadets –44 kg.

The combats were characterized by the achievement of 70% technical actions obtained during the first two minutes (49% in first minute and 31% in second minute); the *sutemi-waza* and *ashi-waza* were the most frequently used groups during the first minute, and the sanctions (20%) and the *ashi-waza* techniques (27%) during the second minute. In the third minute 16% of the results were obtained through the sanctions (penalties), *osaekomi-waza* and *ashi-waza* technique groups. The combat efficiency level is reflected on the 38.8% victories achieved through *yuko*, 34.7% by *ippon*, 18.4% by *koka* and 8.2% by *waza-ari*.

### Female cadets –48 kg

The advantages in this weight were mainly obtained through the opponents' sanctions (33.3%), the *te-waza* (29.8%), being *seoi-nage* (80%) the most common technique (Figure 2). In the *sutemi-waza* group, the most frequently used technique is *tani-otoshi* (71.4%).

The judokas of this weight category executed 38% of the technical actions during the first minute, with *te-waza*

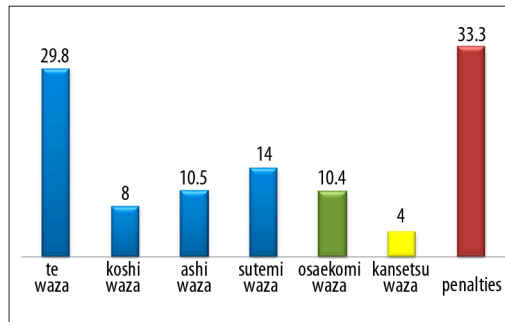


Figure 2. Groups of judo techniques used by the female cadets –48 kg.

and sanctions (25%). In the second, third and fourth minutes the advantages in this weight were mainly obtained through the opponents' sanctions.

The combat efficiency level is reflected on the 29.8% victories achieved through *koka*, 28% *yuko*, 26.3%, *waza-ari* 34.7%, *ippon* 15.7%.

### Female cadets –52 kg

The most efficiently technical group applied by these judokas is the *ashi-waza* 26.9% (*osoto-gari* 44.4%, *kouchi-gari* 22.2%, *ouchi-gari* 16.7%), *koshi-waza* (19.4%), and sanctions (16.4%) (Figure 3).

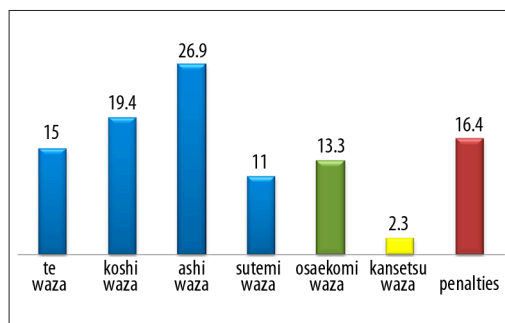


Figure 3. Groups of judo techniques used by the female cadets –52 kg.

The combats of this weight category are characterized by the achievement of 65% of the technical advantages during the first and second minute. During the first minute the most common techniques are *ashi-waza* (27%) and *te-waza* and *koshi-waza* both with 21%. In the second minute, the most frequently used group is *ashi-waza* (45%) and *koshi-waza* and *sutemi-waza*. During the third minute the most common techniques are *koshi-waza*, *te-waza* and sanctions. It is during the fourth minute when sanctions reach a relevant level.

The combat efficiency level is reflected on the 35.8% victories achieved through *yuko*, 26.9% *ippon*, 20.9% *koka*, 16.4% *waza-ari*.

Specific judo terminology (in Japanese):

**Waza** – technique.

**Tachi-waza** – fighting techniques used in vertical posture; usually throwing techniques (*nage-waza*) and combinations of different throws (*tenzoku-waza*).

**Te-waza** – hand techniques.

**Goshi/Koshi-waza** – hip techniques.

**Ashi-waza** – leg techniques.

**Sutemi waza** – rear-fall throws and side-fall throws.

**Ne-waza** – fighting techniques used in horizontal posture (pinning-, strangle-, joint techniques).

**Osaekomi-waza** – pinning techniques.

**Shime-waza** – strangle techniques.

**Kansetsu-waza** – joint techniques.

**Tokui-waza** – techniques that are specialties of the player.

**Ippon** – 10 point; ends the fight before full time.

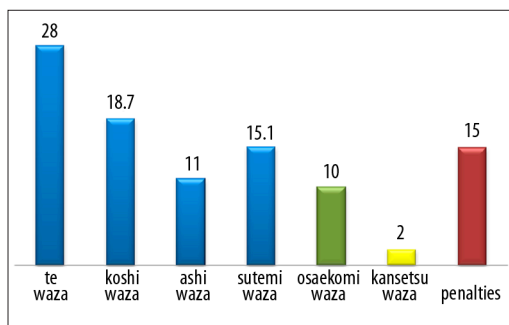
**Waza-ari** – equivalent of 7 point score.

**Yuko** – equivalent of 5 point score.

**Koka** – equivalent of 3 point score.

### Female cadets –57 kg

The most efficient technical group applied by these judokas is the *te-waza* 28% (*seoi-nage* 78.6% and *kuchiki-taoshi* 14.3%), *koshi-waza*, 18.9% (*harai-goshi* 80%) followed by sanctions and *sutemi-waza* all of them with 15.1% (Figure 4).

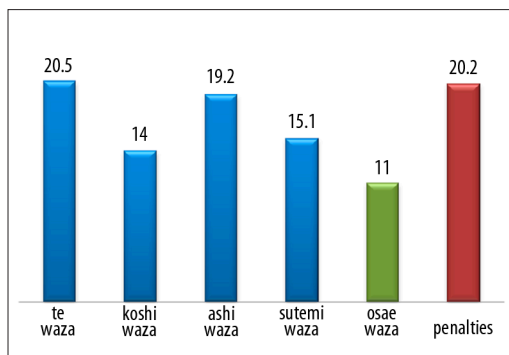


**Figure 4.** Groups of judo techniques used by the female cadets –57 kg.

The combats of this weight category are characterized by the achievement of 86% of the technical advantages during the first and second minute. During the first minute the most common techniques are *te-waza* 58%, *koshi-waza* 23%, *ashi-waza* 16%. In the second minute the most frequently used group is *te-waza* 27% and *osaekomi-waza* 20%. During the third minute the most common techniques are *sutemi-waza* 50%. The combat efficiency level is reflected on the 37.7% victories achieved through *ippon*, *yuko* 30.2%, *koka* 17%, and *waza-ari* 15.1%.

### Female cadets –63 kg

In the category under 63 kg we noticed that 20.5% of the obtained advantages correspond to the *te-waza* techniques group, being *seoi-nage* the most representative technique with a percentage of 86%. It is followed by advantages obtained by *ashi-waza* 19.2% (*kouchi-gari* 28.6%), *sutemi-waza* 15.1% (*tani-otoshi* 90.9%) and sanction (20.2%), being the most common sanction the one due to the opponents' passivity (Figure 5).



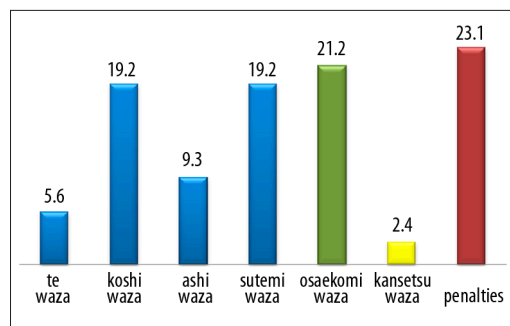
**Figure 5.** Groups of judo techniques used by the female cadets –63 kg.

The combats of this weight category are characterized by the achievement of 38% of the technical advantages during the first minute, 27% in the second minute. In the third minute 18% of the advantages was obtained and 15% in the fourth one.

The combat efficiency level is reflected on the 31.5% victories achieved through *koka*, 30.1% by *yuko*, 20.5% by *waza-ari* and 17.8% by *ippon*.

### Female cadets –70 kg

The combats of the weight categories under 70 kg reflect a high percentage of sanctions (23.1%) due to the opponents' passivity. It is followed by advantages obtained by *osaekomi-waza*, *koshi-waza* and *sutemi-waza*, with *harai-goshi* and *tani-otoshi*, the most frequently used techniques (Figure 6).



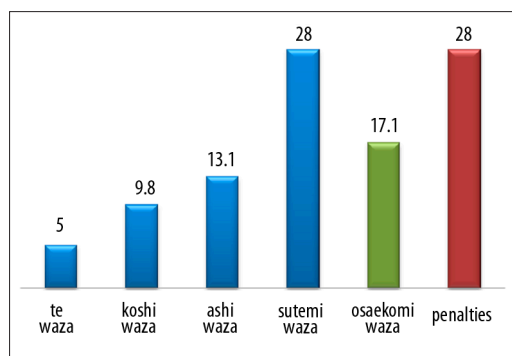
**Figure 6.** Groups of judo techniques used by the female cadets –70 kg.

The greatest number of advantages occurred during the first minute of the combat (63%), *osaekomi-waza* 24%, followed by the *koshi-waza* 21% and sanctions 21%. In the second minute 42% of the advantages were mainly obtained through the opponents' sanctions. The combat efficiency level is reflected on the 30.8% of victories achieved through *ippon*, 25% by *yuko*, 23.1% by *koka* and 21.1% by *waza-ari*.

### Female cadets +70 kg

Analysing the combats of this category we notified that 28% of the advantages were obtained because of the opponents' sanction, due to passivity and lack of initiative, and *sutemi-waza* 28%, *ashi-waza* 13.1%, *koshi-waza* 9.8%. The most common techniques are *kouchi-gari*, *ouchi-gari*, *osoto-gari*, *harai-goshi* and *tani-otoshi* and immobilization techniques (Figure 7).

79% of the techniques took place through the first two minutes of the combat, being the sanctions and *sutemi-waza* with *tani-otoshi* the most frequent ones. The combat efficiency level is reflected on the attainment of



**Figure 7.** Groups of judo techniques used by the female cadets +70 kg.

31.1% victories through *ippon*, 21.3% *yuko*, *waza-ari* 21.3% and *koka* 16.4%.

## DISCUSSION

The judokas' profile within the –44 kg category are characterized by the development of high activity in the first two minutes of the combat and a high level of efficiency, as they achieve a high number of advantages and victories through *ippon*. The most frequently used techniques among them are *ko-uchi-gari*, *ouchi-gari*, *ko-soto-gake* and *tani-otoshi*. The opponents' common and efficient counterattack is *tani-otoshi*. The advantages obtained as a result of actions are very important. The combats of the –48 kg categories are characterized by balancing technical actions in the fourth minute, during which they achieved the greatest efficiency with the *seoi-nage* and *tani-otoshi* techniques. Sanctions increased progressively throughout the combat. The technical profile of judokas under 52 kg is characterized by the development of a high activity during the first two minutes, when they achieved a high percentage of advantages. The most efficient techniques are *osoto-gari*, *kouchi-gari* and *ouchi-gari*. Judokas under 57 kg obtained the greatest number of advantages during the first two minutes with the *seoi-nage*, *kuchiki-taoshi*, *harai-goshi* and *tani-otoshi* techniques. The efficiency of combat level is reflected on the greatest number of victories through *ippon*. The combat of judokas under 63 kg is characterized by the achievement of the greatest number of advantages in the first two minutes. The most efficient technique is *seoi-nage*, *ko-ouchi-gari*, *ko-soto-gake* and *tani-otoshi*. Judokas of the category under 70 kg are characterized by the achievement of their victories throughout the first minute of the combat, being *harai-goshi* and *tani-otoshi* the most frequently applied techniques. The advantages obtained by the opponents' sanctions are very high. The efficiency of combat level is reflected on the achievement of the greatest number of victories through *ippon*. In judokas over 70 kg the greatest number of advantages occurred throughout the first minute of the combat, being the sanctions

and the *tani-otoshi*, *ko-uchi-gari*, *ouchi-gari*, *osoto-gari* and *harai-goshi* the most frequent ones.

During the 1992 Olympic Games in Barcelona and the 1996 Olympic Games in Atlanta the most efficient techniques were: *seoi-nage* and *kuchiki-taoshi* among the hand techniques. *Ouchi-gari*, *uchi-mata*, *osoto-gari*, *kosoto-gake*, *kouchi-gari* and *kosoto-gari* among the leg techniques. *Harai-goshi* predominated in the hip techniques and finally *tani-otoshi* was the most common technique of all the *sutemi-waza*. As for the immobilizations, the *kesa-yoko*- and *tate*- groups were the most frequent, together with the elbow dislocation *ude-hisigi-juji-gatame* [8]. In general terms, these techniques coincide with the ones used by the judokas in our study who applied more efficiently techniques such as *harai-goshi*, *tani-otoshi*, *seoi-nage*, *kouchi-gari*, *ouchi-gari*, *uki-goshi* and *osoto-gari*. A small technical repertory and the inclusion of certain techniques such as *uki-goshi* was shown, which may be due to the evolution process and the judokas' youth. According to Sterkowicz [8] the penalty advantages were caused by avoidance of fight, step outside the combat area and defensive posture. During Olympic Games in Atlanta the second decisive factor in victories were the referees' sanctions. These results are in accordance with the ones obtained in this study where a high number of advantages were obtained through the referees' sanctions due to passivity and the opponents' false attack.

## CONCLUSIONS

1. Spanish teenage female judokas irrespective of the weight category achieve the higher effectiveness of the fight in the vertical posture (*tachi-waza*) than in the horizontal posture (*ne-waza*).
2. Judokas are characterized by the frequent use of the following techniques: *seoi-nage*, *kouchi-gari*, *ouchi-gari*, *kosoto-gari*, *kosoto-gake*, *harai-goshi* and *tani-otoshi*.
3. A high number of technical advantages are obtained through the referees' sanctions due to passivity and false attack.

## Recommendations

In order to achieve a high level, judokas have to broaden their knowledge towards the most evolved techniques such as the pick-ups or modern versions of *sukui-nage*, the twist down, competitive versions of *uki-otoshi*, the new version of the *kata-guruma*, and they should master at least four projection techniques (among them the *kouchi-gari*, two ground techniques, a technique to immobilize and to dislocate *juji-gatame*).



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