

Research article

Most frequent errors in judo *Uki Goshi* technique and the existing relations among them analysed through *T-patterns*

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Abstract

The purpose of this study is to provide a tool, based on the knowledge of technical errors, which helps to improve the teaching and learning process of the *Uki Goshi* technique. With this aim, we set out to determine the most frequent errors made by 44 students when performing this technique and how these mistakes relate. In order to do so, an observational analysis was carried out using the OSJUDO-UKG instrument and the data were registered using *Match Vision Studio* (Castellano, Perea, Alday and Hernández, 2008). The results, analyzed through descriptive statistics, show that the absence of a correct initial unbalancing movement (45,5%), the lack of proper right-arm pull (56,8%), not blocking the faller's body (*Uke*) against the thrower's hip -*Tori*- (54,5%) and throwing the *Uke* through the *Tori*'s side are the most usual mistakes (72,7%). Through the sequential analysis of T-Patterns obtained with the THÈME program (Magnusson, 1996, 2000) we have concluded that not blocking the body with the *Tori*'s hip provokes the *Uke*'s throw through the *Tori*'s side during the final phase of the technique (95,8%), and positioning the right arm on the dorsal region of the *Uke*'s back during the *Tsukuri* entails the absence of a subsequent pull of the *Uke*'s body (73,3%).

Key Words: *Uki Goshi*, observational methodology, error, T-Patterns, sequential study.

Introduction

Many scientific publications on combat sports have dealt with physiological, biomechanical, psychological and training issues. Different physiological parameters have been studied in disparate combat sports such as silat (Aziz et al., 2002), judo (Borkowski et al., 2001; Callister et al., 1991; Kalayci, I., 2008, Taylor and Brassard, 1981; Thomas et al., 1989), boxing (Smith, 2006), wushu (Ribeiro et al., 2006), and wrestling (McGuigan et al., 2006).

As far as judo is concerned, research has been focused on training (Blais and Trilles, 2006; Azevedo et al., 2007), on the influence of psychological variables during the competition (Stevens et al., 2006) and in several biomechanical aspects (Imamura et al., 2006; 2007).

During the 1970's the study of the knowledge of performance of a sport and particularly the study of the technical errors made during said execution has turned out to be a useful tool to learn the basics at the initiation stage of sport techniques (Newell and Walter, 1981; Pieron, 1976; Schmidt, 1988; Schmidt and Gordon, 1977; Schmidt and Lee, 2005) and a valuable help for the later development of specific disciplines such as tennis (De Knop, 1983), gymnastics (Magil and Schoenfelder-Zohdi, 1996) and recently judo (Gutiérrez and Prieto, 2007). All

these studies corroborate Gentile's conclusions (1972), suggesting that it is far more useful to correct a movement or technical gesture from the error's perspective if there is information about the nature of these mistakes than simply to point out the result of the execution.

The analysis of technical errors through observational methodology (Anguera et al., 2001) allows us, in the case of this particular study, to obtain a tool which helps to improve the teaching and learning process of the *Uki Goshi* judo technique in those subjects whose characteristics are similar to the ones studied in this piece of research. To this end, two fundamental goals are proposed: first, to obtain the frequency of the errors during the technique's execution and second, to prove the existence of important relations among said errors, in order to be able to confirm if certain mistakes lead to others.

With the intention of analysing the different approaches to the *Uki Goshi* technique in depth we have observed that the existing publications on judo follow five different trends:

- In the first one, most of these manuals only describe, in a more or less detailed way, how the different techniques should be executed (Habersetzer, 1988; Hoare, 1980; Reay, 1987; etc.).
- The second trend points out the fundamental steps of the aforementioned techniques (Daigo, 2005; Federation Française de Judo et Ju-Jitsu et Disciplines Asocies, 1967; Inogai and Habersetzer, 2002; Kobayashi and Sharp, 1995; Koizumi, 1960; Kolychkin, 1989; Kudo, 1967; Mifune, 2004; Ohlenkamp, 2006; Taira, Herguedas and Román, 1992; Uzawa, 1981; Watanabe and Avakian, 2001).
- The third one, besides describing the technique and its fundamental points, also mentions the typical errors that can be found when executing a particular technique. This information is supposed to be based on the authors' personal experience in the matter (Carmeni, 1989; Federation Française de Judo et Ju-Jitsu et Disciplines Asocies, 1967).
- In the fourth trend, the authors include observations and clarifying notes. They also emphasise some aspects of the execution when describing the technique (Inman, 1997; Kano, 1994; Kawaishi, 1955; Mifune, 2004; Nakabayashi, 1968; Ohlenkamp, 2006; Thompson, 2001).
- And lastly, the fifth trend groups together those authors who use the *Uki Goshi* throw for the explanation of other aspects which are different from the technical model such as counterattacks, combinations, kinds of grip, training methods, groups of techniques, e.g., Cadière and Trilles, (1998); Iatskevich, (1999); Takahashi and family, (2005).

The reason why *Uki Goshi* is the object of this study is that the usage of this technique in the early stages of the initiation to judo has been strongly recommended since its creation in 1882 until present day by the most prestigious authors of this sport in their teaching proposals. Thus, Jigoro Kano included this throw in 1895 in the first *Gokio* group, which can be considered as the first manual on the organisation of the process of teaching and learning the throws. From that moment on, new proposals have come into being, keeping this technique in the same group. These new plans are adapted to the pedagogical reality of the time and try to overcome the difficulties in the learning process that this classification entails. In this respect, Castarlenas and Calmet (1999), Geesink (1967), Kawaishi (1995), Sacripanti (1989) and even the Fédération Française de Judo et Ju-Jitsu et Disciplines Associées [FFJDA] (1967) have established new organizational systems for the teaching of this sport, where *Uki Goshi* is always present in the early stages of the initiation.

In view of the exposed antecedents, it can be concluded that this research comes into being as a consequence of the lack of scientific studies on judo aiming to determine technical errors in the throws and the relations among them, and also as a complement to new teaching trends created to facilitate the work of teachers and professionals of this sport.

Thus, the final purpose of the present study is to analyze the most frequent mistakes made in the execution of the *Uki Goshi* hip throw by adults who have no previous experience in judo techniques, showing how the observed errors relate in order to provide judo professionals with a useful technical support tool for the teaching-learning process of subjects of similar characteristics.

Methods

Design

Observational methodology (Anguera, 1999) was used as it has the necessary rigour and flexibility to study the situations which present themselves during the teaching-learning processes of the judo technique. Specifically, this method can affirm that the kind of observation carried out was standardized, open and non-participant (Heinemann, 2003).

Likewise, the observational design (Anguera et al., 2001) is nomothetic (several participants execute the *Uki Goshi* throw at the same time) monitoring (a technical *Uki Goshi* gesture developed during five academic years) and multidimensional (the dimensions correspond to the criteria of the observation instrument). From the N/M/M approach (nomothetic/ monitoring/ multidimensional) the following decisions derive: participants, observation instrument -OSJUDO-UKG (*Uki Goshi* Judo Technique Observation System)-, registering instrument and procedure.

Participants

The group of study was formed by 44 pupils of the Faculty of Education and Sports Sciences (21 men and 23 women) who belong to the 2003/2004, 2004/2005, 2005/2006, 2006/2007 and 2007/2008 academic years.

The execution of the *Uki Goshi* technique was filmed after a training period of approximately four months. The data were recorded with two digital video cameras using in both cases a full shot and a normal focus. The cameras were placed on two tripods, at a height of 1,50 metres, forming an angle one in front of the other and approximately 2m away from the *tatami*. Afterwards, the different filmed throws were edited with Pinnacle Studio software (version 8, 9, 11 and 12).

Observation instrument

Appendix 1 describes the technical model used for the teaching of this throwing technique which was also used for the elaboration process of the system of categories with which the observation was carried out. For this purpose and due to the difficulty pointed out by different authors (Imamura et al., 2007; Kano, 1994; Koizumi, 1960) to divide the technique into the three traditional phases *Kuzushi*, *Tusukuri* and *Take*, this division will not be strictly used, but rather a general description of it following the sequence of the different movements.

A continuous development of the observation instruments will allow us to deepen our knowledge of the teaching process of the judo technique. The chosen observation instrument for this study is OSJUDO-UKG, which combines field format and category systems (Jonsson et al., 2006). OSJUDO-UKG includes in its criteria the objectives of our study: different technical errors and their interrelation.

OSJUDO-UKG fits the proposed observational design, is multidimensional and consists of the following structure of criteria, dimensions and categories:

Fixed criteria (FC): course and sex.

Variable criteria: grip, unbalancing, right foot positions, right arm position, hip position, right arm action, left foot position, leg action, blocking action, throwing stage, control stage, rebalance and globality. Each of these criteria gives rise to their respective category systems which comply with the conditions of thoroughness and mutual exclusivity (T/ME).

The dimensions considered in this study have given rise to the following system of categories (thorough and mutually exclusive in every dimension), which is described in Appendix 2 of this article.

Registering instrument

A continuous registering process was carried out during the observation of all the filmed sessions, using the software *Match Vision Studio Premium v.1.0.* (Castellano, Perea, Alday and Hernández, 2008). This is an interactive multimedia computer program which allows watching and registering in the computer's screen itself the digitalized recording of the videos in avi, mpg or wmv format.

This program is highly flexible, and enables the input of all of the corresponding codes for each one of the variable dimensions criteria of the observation instrument OSJUDO-UKG (Table 1) in order to register their sequence. It must be pointed out also that when one of those In addition, the quality of the data (Blanco-Villaseñor and Anguera, 2000) was calculated through the kappa coefficient -obtained using the program SDIS-GSEQ, version

Table 1. Frequency (Freq.) and percentage (%) of *Uki Goshi* technical mistakes.

Frequent <i>Uki Goshi</i> errors								
Error	Freq.	Percentage	Error	Freq.	Percentage	Error	Freq.	Percentage
<i>GRIP</i>			<i>HIP POSITION</i>			<i>BLOCK</i>		
<i>AGR</i>	5	11.4	<i>MRS</i>	7	15.9	<i>NBLC</i>	24	54.5
<i>FAGR</i>	1	2.3	<i>OLSH</i>	4	9.1	<i>RLBLC</i>	5	11.4
<i>UNBALANCE</i>			<i>OMRS</i>	4	9.1	<i>HLO</i>	4	9.1
<i>LARU</i>	1	2.3	<i>TBP</i>	5	11.4	<i>THROWING STAGE</i>		
<i>NLU</i>	6	13.6	<i>PCR</i>	8	18.2	<i>IATR</i>	8	18.2
<i>NRU</i>	1	2.3	<i>RIGHT ARM ACTION</i>			<i>IRATR</i>	9	20.5
<i>NU</i>	20	45.5	<i>NT</i>	25	56.8	<i>ILATR</i>	3	6.8
<i>DU</i>	7	15.9	<i>LEFT FOOT POSITION</i>			<i>RAOT</i>	2	4.5
<i>UU</i>	1	2.3	<i>FLF</i>	3	6.8	<i>TRFL</i>	24	54.5
<i>RIGHT FOOT POSITION</i>			<i>FFLF</i>	5	11.4	<i>ITRT</i>	10	22.7
<i>IRF</i>	3	6.8	<i>ILF</i>	6	13.6	<i>STH</i>	32	72.7
<i>FRF</i>	1	2.3	<i>FILF</i>	2	4.5	<i>CONTROL STAGE</i>		
<i>ORF</i>	1	2.3	<i>FFILF</i>	1	2.3	<i>FOFA</i>	12	27.3
<i>FIRF</i>	1	2.3	<i>FOLF</i>	3	6.8	<i>ULAF</i>	6	13.6
<i>ITRRF</i>	1	2.3	<i>PILF</i>	5	11.4	<i>PTRFL</i>	6	13.6
<i>ITRF</i>	7	15.9	<i>OBLF</i>	3	6.8	<i>REBALANCE</i>		
<i>BTRF</i>	5	11.4	<i>LEG ACTION</i>			<i>FRFRB</i>	5	11.4
<i>FTRF</i>	1	2.3	<i>LFLEX</i>	4	9.1	<i>RRFRB</i>	1	2.3
<i>RIGHT ARM POSITION</i>			<i>LFL</i>	3	6.8	<i>BRFRB</i>	2	4.5
<i>AB</i>	15	34.1	<i>RLFL</i>	4	9.1	<i>FLFRB</i>	4	9.1
<i>AW</i>	10	22.7	<i>FLFAT</i>	10	22.7	<i>BLFRB</i>	13	29.5
<i>AWGR</i>	1	2.3	<i>PLFAT</i>	9	20.5	<i>GLOBALITY</i>		
<i>SBGR</i>	2	4.5	<i>ILFL</i>	1	2.3	<i>SLEX</i>	0	0 %
<i>ALAP</i>	1	2.3						

4.2 (Bakeman and Quera, 1992; 2001)- getting a value of 0.91.

Procedure

Following the registering of the 44 *Uki Goshi* throws performed by the participants, a first descriptive analysis of the frequencies and percentages of the occurrence of the technical mistakes was carried out. Afterwards, time patterns -sequential in this case-(Magnusson, 1996; 2000) were analyzed using the THÈME software, obtaining the corresponding dendograms, which show the occurrence of mistakes in the execution of the studied technique.

Results

Table 1 shows that the participants made a large number of different mistakes. It is apparent how some of these mistakes occurred more often than others. Out of 59 mistakes observed by the researchers, more than half (37) had a very low frequency of occurrence (only 1 to 5 participants). Therefore, it can be stated a priori that there exist a few mistakes which could be considered as common, due to the high frequency with which they were observed, and many others which cannot be considered as significant or important because they were scarcely registered in the videographic analysis. In fact, as it can be observed in Figure 1, only 8 of them were made by more than 10 participants out of the total 44 people who participated in the study.

In the analysis of the T-Patterns (temporary behaviour patterns) a series of important links related to the occurrence of chained mistakes, were observed which enable us to deepen our knowledge of the *Uki Goshi* technique.

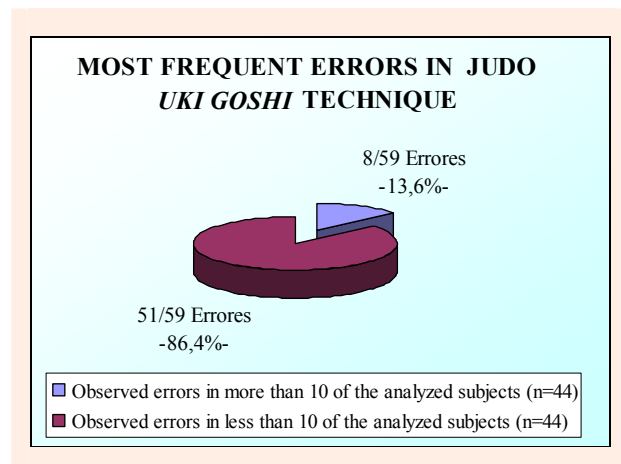


Figure 1. Percentage of observed errors in more than 10 of the analyzed subjects.

As a result of this T-Pattern represented in Figure 2, it can be deduced that a possible chained sequence of *Uki Goshi* errors could be as follows: At the beginning of the throw, the *Tori* does not unbalance his opponent correctly (NU) and afterwards, he places his right arm (skilled arm) under his opponent's left armpit surrounding the dorsal region of the back instead of the lumbar region (AB). These last two mistakes bring about another two new ones, specifically, the *Tori* places his left foot after the *Tai Sabaki* on the inner part of the *Uke's* same foot (ILF) and his iliac crests are parallel to those of his adversary (PCR) instead of occupying the right position described by the ideal technical model.

These mistakes lead firstly to an insufficient pull with the skilled arm (NT) probably due to its incorrect initial position (AB), and secondly to an inefficient block,

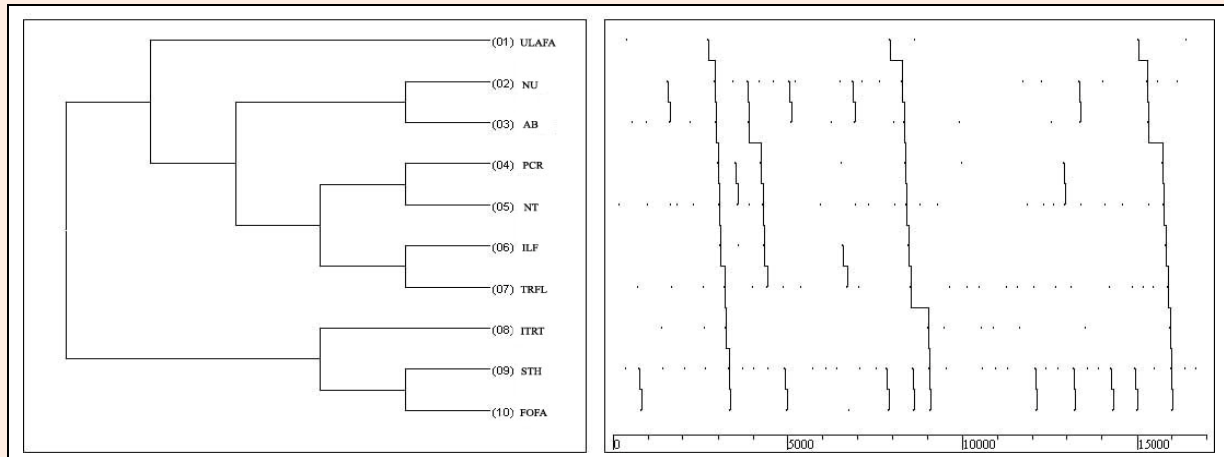


Figure 2. *Uki Goshi* dendrograme.

thus the *Uke's* body is not thrown down (by blocking it) over the *Tori's* hip's right side, but through the attacker's body's right side (STH), not existing a close contact with the *Tori's* right iliac crest.

According to what has been observed in the presented T-Pattern, it can be concluded that this last error is originated by the *Tori* following his opponent's body while it falls instead of blocking it (FOFA) and by the absence of a spin movement of his body in the *Tsukuri* stage (ITRT), a fundamental task in this hip throw.

The following dendrograme, Figure 3, shows the close relation that exists, as we pointed out before, between the incorrect position of the right arm during the initial stage of the throw (AB) and its lack of pull afterwards (NT)

Lastly, it must be emphasized that another important relation, not observed in the previous dendrogrames, is probably fundamental in order to determine the chain of errors and incorrect actions that lead to mistakes during the throw. As it can be observed in the next dendrogram, Figure 4, the existing relation between NBLC and STH, is high, since, every time the first error happens, the second one follows. Not blocking the opponent's hip (NBLC), which is the primary movement in this technique, leads to throw the *Uke* down through the *Tori's* side, following an

irregular trajectory (STH) instead of throwing the *Uke* down over the *Tori's* hip perpendicularly.

A Mann Whitney U Test found significant differences between males and females in the amount of observed mistakes in the *Uki Goshi* technique ($p < 0.05$). In the AB mistake (*Tori* puts his right hand under the *Uke's* body's left armpit, holding the dorsal region of his opponent's back in order to throw him down). Specifically, the highest percentage of mistakes was observed in the male participants.

It is not easy to justify the reason for this, but after a close observation of the videos, a possible explanation could be that males who make this mistake performed the technique with an *Uke* who was shorter than them. The difference in the partner's height makes it more difficult for the *Tori* to surround the *Uke's* lumbar region with his hand. Female participants performed the technique with a partner who was either similar in height or taller than them, thus reducing the chances of making the same mistake.

Discussion

As it was previously pointed out different researchers (De Knop, 1983; Gutiérrez and Prieto, 2007; Magil and

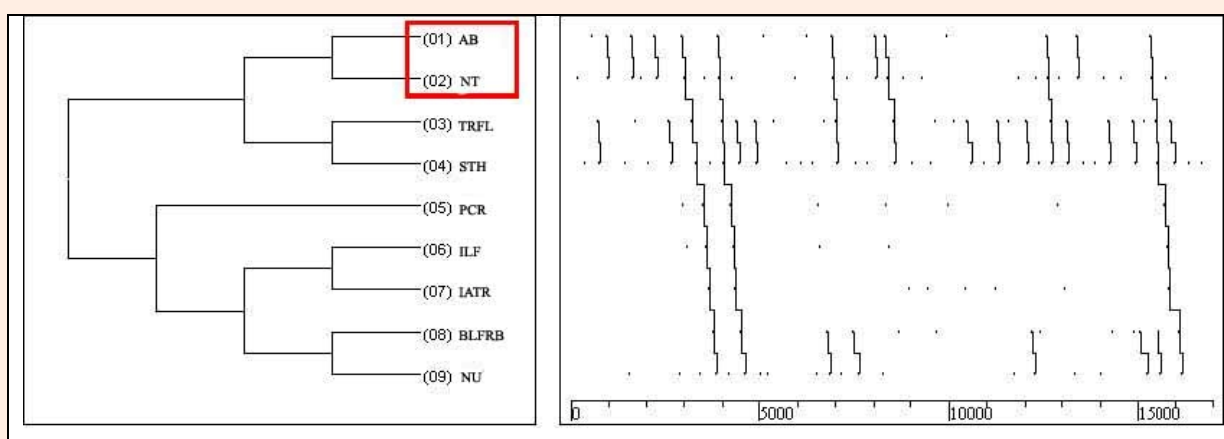


Figure 3. *Uki Goshi* T-Pattern associated to AB and NT mistakes.

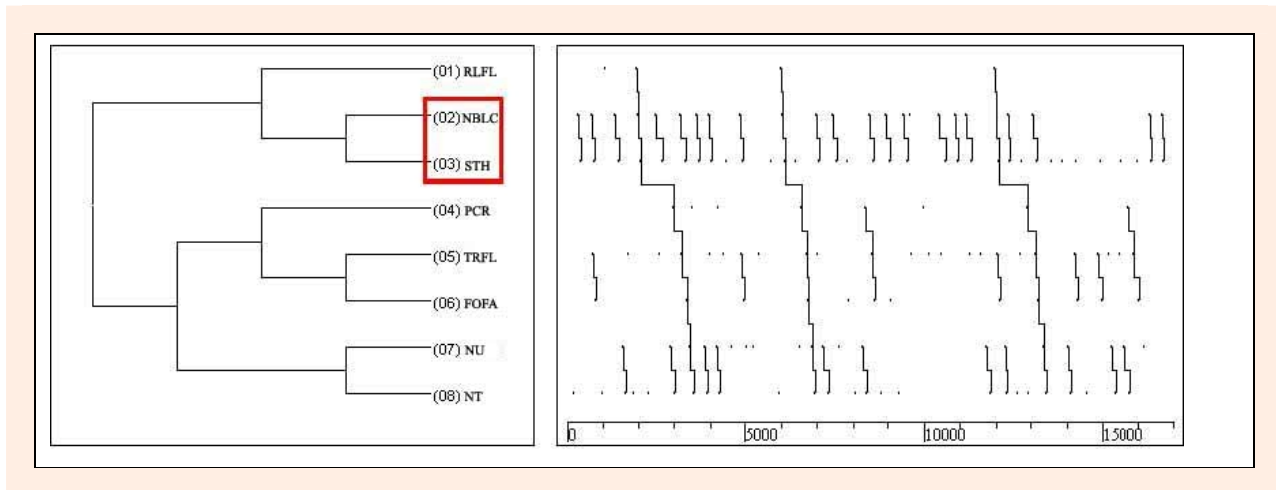


Figure 4. T-Pattern related to the observed mistakes NBLC and STH.

Schoenfelder-Zohdi, 1996; Newell and Walter, 1981; Pieron, 1976; Schmidt, 1988; Schmidt and Gordon, 1977; Schmidt and Lee, 2005) have dealt with the study of knowledge of performance (Schmidt, 1988) of the technique and particularly the technical mistakes made in it. However, there are very few scientific studies which have used observational methodology as a tool to obtain the best results in the early stages of the teaching learning process of judo (Gutiérrez and Prieto, 2006; 2007). In fact, after a long research in specific databases and specialized magazines, we did not find any article which focused on the *Uki Goshi* technique nor any scientific studies linked to the sequential analysis of judo techniques.

Several of the most prestigious judo experts do reflect in their works on the most essential points to describe the *Uki Goshi* technique and offer a specific section on technical errors. Their conclusions are probably based on their own personal and professional experience, and the typical mistakes observed in the current study coincide in many cases. For example, many of these authors point out as a fundamental aspect or frequent mistake the incorrect performance of the initial unbalancing movement with both arms forward after the *kumikata* (NU error) (Daigo, 2005; Inman, 1997; Kobayashi and Sharp, 1995; Kolychkin, 1989; Mifune, 2004). In a similar vein, some authors pay attention to the position of the *Tori's* right arm on the *Uke's* body (AB, AW, AWGR, SBGR and ALAP errors), and claim that the *Tori* must never hold the *Uke's* belt or judogi, he must firmly embrace his opponent's waist (Daigo, 2005; Kolychkin, 1989; Kudo, 1967; Ohlenkamp, 2006; Taira et al., 1992). In this particular case, we observed that it is an error which manifests itself frequently, especially referring to the position of *Tori's* right arm on the *Uke's* back's middle dorsal region, in more than 1 out of 3 of the analyzed participants (AB error).

Another group of authors consider the pulling of the *Tori's* free body inwards very important in order to attract the *Uke* towards his own hip's right side (NT) and block him with it (NBLC) (Kudo, 1967; Mifune, 2004; Uzawa, 1981). One of the most frequently observed mistakes in this technique's analysis is the lack of a left foot pivot during the final stage of the throw (used in the ini-

tiation in order to favour the body's spinning movement - FLFAT, PLFAT and ILFL errors-). Many of the most relevant consulted international authors agree that this spinning action is vital for the successful performance of *Uki Goshi* technique (Daigo, 2005; Kawaiishi, 1955; Kobayashi and Sharp, 1995; Koizumi, 1960; Ohlenkamp, 2006; Taira, Heguedas and Román, 1992; Uzawa, 1981; Watanabe and Avakain, 2001).

On the other hand, there are two key points in the technique which are conspicuously reflected, in the form of mistakes, in the videographic analysis. The first of them is the lack of a blocking movement performed with the *Tori's* hip on the opponent's body (NBLC) and the second one is related to the trajectory that *Uke's* body follows during the throw (STH). In accordance with the technical model's recommendations and following the premises of the world's most prestigious authors, the *Uke's* body must be blocked by the *Tori's* right iliac crest, and afterwards, he must be thrown down forwards over the hip, following a perpendicular trajectory (Daigo, 2005; Kolychkin, 1989; Ohlenkamp, 2006; Taira et al., 1992; Watanabe and Avakain, 2001).

One of the original aspects of this study which will provide information concerning chained technical mistakes in the *Uki Goshi* throw (that is, the existing relations among the different technical errors) is the analysis of the sequential patterns in the occurrence of mistakes in this technique.

Undoubtedly, one of the most important sequences found in this piece of research has been the existing relation between the lack of the *Uke's* body's block (NBLC) and the incorrect trajectory which the body follows during the throw (STH). The consulted bibliography does not mention this behaviour specifically, although most authors do point out the importance of the block in order to perform a successful throw (Daigo, 2005; Kolychkin, 1989; Ohlenkamp, 2006; Taira et al., 1992; Watanabe and Avakain, 2001).

It also seems relevant the existing relation between the incorrect positions of the *Tori's* right hand on the *Uke's* back (AB) and the deficient subsequent pulling inwards of the *Tori's* free body (NT). Due to biomechanical reasons, pulling the *Uke's* body towards the *Tori's* hip is more complicated from a higher position (the back)

than from a lower position (the hip). Both Kudo (1967) and Taira et al. (1992) in their section on most important points refer to this mistake specifically. Likewise, the other previously mentioned authors also explain the importance of embracing the dorsal region during this technique (Daigo, 2005; Kolychkin, 1989; Ohlenkamp, 2006).

Conclusions

After a statistic-descriptive-sequential analysis of the *Uki Goshi* technical errors and after a process of interpretation and discussion, this piece of research came to the following conclusions:

- The most frequent mistakes made by this study group in the performance of the *Uki Goshi* technique were: incorrect initial unbalancing gesture (NU), lack of proper right arm pull during the execution of the throw (NT), absence of a correct *Uke's* body's block on the *Tori's* hip (NBLC) and the *Uke's* body's throw through the *Tori's* side in the final stage of the technique (STH).
- Placing the *Tori's* right arm on the *Uke's* back's dorsal region during the *Tsukuri* stage was also another typical mistake (AB).
- Likewise, it was rather usual for these subjects not to take their left foot to the outer side of the *Uke's* same foot during the right foot's pivoting action (FLFAT and PLFAT).
- It was also observed that many pupils followed with their right arm the *Uke's* body during the final stage of the throw until he hit the floor (FOFA); and instead of spinning their trunk during the final stage of the technique, they bent it down (TRFL).
- As far as sequential behaviour is concerned, the most important pattern observed was the lack of the *Uke's* body's block (NBLC) and its subsequent throw by the *Tori's* body's side in the final stage of the technique (STH).
- Another important sequence was the one which related the *Tori's* right arm position on *Uke's* back's dorsal region during the *Tsukuri* (AB) with the absence of subsequent pull (NT).
- Taking into account the most global T-Patterns and the relation among the most frequent mistakes, a global sequence of *Uki Goshi* errors could be as follows: NU, AB, PCR, NT, NBLC, TRFL, ITRF, STH and FOFA.

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Key points

- In this study, the most frequent errors in the performance of the *Uki Goshi* technique have been determined and the existing relations among these mistakes have been shown through T-Patterns.
- The SOBJUDO-UKG is an observation instrument for detecting mistakes in the aforementioned technique.
- The results show that those mistakes related to the initial imbalancing movement and the main driving action of the technique are the most frequent.
- The use of T-Patterns turns out to be effective in order to obtain the most important relations among the observed errors.

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Appendix 1

Both judokas are facing each other in a natural position with a fundamental right-handed *kumikata*. The thrower (*Tori*) performs a forward unbalancing movement to the right with both hands, pulling with his left hand, which is placed at the opponent's elbow, specifically at the outer side of the sleeve, pulling at the same time the faller's body (*Uke*) towards his own with his right hand, which is placed on the imaginary line which links his shoulder with the judogi's lapel of the *Uke*, provoking the frontal-lateral unbalancing of his partner.

Next, the *Tori* performs the *Tai Sabaki* movement, putting his right foot forward next to the inner side of the *Uke*'s right foot; simultaneously, he places his right hand under the *Uke*'s left arm, firmly embracing the *Uke*'s hip with the palm. At the same time, he places his left foot further forward than his own right foot (about 30 cm in the sagittal plane) and in the outer side or even at the same level as the *Uke*'s left foot (frontal plane). From this position, with his back turned on his adversary, *Tori*, bending his own free body inwards, pulls *Uke*'s body towards his right hip. The central part of the *Uke*'s abdomen is situated on the right side of the *Tori*'s hip, therefore, the *Tori*'s hip must never stick out over the *Uke*'s hip. At the same time, without loading at any moment the *Uke*'s body on the *Tori*'s hip, and using the right foot as a spin axis, the *Tori* must put his left foot on the outer side of the *Uke*'s same foot (frontal plane) just in front of it (sagittal plane), performing a spin-torsion movement to the left of his body in order to throw the *Uke* forward (Taira, Herguedas and Román, 1992) (Figure 5).



Figure 5. *Uki Goshi* (floating hip) technique (Inogai and Habersetzer, 2002).

Appendix 2

Grip:

AGR. *Tori* grips with his left hand, during the execution of the throw, the *Uke*'s judogi by the middle part of the biceps brachii muscle.

FAGR. *Tori* grips with his left hand, during the execution of the throw, the *Uke*'s judogi by the middle part of the forearm.

Unbalancing:

LARU. *Tori*'s left hand unbalances to the right during the technique's *Kuzushi* stage.

NLU. *Tori*'s left hand maintains the gripping position, without performing any unbalancing action during the first stage of the throw.

NRU. *Tori*'s right hand maintains the gripping position, without performing any unbalancing action during the first stage or the throw.

NU. *Tori*'s right and left hands maintain the gripping position, without performing any unbalancing action during the first stage of the throw.

DU. The execution of the frontal unbalancing and the subsequent *Tai Sabaki* movement are performed without interruption.

UU. *Tori* performs an unbalancing action with both hands palms facing up when both judokas are in a natural gripping position.

Right foot position:

IRF. At the moment when the *Tori* is performing the *Tai Sabaki* movement to turn his back on his partner, he places his right foot on the inner part (frontal plane) of the position occupied by the *Uke*'s right foot and, at the same time, in the middle point situated between the *Uke*'s feet.

FRF. At the moment when the *Tori*, after the initial grip, performs a semi-turn around the longitudinal axis- *Tai Sabaki*- to turn his back on his partner, he places his right foot just before the *Uke*'s right foot (sagittal plane) less than 10 cm away.

ORF. When the judoka performs the *Tai Sabaki* movement with the purpose of turning his back on his partner, he places his right foot on the outer part (frontal plane) of the position occupied by the *Uke*'s same foot.

FIRF. When the *Tori* performs the *Tai Sabaki* movement to turn his back on his partner, he places his right foot on the inner part (sagittal plane) of the position occupied by the *Uke*'s right foot, although more than 10 cm forward (sagittal plane).

ITRRF. When the *Tori*, after the initial grip, spins around the longitudinal axis (*Tai Sabaki*) to turn his back on his partner, he places his right foot on the inner part (frontal plane) of the *Uke*'s right foot in a transverse manner (heel facing inside) modifying this position during the technique's performance.

ITRF. The *Tori*, after performing the *Tai Sabaki* movement to turn his back on his partner, places his right foot on the proper place according to the ideal technical model (sagittal and frontal planes) although transversally (heel facing inside) keeping it this way during the whole execution of the throw (Figure 6).

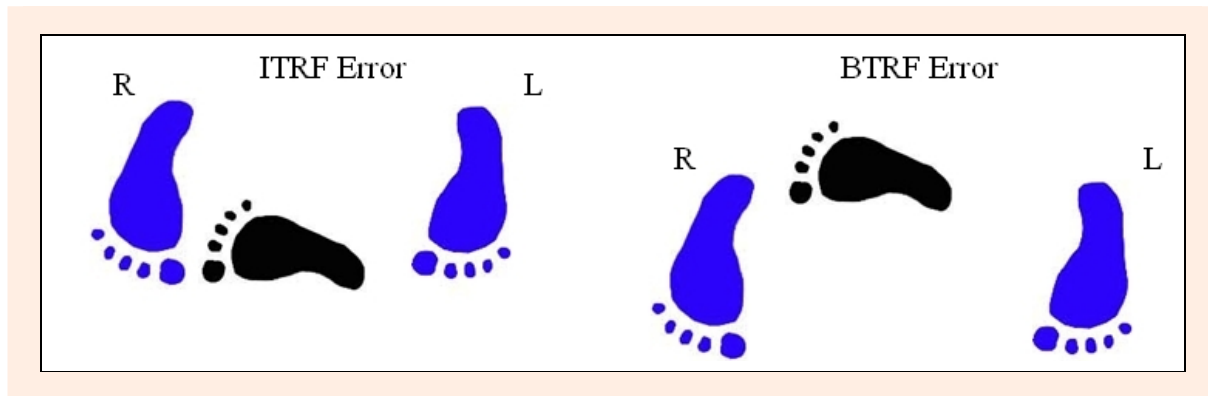


Figure 6. ITRF and BTRF *Uki Goshi* errors.

BTRF. After a spin around the longitudinal axis –*Tai Sabaki*- the *Tori* places his right foot behind the ideal position-sagittal plane- in a transversal manner (heel facing inside) keeping this position during the technique's execution, although in the correct place as far as the frontal plane is concerned (Figure 6).

FTRF. When the *Tori*, after the initial grip, performs a semi-spin around the longitudinal axis-*Tai Sabaki*- to turn his back on his partner, he places his right foot just before the *Uke*'s right foot (sagittal plane) in a transversal manner (heel facing inside), correcting the position during the technique's execution.

Right arm position:

AB. The *Tori* places his right hand under the *Uke*'s body's left armpit, embracing the dorsal region of his opponent's back to throw him down.

AW. The *Tori*, turning his back on the *Uke*, and putting his right hand under the *Uke*'s left armpit, places his right hand at his adversary's belt level, but in the middle of the body.

AWGR. The *Tori*'s right hand holds the *Uke*'s belt, performing a “fishing” action –*Tsuri*-, that is, pulling the belt upwards in order to throw him down.

SBGR. The *Tori* puts his right hand under the *Uke*'s body's left armpit, placing that hand on the left side of the *Uke*'s hip, without holding it at any moment.

ALAP. The *Tori*'s right hand holds the *Uke*'s left lapel, keeping that position for the whole execution of the throw.

Hip position:

OLSH. The left side of the *Tori*'s hip is outside the space between the *Uke*'s two iliac crests (frontal plane).

MRS. Despite the correct position of the *Tori*'s right iliac crest, there is an accentuated gap (sagittal plane) between the posterior part of the *Tori*'s left iliac crest and the *Uke*'s body's anterior left half during the second stage of the throw (Figure 7).

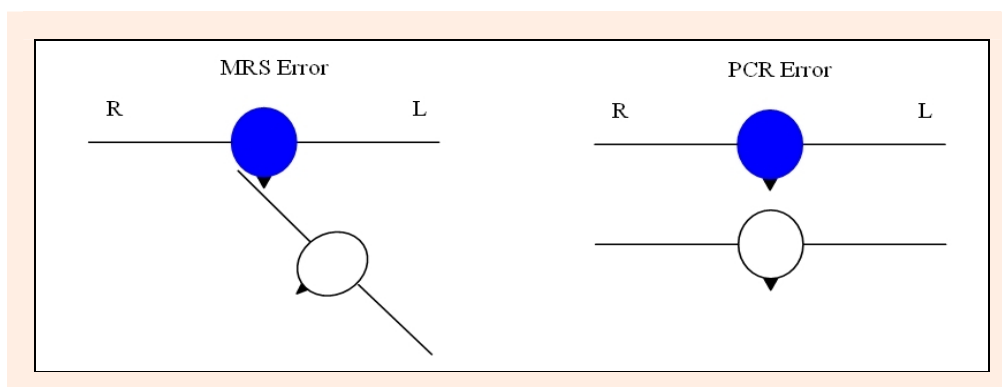


Figure 7. MRS and PCR *Uki Goshi* errors.

OMRS. The *Tori's* right iliac crest is situated in the middle part of the *Uke's* hip but his left iliac crest is separated (sagittal plane) from the left half of the *Uke's* body and outside the line of the *Uke's* feet (frontal plane).

TBP. Despite the correct position of the *Tori's* right iliac crest, there is a maximum separation (sagittal plane) between the *Tori's* right iliac crest and the *Uke's* body's anterior left half, so the *Tori's* body is perpendicular to the *Uke's* body.

PCR. The *Tori's* and the *Uke's* hips are facing each other (frontal plane) and parallel to each other (sagittal plane).

Right arm action (Figure 7).

NT. The right hand which surrounds firmly the *Uke's* hip does not carry out the action of bending the *Tori's* free body inwards, that is, it does not pull the *Uke* towards his the *Tori's* hip's right side.

Left foot position:

FLF. When the *Tori*, after the initial grip, performs a *Tai Sabaki* movement in order to turn his back on his partner, he places his left foot just before (sagittal plane) the technical model's ideal position, although less than 10 cm away.

FFLF. When the *Tori*, after the initial grip, performs the *Tai Sabaki* movement in order to turn his back on his opponent, he places his left foot before (sagittal plane) the technical model's ideal position, more than 10 cm away, but less than 30 cm. (Figure 8).

ILF. When the *Tori*, after the initial grip, performs the *Tai Sabaki* movement in order to turn his back on his partner, he places his left foot on the inner side of the *Uke's* same foot (Figure 8).

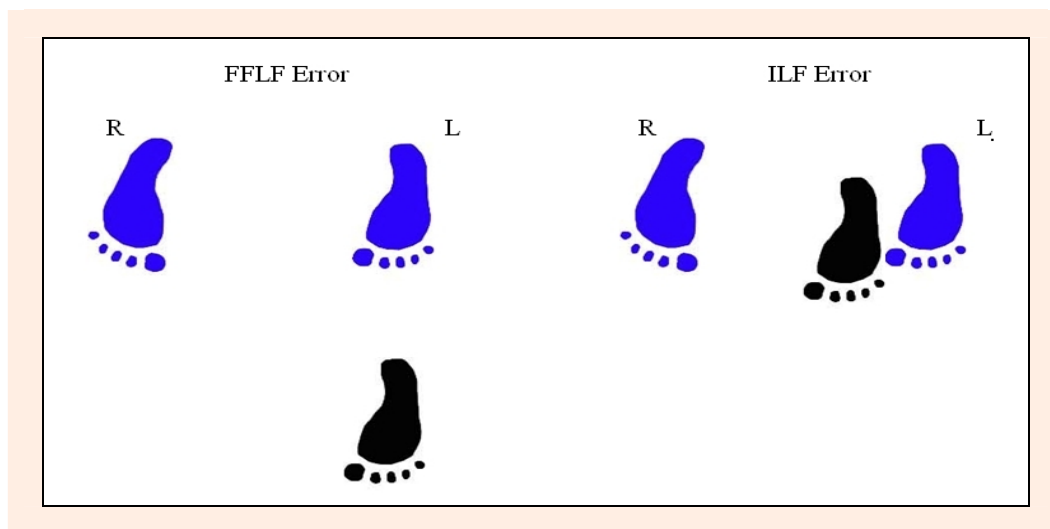


Figure 8. FFLF and ILF de *Uki Goshi* errors

FILF. When the *Tori*, after the initial grip, performs the *Tai Sabaki* movement in order to turn his back on his opponent, he places his left foot on the inner side of the position occupied by the *Uke's* left foot (frontal plane) and just before (sagittal plane) the *Uke's* foot.

FFILF. When the *Tori*, after the initial grip, performs the *Tai Sabaki* movement in order to turn his back on his partner, he places his left foot on the inner side of the position occupied by the *Uke's* left foot (frontal plane) but more than 10 cm forward (sagittal plane).

FOLF. When the *Tori*, after the initial grip, performs the *Tai Sabaki* movement in order to turn his back on his partner, he places his left foot in an accentuated way on the outside of the position occupied by the *Uke's* left foot (frontal plane) but no more than 30 cm forward (sagittal plane).

PILF. *Tori's* left foot stays in the initial position, despite the fact that the right foot starts the *Tai Sabaki* movement, spinning around itself without any displacement during the technique's execution.

OBLF. When the *Tori*, after the initial grip, performs the *Tai Sabaki* movement in order to turn his back on his opponent, he places his left foot on the outer side (frontal plane) of the *Uke's* same foot and slightly behind it (sagittal plane)

Leg action:

LFLEX. The *Tori*, in the final stage of the movement, when he is using his right foot as a spin axis to take his left foot to the outer zone of the *Uke's* same foot (frontal plane) performs a flexion and extension action with his knee.

LFL. The *Tori*, in the final stage of the movement, when he is throwing the *Uke* forward, bends his knees, keeping them in this position until the end of the technique.

RLFL. The *Tori*, in the final stage of the movement, when he is throwing the *Uke* forward, bends his right knee, keeping it in this position until the end of the technique.

FLFAT. The *Tori*, in the final stage of the movement, when he is using his right foot as a spin axis, keeps his left foot in front of the *Uke's* same foot, and does not take it to the outer side of the *Uke's* same foot (frontal plane).

PLFAT. The *Tori*, in the final stage of the movement, when he is using his right foot as a spin axis, and despite starting the movement with his left foot, does not take it to the outer side of the *Uke's* same foot (frontal plane)

ILFL. The *Tori*, in the final stage of the movement, when using his right foot as a spin axis to take his left foot to the outer side of the *Uke*'s same foot (frontal plane), leans on his left foot.

Blocking action:

NBLC. The *Tori*, during the technique's execution, does not block at all *Uke*'s body with his hip.

RLBLC. The *Tori*, when he performs the spin-torsion movement towards the left side of his body in order to throw *Uke* forward, uses his right leg to block the *Uke*'s body.

HLO. The *Tori*, when pulling the *Uke* towards his own hip's right side, loads him onto it and then throws him down.

Throwing stage:

IRATR. During the final stage of the throwing technique, *Tori*'s right arm does not pull strongly enough the *Uke*'s body towards the floor.

ILATR. The *Tori*, in the final stage of the technique, when trying to throw the *Uke* down, does not pull strongly enough with his left arm.

IATR. The *Tori*, in the final stage of the technique, when trying to throw the *Uke* down, does not pull strongly enough with his left arm, and his right arm does not exert enough strength to pull the *Uke*'s body towards the floor.

RAOT. The *Tori*'s right arm, instead of pulling the *Uke* towards his own hip's right side, takes him directly down against the floor (in an *Otoshi* manner)

TRFL. The *Tori*, during the final stage of the throw, bends his trunk down around 90°.

ITRT. The *Tori* does not turn his trunk left enough in the *Kake* stage of the technique.

STH. The *Tori* throws the *Uke* down through his body's side instead of performing this action over and in front of his hip (following a linear trajectory, perpendicular to the frontal plane itself) The *Uke* is thrown down and his body lays in a cross direction with respect to the *Tori* (parallel to the frontal plane).

Control stage:

FOFA. The *Tori*'s right arm follows the *Uke*'s body during the final stage of the throw until his partner's body hits the floor.

ULFA. During the final stage of the throw, the *Tori* does not perform any action with his left hand, therefore he does not control his partner's body's fall.

PTRFL. The *Tori* bends down 90° from the vertical during the final stage of the throw, keeping this position after finishing the technique.

Rebalancing manoeuvre:

BRFRB. After performing the throw, the *Tori*, as a rebalancing manoeuvre, leans his right leg backwards (sagittal plane)

FRFRB. The *Tori* loses his balance forward (sagittal plane) after throwing his partner, and corrects his position with the help of his right foot.

RRFRB. The *Tori* loses his balance to the right (sagittal plane) after throwing his partner, and corrects his position with the help of his right foot.

BLFRB. The *Tori* loses his balance backwards (sagittal plane) after throwing his partner, and corrects his position with the help of his left foot.

FLFRB. After performing the throw, the *Tori*, as a rebalancing manoeuvre, leans his left leg forward (sagittal plane).

Globality:

SLEX. The execution of the technique is slow and discontinuous.