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&

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„APPLICABLE RESEARCH IN JUDO“

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Hrvoje Sertić, Sanda Čorak and Ivan Segedi

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FOREWORD

Proceedings book of the 4th EUROPEAN SCIENCE AND JUDO RESEARCH SYMPOSIUM and the 3rd Scientific and professional conference on judo: „APPLICABLE RESEARCH IN JUDO“ is in your hands!

We would like to thank you for reading it and we do hope that it offers you a number of interesting research papers and judo scholars' works.

We would also like to take this opportunity to inform you about our two last conferences. The first one was organized two years ago by Croatian Judo Federation and Faculty of Kinesiology, University of Zagreb, during the period of European Cadet Cup in Zagreb. It hosted exceptional lecturers and guests, from Japanese Ambassador in Zagreb to the guests from Brazil. Although we were not satisfied with the number of those who attended the conference, the starting conference really raise the awareness of the need to connect judo researchers and practitioners as well as make a network of all those involved in research about judo.

The second one was organized as joint conference of European Judo Union, Croatian Judo Federation and Faculty of Kinesiology, University of Zagreb and we think that this kind of collaboration between international and national judo federation and academic institution was suitable for the main theme of our conferences – „Applicable research in judo“. In addition to standard podium and poster presentation, one conference day was dedicated to the practical presentations on tatami, which included guests from Japan and was interesting to many coaches, as the conference was one of the activities of Judo festival in Poreč.

Therefore, for the third conference we wanted to combine the efforts and knowledge of all three partner organizations and we again held the conference in Poreč, during the Judo festival. The main goals of the latest conference was to continue to gather all the researchers in judo and all the experts in the related sport fields like management, psychology, biomechanics, history, etc.

We are of the opinion that through organizing conferences we would like to continue to make stronger connection between theory and practice in judo and to establish a permanent network and communication of researchers in judo and all those who use research results. Our meeting at the conference, in order to share our knowledge, insights and experiences is important step in progress of judo.

Thank you all for coming and contributing to the development of the conference and your active participation and willingness to share your experiences with the same goal – to continuously improve the quality and value of our sport – JUDO!

Prof. tenure Hrvoje Sertić, PhD – Faculty of Kinesiology, University of Zagreb

Mrs. Jane Bridge-Charlot - EJU Vice-president

Sanda Čorak, PhD - Croatian Judo Federation president

CONTENTS

JUDO RHYTHM THROUGH MUSIC AND DANCE

George Bountakis, Mike Callan
University of Chichester, Chichester, United Kingdom

There is a link between judo athletes and dancers since they are both interested in kinesthetic awareness (Campos, González, Iglesias, & Dopico, 2001; Imamura & Johnson, 2003). This paper considers that dancers and judo athletes share a common understanding of body rhythm through the kinesthetic awareness in their training. More precisely, the paper goes on to propose a 10 step approach to the development of rhythm that can be applied by judo coaches.

Since ancient times, dance was the symbol of a conscious presence of life (Sharp & Oppé, 1924; Thorp, 1998; Werner, 2008). The human body is the tool of dance (Brown, Martinez, & Parsons, 2006). Dance is a ritual, for participation and not only a visual spectacle. Dance is a power that is beyond the meaning of words (Carter, 1998). Rhythm is a prime metaphor of our existence; at a time before visual art it was much more vital and needed. In ancient cultures all over the world, people can be observed dancing for religious practices. In Greece, Aristotle defined education as a mixture of music and gymnastics (Mikalson, 2010), while Socrates demanded for dance to be taught more widely, saying that 'They who honour the gods best with dances are best in war' (Mikalson, 2010). Plato wrote 'So the knowledgeable man can learn to sing and dance well' dedicating much of his consideration on the importance of dance education in his treatise of „Laws" (England, 2013; Nawar, 2014).

There is some evidence that rhythm is an element in every-day life (Browning, 1972; Stauffer, 2010). But there is a need for further studies to address why rhythm is important. People with developed skill of rhythm, move properly, breathe properly, beginning or finish work at the correct time (Goodridge, 1999).

One objective of judo training is the interaction of body and mind (Kano, 2005). Dance training as well as judo provides experiences that have as their ultimate goal the attainment of a skillful body (Iermakov, Arziutov, & Jagiello, 2016). Through the effort of training, a heightened awareness and control of the body can be gained, something very significant for the judo athlete. Rhythm is found in the culture of many countries, in Japan in performance arts such as music and theatre (Myung Whan, 2013), in Greece in Zorba's syrtaki dance (Theodorakis, 1966), through walking in Japanese judo (Kotani, 1970) and in Greek wrestling (Martell, 1993).

The proposed 10 Steps to approach Rhythm which the research will assess are:

Step 1. Ayumi-ashi and tsugi-ashi going forward and backward (hokyo game)

Step 2. Tai-sabaki - grip - body – tandoku-renshu (learning game)

Step 3. Tai-sabaki in pairs (tori leads - uke follows)

Step 4. Side okuri-ashi-barai and yoko-tomoe-nage (with partner)

Step 5. Hikidashi and grip (tempo with clapping and rhythm with music)

Step 6. Moving hikidashi (distance and rhythm with music)

Step 7. Static uchikomi with 1 meter distance (osoto-gari at the same time)

Step 8. Moving uchikomi (combination and rhythm)

Step 9. Cyclic uchikomi (learning game)

Step 10. Nage-no-kata (rhythm and time with music)

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VALUE OF NAGE-NO-KATA: ANALYSIS OF MOTORIC MOVEMENT AND PRINCIPLES WITH THE GOAL OF TEACHING APPLICABILITY OF THROWING TECHNIQUES IN SIMULATED COMBAT SITUATIONS

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Nage-no-kata together with katame-no-kata make up the randori-no-kata (Otaki & Draeger, 1983). The reason why is called randori is in their creation forms of learning techniques and principles for exercising randori (free exercise). Although this role is often emphasized, today the nage-no-kata is commonly exercised for examination or as a discipline in the kata competition. The value of learning nage-no-kata is emphasized from the very foundation of the Kōdōkan Judo and founder Kano Jigoro (Kano, 2005), and later of the great teachers and judo champions (Kawaishi, Gailhat, & Harrison, 1957; Kotani, 1970). In order to realize the true value of nage-no-kata it is necessary to scientifically handle the elements that are in direct correlation with the application in randori or shiai. Nage-no-kata uses a number of important structural elements of judo useful for learning judo.

This paper contains an analysis of technical circuits between the reaction of uke and tori action in five selected techniques from each set of nage-no-kata, to establish the critical part of the technique and method of reaction between tori and uke. This analysis will show similarities with identical movements during practicing randori or shiai. The selected techniques are; seoi-nage, uki-goshi, okuri-ashi-barai, ura-nage, and yoko-guruma.

At first, Kano emphasized randori, but then realized that students needed kata, a „grammar" that would help them build a balanced approach to training. Also, kata provided Kōdōkan members with a safe method for practicing the techniques prohibited or not practical in randori (Kano, 1986; Stevens, 2013).

Apart from randori, kata practice is also an important part of the judo curriculum (Bennett, 2009). Each kata was developed over many years by ancient masters (Mifune, 1956), and it is recognised that kata is very good for learning judo theory (Yamashita, 1993). Randori alone can make it difficult for students to develop a wide variety of techniques due to the resistance of opponent. A study of kata will provide a stable basis for judo (Ishikawa & Draeger, 1962).

Analysis of the movements of tori in each of the techniques encompassed:

- Using actions of uke for sabaki, kumikata, kuzushi
- Performing kuzushi in the key part of technique
- Achieving proper tsukuri

The solutions for the phase of uke reaction include:

- Attack techniques, sabaki, shisei, kumikata, kuzushi
- Body reaction on tori technique
- Ukemi

Table 1: Techniques, and overview of reaction of uke and tori

TECHNIQUE	UKE REACTION	TORI ACTION
seoi-nage	• The body and arm block	• Lowers the centre of gravity and pulls
uki-goshi	• Body	• Maintains position and attracts uke
okuri-ashi-barai	• Movement	• Clears unstable part of the body
ura-nage	• Body and block	• Pulls the focus of uke
yoko-guruma	• Block and neck control	• Rotates up and descent in

By comparing the principle of the initial reaction of uke to attack tori, a great similarity in finding solutions of tori to perform the action can be seen. Understanding the critical moment of the reaction of uke is crucial for understanding the teachings and values of nage-no-kata. Learning nage-no-kata without proper actions and reactions completely loses the meaning of the exercise.

Through a structural analysis of techniques in nage-no-kata and comparison of the key parts with an emphasis on the critical moments of the reaction of uke, tori comes into a position to prevent the execution of techniques, it can be explained by tori finding solutions which will result in the successful performance of the throw. Each individual technique in nage-no-kata contains all of these elements and by discovering, clarifying and learning can be very effectively applied to other techniques. The principle of action and reaction between tori and uke and the capability of finding solutions illustrates the constant value of nage-no-kata as a means of training in judo.

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HISTORY OF THE BUDOKWAI, LONDON; THE ADOPTION OF KŌDŌKAN JUDO IN THE EARLY YEARS

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2018 marks the centenary of the opening of the Budokwai in London, billed as 'Europe's oldest and most prestigious judo and martial arts club' (Budokwai, 2017). This paper explores the early origins of the Budokwai, and its adoption of Kōdōkan judo.

The Budokwai, opened on Saturday 26 January 1918, occupying two empty shops at 15 Lower Grosvenor Place, London SW1 close to Buckingham Palace. Koizumi Gunji had leased the former dressmaker's premises from the landlord's agents on 19 December 2017, and promoted the new society through the Japanese newspaper, Nichi-Ei Shinshi. The society was formed as a martial arts and cultural club for the Japanese in London, and any westerners who showed an interest in Japanese culture.

The first member was Ouchiyama Masami, and the society gained 14 members in the first five days, and by the end of February the numbers had swelled to 36 (Budokwai, 1929), paying the membership fee of £3.

During early 1918 London was subject to First World War night-time bombing raids (Johnson, 2017), and in the middle of the practice on 28 January they could hear the air raid and the booming of guns. 1918 also marked a turning point for the efforts of the women's suffrage movement, when the Representation of the People Act received Royal Assent on 6 February 1918, and women over the age of 30 were given the right to vote (Crawford, 2006).

Koizumi had previously visited the UK in 1906 - 1907, returning from America in 1910, just before the Anglo-Japanese Exhibition in White City. In 1906 Koizumi was briefly engaged as an instructor at the 'Kara Ashikaga School of Jiu-jitsu' in Liverpool, where he met Uyenishi Sadakazu (Raku) and Ohno Akitaro (Daibutsu), who were performing in the music halls (Uyenishi, 1906). Uyenishi introduced him to William Garrud, and he moved to London to teach at the Piccadilly School of Ju-jutsu in Golden Square (Lister, 1965). There Koizumi taught alongside Uyenishi, Ohno Mitsuyo Maeda and Tani Yukio. Ohno and Maeda introduced Koizumi to Kōdōkan judo (Koizumi, 1965).

Initially all the Budokwai early members were Japanese. Tani Yukio is member number 17. The first lady member was Miss Katharine White-Cooper, number 60 who joined in April 1919, shortly before Ernest Harrison, number 64, who joined in May 1919 (Budokwai, 1929).

In the initial months, the Budokwai did not use the term judo. An advertisement in Health and Strength states 'Budokwai (Knighthood Club) for Ju-jitsu' (Budokwai, 1918). Utilising original archival material, the paper shows how the principles of the society changed. In February 1918 they do not mention judo, but included; 'Be earnest in pursuance of Budo, but never boast'(Editor, 1918). The committee meeting of 29 November 1919 approved one of the principles as; 'Never boast or misuse one's skill in JUDO or other arts' (Budokwai, 1931).

Keen to expand the membership, the first Annual Display was held at the Budokwai premises, on 11 May 1918, attracting about 100 visitors, including Consul General Yamazaki (Bowen, 2011). The first mention of the word 'judo' in the dōjō diary is found on this date (Budokwai, 1931).

The paper outlines the role of William E. Steers in encouraging the fledgling society to adopt Kōdōkan judo. Steers had met Koizumi at the Golden Square School in 1906 (Wolf, 2010). During a visit to Japan in 1912 he was awarded shōdan by the Kōdōkan. He joined the Budokwai on 29 November 1918, and by the end of the year had taken on the role as Honorary Secretary.

On 21 December 1918, Steers gave a lecture at the Budokwai 'A perfect manhood and judo of the Kōdōkan'. The lecture was heavily promoted and was reported in the Sunday Times (Budokwai, 1931).

Ernest Harrison had also studied Ju-jitsu (Tenshin Shinyo-ryu) in 1897 at the Hagiwara Ryoshinsai dōjō in Yokohama, before he moved to Tokyo and gained a shōdan at the Kōdōkan.

Both Steers and Harrison were strong advocates for Kōdōkan judo (Shortt & Hashimoto, 1979). In May 1919 Harrison wrote a piece for Health and Strength Magazine, entitled 'The Art of Judo' (Harrison, 1919). Thanks to arrangements by Steers, on 15 July 1920 Professor Kanō Jigoro accompanied by 4th-dan Aida Hikochi arrived at Waterloo Station at midnight, and were met by Koizumi and Steers. Kanō was in Europe to attend the Antwerp Olympic Games in his role as a member of the International Olympic Committee (Bowen, 2011). In December 1920 at a yudanshakai held at the Budokwai, Kanō awarded 2nd dan to both Koizumi and Tani (Budokwai, 1931).

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POSITION AND ROLE OF JUDO SPORTS IN THE REPUBLIC OF CROATIA

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Judo sport exists in Croatia since 1951 and it has experienced a great expansion in these 65 years. Starting as a sport which, along with ju-jitsu, was timidly promoted in the 50's of the last century, it turned into the sport which is simultaneously transmitted by multiple national and international TV stations during the GP competition or the European and World Championships.

Judo as a sport has been a part of the educational system for a long time, since it is extremely beneficial for the overall motor and functional system development. The largest step was taken in 2005, at the moment of the formation of Croatian national education standards, when judo was implemented into teaching topics of Physical Education courses from the fifth to the seventh grade, including 4-5 topics per class for girls and boys.

In high school, some elements of judo are taught in the form of self-defence, while at the University level, judo is offered as an organized physical activity within the course of Physical Education in the first two years of study.

At the Faculty of Kinesiology at the University of Zagreb, judo has been a compulsory subject since 1965 and must be taken by all students on the second year of study, in the 75-hour framework. Judo is a one-term subject which includes 15 hours of theory, 30 hours of theoretical practical lessons, and 30 hours of practical exercises.

Training for the coaching qualifications necessary to meet the legal requirements for working in clubs and sections is organized and implemented, from the level of training (via the IJF Academy, and the Croatian Institute for Kinesiology) to the coach training, in accordance with the Bologna process teaching organization that lasts 3 + 2 years, in which a student can gain 300 ECTS credits (180 + 120).

In addition to judo (75 hours) being a regular subject of the Faculty of Kinesiology, a student can acquire additional coaching qualifications equivalent to the Bachelor coaching profession (180 credits). Having completed three years of study, it is possible to continue with a two-year long professional JUDO study programme.

Recently, numerous bachelor and master's thesis, as well as PhD thesis dealing with judo topics have been written at two Croatian universities of Split and Zagreb where the Kinesiology courses can be taken.

Croatian Judo Federation has organized a number of competitions and events related to judo, including coaching and college seminars, European Championship, Cadet EC, and senior GP. Furthermore, Croatian Judo Federation, in cooperation with the Faculty of Kinesiology and the European Judo Union, organizes scientific professional conference/symposium for the third year in a row. In above mentioned scientific segments, Croatian judo members have won awards and achieved significant results.

In Croatia, we have won 4 gold medals from the World Championships (3 junior and a cadet) and several titles in junior and cadet championships and European championships. Recently, we have won a number of individual senior women's and men's medals, as well as a women's team medal…

Judo was introduced into schools as an additional and optional physical activity, and ever since has achieved a great success in educational, sporting, recreational, scientific and organizational aspect.

All these facts would not be so interesting if they were not related to the country with only about 4 million inhabitants and 8000 registered judo members.

Due to the dedicated work of athletes, coaches, and staff, judo in Croatia is today well known among leading statesmen of the Republic of Croatia, who enrol their own children in judo at a very young age.

IS THERE A DIFFERENCE BETWEEN YOUNG JUDOKA AND TAEKWONDO ATHLETES IN SOME DIMENSIONS OF SOCIAL SUPPORT

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ABSTRACT

Since judo and taekwondo as sports in the area of martial arts are quite similar in the field of functional and motor abilities, it will be interesting to see whether they are so similar in the area of social support. The goal of this study was to examine is there a difference between young judoka and taekwondo athletes in some dimensions of social support. 182 participants all young men aged 13 to 15 years from Bosnia and Herzegovina, of which is 91 from judo and 91 from taekwondo were subjects of this research. Scale of social orientation (Crnjac, 2017) with three dimensions of social support (coach praise, friendship, group acceptance), is used in this research. Univariate analysis of variance (ANOVA) was used to compute the statistical differences between groups. The results shows that were not significant differences in all three dimensions of social support, between the young judoka and and taekwondo athletes (p-0,698). In this study, judo and taekwondo did not differ across these types of social orientation.

Key words: judo, taekwondo, social orientation

INTRODUCTION

Physically active youth have opportunities to build social relationships, develop positive self-perceptions, and adopt self-determined forms of motivation (Weiss, Amorose & Wilko, 2009). Based on theoretical work Urdan and Maehr (1995), and empirical research by many other (Hayashi, 1996; Nicholls and Järvinen, 1996; Lewthwaite, 1990; Schilling and Hayashi, 2001; Whitehead, 1995) social orientation separated from the goal orientation and reflects the social relations that are established within parts of the social environment as well as in the work Stuntz and Weiss (2003). Our teammates, friends, parents, and coaches influence how we play and think about sports. What might not immediately emerge as a concept, and largely describes martial arts, is that it is individual sports and that athletes in combat are largely dependent on their personality, knowledge, abilities and abilities (Segedi & Sertić). Judo and taekwondo belong to the group polystructural acyclic sports, with Judo belongs to acyclic activities wrestling character (Segedi at all. 2011). Taekwondo is a popular and commonly practiced Korean martial art characterised by its emphasis on dynamic kicking techniques delivered from a mobile stance (Lystad at all. 2009).

The goal of this study was to examine is there a difference between young judoka and taekwondo athletes in some dimensions of social support.

MATERIAL AND METHODS

This study has 182 participants from Bosnia and Herzegovina, of which is 91 from judo and 91 from taekwondo. They are all young men aged 13 to 15 years. The Social goal orientation scale by Stuntz and Weiss (2003), consisting of three subscales measuring coach praise, friendship and peer acceptance, was translated to Croatian and extended by an item for each subscale. It consists of three subscales; each of them have five items with responses on a five-point Lickert-type scale (1 = strongly disagree, 5 = strongly agree). The scale was translated and modified

by D. Crnjac for his doctoral research (Crnjac, 2017) conducted on the samples of athletes from combat sports. The scale has 18 variables, which represent three dimensions of social support. The first dimension coach praise have 6 variables, and represents coach support. The second and third dimension represents peers. Friendship (6 variables) and group acceptance goal orientations also (6 variables). The first dimension coach praise, is related to the approval of these coaching and support provided by the athlete, particles like. „My coach praising my performance" or „When I'm good at my coach told me that I did a good job. The second dimension friendship. Particles, „I have friends comrades who truly understand me" or „My friends encouraged me to strive together when I make a mistake,". Third dimension under the group acceptance. „The children of my club carefully listen to what I say," or „My comrades called me often to hang out with them," the two particles from 6 to represent this dimension of peer support (Crnjac & Bosnar 2017).

The data analysis was done by means of the statistical package Statistica 13. Upon confirming the significance, the pair-wise univariate analysis of variance (ANOVA) was used to compute the statistical differences between a group of young judoka and and taekwondo athletes in some dimensions social support.

RESULTS AND DISCUSSION

For all three dimensions the basic descriptive parameters were computed: arithmetic mean (Mean) and standard deviation (SD). Normality of distribution of the variables was tested by means of KolmogorovSmirnov test at the error level of 0.05.

Table 1. Descriptive Statistics

Variable	Valid N	Mean	max D	K-S p	Std.Dev.	Skewness	Kurtosis
SOT	182	3,822	0,105	p < ,05	0,734	-0,802	0,543
SOV1	182	3,810	0,094	p < ,05	0,839	-0,822	0,966
SOV2	182	3,600	0,092	p < ,05	0,830	-0,646	0,334

Legend:CP-coaching praise FO- friendship GA- group acceptance N- number of respondents, AS- arithmetic mean, K-S – Kolmogorov–Smirnov test, SD- standard deviation, Skewnes- the degree of symmetry, Kurtosis – the degree of peakedness

The descriptive parameters obtained are presented in Table 1. Descriptive statistics shows that social support and in both martial arts (judo and taekwondo) is high. Across statistical analysis, ANOVA, we'll determine whether there are differences between social support young judoka and taekwondo athletes.

Table 2. Results of ANOVA

Effect	Value	F	ffect df	p	Partial eta-squared
Intercept	0,025	2238,771	3	0,00000	0,974
Judo/Taekwondo	0,992	0,477	3	0,698	0,007

Legend: df-degrees of freedom, Judo/Taekwondo – significance differences between grups, F- Test, p- level of significance, partial eta-squared – measure of effect size

ANOVA (Table 2) helped to identify the differences between arithmetic means of two grups in 18 variables, which represent three dimensions of social support (coach praise, friendship and group acceptance). The results of this research shows that statistically significantly difference between the young judoka and and taekwondo athletes does not exist (p-0,698). Since there were no statistically significant differences, then we did not do further

analysis. Coaches and peers are an important part of social environment. In this particular age of 13-15 years, children usually leave the sport and social support is important to stay in the sport. Social support coaches and peers is extremely importantis one of the key factors to ensure young people remain in the sport, as the results show (Table 1). If coaches and peers create a good social environment, it is very likely that they will stay in the sport (Ullrich-French & Smith 2009).

CONCLUSION

Judo and taekwondo differ widely but in this research their differences do not exist in the form of social orientation. On a sample of young boys aged 13-15, the results did not show significant differences between these two martial arts. Future research should involve more social goals and increase the pattern of both sexes.

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CONCEPTUAL FRAMEWORK ON WOMEN PARTICIPATION IN JUDO

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INTRODUCTION

Statistics conducted in many national sports federations, not only in Croatia but worldwide, show a significantly lower involvement of women in different sport positions, especially in terms of management positions (Skirstad, 2009; Borko, 2012; International Olympic Committee, 2017; Rendulić, Sindik i Čorak, 2014). Despite increased participation opportunities for girls and woman in sport, they are still underrepresented in leadership positions at all levels of sport (Burton, 2014). Based on such statistics, the most common conclusions are made regarding all sports organizations with the aim of encouraging greater involvement of women. The task of this paper is to establish a conceptual model that allows analysis of women's inclusion in sports as well as analysis of factors influencing this involvement depending on positions that woman in sports are engaged in. Such a very simple model with the help of statistical data on the share of women and their positions allows for more concrete conclusions about the activities that individual organizations can take to increase women's involvement and to remove barriers for attracting and retaining women in sports.

CONCEPTUAL MODEL - AN EXPLANATION

Various analyses show that data on involvement of women in the sports, i.e. on functions/occupations such as trainers, referees, administrative sport officials, are continuously collected. Based on this, conclusions are drawn on the need to increase the share of women, regardless of the tradition and reputation of individual sport.

The conceptual model addresses three areas of women's involvement in sport. The first level encompass the greatest involvement and usually means their competitive status, i.e. participation in sport as a competitor. The next level is the field of professional work and most commonly involves work as a coach or referee (more often a volunteer function). Regardless of this, the athletes, after completing their sports career, usually have the possibility to participate in sports in one of the leading positions, i.e. as club president or to participate in various commissions on a regional or national level.

There are numerous „drivers" or influencing factors in each area. When it comes to attracting woman in sport (the first level of involvement), „drivers" are from various sources, so influential factors could be friends, schools community, local communities, promotion by clubs, national federations, International federations, various media and social networks. Given a large number of possible influencing factors in this level of involvement the potential for influence of national sports federation is somewhat smaller. But when it comes to second level of involvement dealing with professional positions (coaches, administrative), sports clubs and national federations of a particular sport can have a much greater influence of attracting and retaining women. It is similar to the third level, but when it comes to leadership positions they greatly depend on the stage in the life cycle of the woman as well as personality traits. All those who can influence should provide the appropriate conditions according to individual needs.

CONCLUSION

As explained above, the conceptual model explains the factors influencing the position of women and generally indicates that national federations can influence far more the retention of women in sports. This suggests that

statistics on the proportion of women at each level of involvement indicate the success of particular sport federation. For example, if in a sport-judo the share of women in the competitive population is about 25%, and that share is significantly reduced in other levels. It means that all sport organizations i.e. sport clubs and federations were less successful in retaining woman in comparison with those who have same share of woman in all levels of involvement.

Due to the usual considerably greater decline in the number of women taking place even during the competition period, continuous activities of promoting and attracting women to sports are needed. The national federation, as well as the international federations, is trying to reduce the decline in the number of women and maintain a similar ratio of women and men from the competitive period onwards. To begin with, there is a need for establishing data base on the number of women in each of the above mentioned level of involvement in sports.

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THE LEVEL OF AEROBIC CAPACITY AND SPECIAL FITNESS TEST RESULTS IN FEMALE JUDO CONTESTANTS DURING TWO SEASONS

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Aim of this study was to evaluate and assess relationship between aerobic power, Special Judo Fitness Test (SJFT), some structural properties (fat percentage, body mass index), technical (qualitatively performed throws) parameter and final result in national championship 2015-2016 in the end of preparatory period and they changes after one year in Lithuanian national female team contestants.

Subjects and methods. Twelve Lithuanian national female team judo athletes [age 20 (±3,04) years, body mass 66,88 (±9,72), height 1.70 (±7,78) m, body mass index 23,25 (±2,64) kg·m-2 and body fat 22,448 (±5,15)] performed exercise test in treadmill. The SJFT was used to evaluate the current level of fitness preparation of the judoka in the end of preparatory period. The following variables were quantified at SJFT: throws performed during series A, B and C; total number of throws; heart rate immediately and 1 minute after the test and SJF test index.

Results. The maximum oxygen intake per minute during their effort on the treadmill amounted on average to 40,88 4,69 ml/kg/min and 44.02 5.15 ml/kg/min after aerobic exercise increase in training program. The Special Judo Fitness Test related with V02max. We found that increasing aerobic training improving V02max results while improving SJFT index as well. There was also a statistically significant decrease in fat body mass after training program was modified.

Conclusion. It was pointed out in the conclusion to this study that the SJFT could be alternatively used to evaluate the effort tolerance in judoka, especially under circumstances where the laboratory facilities are not available for coaches during training.

Based on the studies recommend trainers to modify the training program with increasing aerobic loads, because it positively affects specific athlete preparedness and reduces body weight in fat mass.

SUCCESSFUL TRANSITIONS TO NEWAZA IN A SAMPLE OF HIGH LEVEL JUDO COMPETITION

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ABSTRACT

Purpose: was to determin the key factor of a successful transition in a judo fight.

Methods: A total of 372 transition situations in a sample of high level judo competition was analyzed. The most important variables were winning in ne waza, and the transition.

Results: There was a increased probability of winning in ne waza when the transition is controlled by the judo-athlete and the duration of the ground fight is about ten seconds.

Conclusion: Coaches have to train the athlete in the transition situations technically, tactically and physically, to control always this phase, arriving in a dominant position after every tachi waza action. With the skills and the energy to continue the fight on the ground every time there is a transition opportunity, to try to gain quickly a ippon with ne waza techniques.

INTRODUCTION

„Transition in judo fight is the situation when, at least, one of the two fighters touch the ground (tatami) or with the central area of the body (trunk, hip) or the extremities (hand, elbow, knee) longer enough to go to fight in ne waza." (IJF 2014). Transition is a phase of Judo fight with kumi kata, tachi waza and ne waza (FFJJ 1985). Despite the importance of the transition situation there are very few studies that examined the transition (Roux 1990; Weers 1996; Paillard & Calmet 2010, Pierantozzi et al. 2016). When the first author was an athlete she practiced this fight phase and thank to her skills in this segment she won important fights, sometime against opponents stronger than her in tachi waza. We know that the best judo player more than good in the four areas, (kumikata, tachi waza, transition and ne waza), with the best combination will prevail (FFJJ 1985). The top level judoka in transition phase is that who is able to adapt himself/herself to all situations, and knows how to use the attack of the opponent in tachi waza to link to the ground (Roux 1990). How are the transition situations today? How many times the judo-player continue to fight in ne waza, when he/she is in a dominant position in transition, when a lot of rules are changed in the last Olympic cycle? Are there any difference between the stronger nations in ne waza? To answer to all these questions we analyzed some fights of the stronger judo athletes of 2017 and some effective transitions in a sample of high-level judo competition.

METHODS

To pursue our goal we selected one of the main competitions this year, Paris Grand Slam 2017, and analyzed (tab.1):

1. all the transition situations of ten gold medalists (7 males and 3 females; age 21 + 3 years), during the matches they fought to win the competition.
2. all the successful transitions ended with a score in ne waza during the whole Grand Slam.

Table 1: Number of transition situations analyzed

Transitions	M	F	TOTAL
Gold medal matches	191	85	276
Successful	52	44	96
TOTAL	243	129	372

To understand this phase we chose some transition variables (Pierantozzi et al. 2016):

- action typology and score in tachi waza;
- who started and who controlled the transition (winner vs looser);
- number of times where transition finished in ne waza fight;
- number of times where ne waza fight finished with a score;
- duration of the different transition situations and duration of the fight;
- ne waza score technique.
- body position of the dominant and the dominated judo-player at the beginning of the transition;
- the passage typology to arrive to the score technique in ne waza.

RESULTS

We analyzed 372 transition situations, 276 occurred during the 46 matches of the ten gold medalists, almost 6 throwing situations during each fight, one event to the ground almost every 30 seconds. The average duration of these fights was 3min13s + 1min34s.

Analyzing the 276 throwing situation of the Gold medal winners

- 18 ippon (7%), 31 wazari (11%, where 2% of these happened during golden score), 227 no score actions in tachi waza (82%: 74% nothing, 7% kinza, 1% shido);
- winner determined the action to the ground in 61% of the occasions, while the defeated athlete determined 39%

Considering who controlled the transition situations:

- winner controlled 45%, while defeated athlete controlled 24%, and 31% were not controlled by anyone;

Analyzing the ne waza phase:

- 31% of the fights continued to ne waza, 22% was the winner who decided, 9% was the defeated athlete;
- little more of 2% of the ne waza fights finished by a score (only 6 ippon in newaza: 5 osae waza, 1 kansetsu waza);
- 69% of the transitions stopped before ne waza phase (in 28% of situations the referee commanded matte, 22% winner decided not to continue, 13% defeated athlete decided not to continue; 6% immediate standing of the judo player);
- the average duration of the transition without continue in ne waza was 3 + 2 s;
- the average duration of the ne waza fight before the score situation was 19 + 10 s; the duration of the five osae waza was, for all, 20 s.

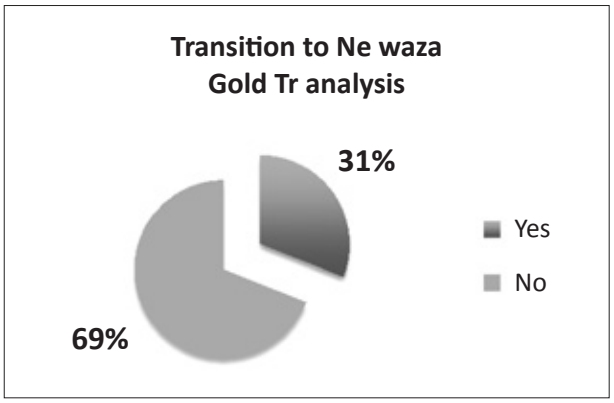

Fig. 1: Percentage transition phase continued or not to ne waza phase

The results of our second analysis, concerning all successful transitions during the 451 contests of Paris Grand Slam, were:

- 96 fights had a score in ne waza (52 male combats, 44 female combats) thanks to 78 different judo players among the 409 who competed;
- in general we had 92 fights of 451 (20% of all contest) won by ippon on the ground (16% osae waza, 3% kansetsu waza, 2% shime waza).

Considering who started and who controlled the effective transition situations:

- winner determined the action to the ground in 80% of occasions, while the defeated athlete determined 20%;
- winner controlled the transition in 94% of occasions, defeated athlete only 4%, and 2% were controlled by anyone.

Analyzing the ne waza situation:

- the most two common body position of Tori during transition to ne waza was „directly from tachi waza technique to ne waza score position" (46%) and from „stand position" (28%);
- the three most common positions of Uke during transition to ne waza was supine (33%), four supports and prone (20% for each);
- 40% of the time the winner utilized a successful passage to win the defensive position of the opponent (in four support or prone position) and lead him/her in a osae waza techniques, and in the 17% of the situations had to free also the leg to score in ne waza;
- the average duration of the ne waza fight before the score solution was 10 + 10 s and the average duration of osae waza was 19 + 1 s.

Among the 61 countries taking part to the competition, almost 30 nations had an athlete who won a fight in ne waza. Analyzing the first two medalist ranked nations, Japan and Korea, both had competed in Paris with 19 athletes. Japan, the first in the medal ranking (7 gold, 4 silver, 2 bronze, 1 fifth), had 11 judo players who won in 18 fights in ne waza. Korea, second in the medal ranking (2 gold, 1 silver, 2 bronze, 4 fifth), had 3 athletes who won 4 times a fight in ne waza. Despite this different number of ne waza ippon, there are no significant differences between the two countries in all the variables.

DISCUSSION AND CONCLUSION

We have to moderate our discussion and conclusion because of the limited number of combats analyzed and the level of these combats that was „gold medal" combats in Grand Slam.

Nevertheless, some results concern us:

- 6 transition situations per fight: one transition situation each 30 s. Last year our analysis (Pierantozzi et al 2016) found 8 transition situations per fight, one every 32 s. Perhaps this different result is due to the reduction of the fight time for the men category (4 min instead 5 min).
- 69% transition situations did not continue in ne waza: in a combat 4 transition situations are not utilized to go in ne waza. The percentage of give up to fight on the ground is always high, moreover 35% of the time the judo-player who decided to „not fight in ne waza" was in a positive situation (dominant situation). Even if, comparing this result with the Roux previous study (1990), there is a improvement (35% vs 42,5%), in our opinion there are some more work to do to exploit better this judo fight phase.
- Very few transitions in the sample of the gold medal winner fights analyzed finished with a score in ne waza (2,4%).

Comparing the result of the successful transition situations with the transitions of the gold medal winner, we can say, simply, that the key factor seems to be the „control phase" during the transition. In the effective transitions most of the time the winner dominates this moment (94% vs 48%). In the effective transition the winner is capable to score in ne waza starting from different body positions between the judo players, with different passages to arrive to the score technique in less time (10 + 10 s vs 19 + 10 s).

To score in ne waza seems difficult and judo athletes can think that ne waza is not profitable.

Thus, they have to consider 6 opportunities per combat to continue in ne waza which represent one opportunity each 30 s during the combat. At that time, only two opportunities (transition situations) per combat lead to a ne waza phase.

As trainers we have to increase the number and the variety of training situations to improve judo athletes behaviors and physical preparation concerning transition situations to ne waza phases, especially with the control of the transition situations, starting Tori standing up or lying with the leg locked, Uke four supports or prone.

We will continue this survey with new combats:

- analyzing passage to score techniques obtained in ne waza;
- detailing learning situations to improve transition situations;
- compare male and female judo style in transition.

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SAFETY ON JUDO CHILDREN: METHODOLOGY AND RESULTS

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The main problem against the acceptance of judo for children as sport, in the families, is the „strange" position that some medicine doctors have respect to judo. Many doctors although they have not firsthand experience of judo, describe it as a sport unsuitable for children, often expressing themselves so broadly negative, even via web. Theoretically speaking falls derived by Judo throwing techniques, could be potentially dangerous, especially for kids, if poorly managed. Obviously all judo people knows that good judo is safe for children, and how these affirmations are generalist and negative, but the „truth" is based only on personal experiences, not supported by scientific evidence worldwide accepted.

A lot of researches were focalized on traumas or injuries taking place in judo, both during training and competition, from these papers, you know, paradoxically, that training has a higher content of incidents against competition. However never a totally complete scientific research was performed to support the harmlessness of judo for kids, especially with regard to potential traumas deriving by falls due to throwing techniques. The goal of this research is to define and apply a scientific methodology to evaluate the hazard in falls by judo throws for children during training. By organizing the research on the basis of safety analysis there are at first defined and experimentally evaluated for fifteen among boys and girls:

1. The flight time for five throws
2. The maximum impact forces and velocities for five throws
3. The contact surfaces of bodies on the Tatami for five different throws.
4. The Elastocaloric effect to evaluate the energy absorption by Tatami Materials.
5. The maximum Strain on the Tatami.
6. The impact reaction Stress on the children bodies.

After valuated the mechanic of falls, and the evaluation of contact body surfaces on the tatami, by a Japanese AVIO Thermal Camera, the next step is to connect the impact of biomechanics on the potential traumas. The only worldwide accepted methodology both from Medical and Engineering people is the Crash test Methodology. Along with the appropriate changes in the specifications of the „Crash Test Methodology" there are defined and evaluated:

1. A „judo boy Dummy", to apply safety criteria used in crash test.
2. Both: Thoracic Trauma Index and Compression Index
3. The Head Injury Criterion
4. The probability of skull fracture (if any) applying risk analysis.

Connecting in this way, the mechanical results with the resulting physiological hazard connected to Judo throwing techniques, using the „Crash Test Methodology" it is proved that, correct falls of judo throws are safe for „judo boy Dummy", and for logical extension they are safe, also for judo children.

The last two troubles of still judo throwing techniques training for kids are:

The wrong combination of kids during training and the potential long term traumas, in such delicate issues a Digital Assistant named (Hazard Training Sentinel) have been prepared to help teachers to manage in optimal way this specific aspect of their important and delicate work.

IMPACT OF DIRECTIONAL ASYMMETRY ON COMPETITION PERFORMANCE IN ELITE YOUTH FEMALE JUDOKAS

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Body asymmetries can be interpreted and used from two different perspectives; firstly, they represent a medical body status and an occurrence of injuries (Stradijot, Pittorru, & Pinna, 2012), and secondly, they represent greater possibility of the competition success. In some sports, such as fencing, greater morphological asymmetries have been shown to demonstrate better performance success (Roi & Bianchedi, 2008).

Directional asymmetry (hereinafter DA) is characterized as a symmetry distribution that is not centered around zero, but is significantly biased (Tomkins & Kotiaho, 2002), and is largely attributable to differential mechanical loading during bone growth, such as handedness (Özener, 2010) or long term sports training. DA has been used in judo in connection to competitive performance. On this issue Šimenko (2015) reports that average body DA of 0.51 ± 0.09 may represent a greater possibility of competition success in male judokas. However, to date, there is no study that reports on the DA in connection to competition success in female judokas. This study aims to address this issue: that is, to present the relationship of DA to competitive performance in elite female judokas and to compare the findings with previous study.

Sample included 6 female judokas that are competing in cadet and/or junior national and international competitions. Judokas with results of 1st, 2nd or 3rd place in cadet/junior European cups, European cadet/junior championship, World cadet/junior championship or EYOF were considered in the study. Participants were 19.3 ± 1.34 years old. Measurements were conducted in a Physiological laboratory of the Faculty of Sports, University of Ljubljana. Anthropometric measurement of body was performed by a 3D body scanner NX16 (TC2, USA) that has been calibrated and validated (Šimenko & Čuk, 2016). We used 17 paired body variables as suggested by Šimenko and Vodičar (2015). Competitive performance was measured by total number of points in final standings of 2015 competition year on the freely accessible web page of Slovenian Judo Federation. DA was calculated as R-L body value as suggested by Özener, Pelin, Kürkçüoğlu, Ertugrul, and Zagyapan (2011). Absolute values |R – L| were taken for calculating the asymmetry of paired variables and the average personal asymmetry value.

With 3D body scanner, we measured left and right variable and calculate DA for following variables: LSH - Long shoulder height DA 1.37 ± 0.71, ASG - Armscye girth DA 1.00 ± 0.75, SAL - Straight arm length DA 1.18 ± .55, UAG - Upper arm girth DA 1.03 ± 0.48, EG - Elbow girth DA 0.77 ± 0.25, FG - Forearm girth DA 0.92 ± 0.49, WG - Wrist girth DA 0.58 ± 0.32, SWH - Side waist height to floor DA 0.10 ± 0.06, OLL - Outside leg length DA 0.23 ± 0.20, TL - Thigh length DA 0.31 ± 0.23, TG - Thigh girth DA 0.85 ± 0.59, MTG - Mid-thigh girth DA 0.57 ± 0.56, MTH - Mid-thigh height DA 0.03 ± 0.08, KH - Knee height DA 0.05 ± 0.12, KG - Knee girth DA 0.88 ± 0.88, CH- Calf height DA 1.50 ± 1.52 and CG - Calf girth DA 0.25 ± 0.11.

Average individual DA for elite female judokas was 0.58 ± 0.14, from which we can assume that female judokas closer to DA of 0.58 have higher possibility of greater competition success. Compared to the results of averaged male judokas where DA was 0.51 ± 0.09 (Šimenko, 2015), it is observed that male judokas have overall smaller DA values in connection to better performance. It is further assumed that DA value of 0.58 is very significant for female judokas in order for achieving greater competition success and that this level of morphological asymmetry further needs to be strived towards. Also, greater or lesser DA value than 0.58 might represent worse

performance for female judokas. Thus, we suggest to further examine this assumptions on a larger sample of female judokas to find a limit of body asymmetry that, on one hand, allows judokas a better performance, but on the other hand, does not contribute to occurrence of injuries.

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JUDO RELATED CONCUSSIONS: IDENTIFICATION AND PREVENTION

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Judo is worldwide popular combat sport. It is also called „art of throwing" because in judo the main way of achieving the victory is by throwing your opponent flat on the back. While executing the osoto gari throw the impulsive force on the head of uke (one that is receiving the throw) during performance of typical ukemi (breakfall) in judo is 204.82 ± 19.95 kg m · s-2 (Hashimoto, Ishii, Okada, & Itoh, 2015). Somewhat less is the impulsive force on the head of uke is calculated while he is being thrown with ouchi gari 118.46 ± 63.62 kg m · s-2. This means that every time judoka receives a throw he is potentially in danger of getting an injury. Prevention method is based on mastering the falling skills extremely good before engaging into training fight. Still, data from Olympic Games held in 2008 and 2012 show that judo have average injury rate compared to other Olympic sports (Pocecco et al., 2013). Shoulder and knee injuries are the most common severe injuries (23% each), while concussion is reported by 5% of the athletes in the large study that included 4659 judokas (Akoto, Lambert, Balke, Bouillon, Frosch, & Höher, 2017). Since the definition of the injury was set to register only injuries that removed athletes more than 3 weeks from training and competition, we can assume that there were more concussion injuries that remain unregistered. Even mild concussions are extremely important to identify because they can, if they are not treated properly, lead to potentially catastrophic second impact syndrome.

A short survey was conducted in order to reveal the amount of information coaches have about the concussion injury. On Serbian national championship 2017 for seniors 24 coaches from 30 clubs have completed the survey. In the survey they rated their knowledge about concussions, asked to recognize most common symptoms and answer if they are familiar and using some kind of protocol for concussion injuries. Majority thinks that they have only basic knowledge (78.26%) while the rest of them think that they are very well informed about this type of injury. 26% of them stated that at least one of their competitors had a concussion in the past year. It is alarming that clubs do not have any protocol established and that coaches themselves didn't receive any education about this type of injury (78.26%). Logically, club do not offer any type of education to the parents of their athletes (86.96%).

These findings show the basic need for adequate education of coaches and everybody else that are involved in judo training and competition (athletes, referees and tournament directors), which is in accordance with prevention measures recommended by Pocecco et al. (2013). Sideline protocol that exist in other sports can be adopted and recommended by the national federation or, even better, International Judo Federation or European Judo Union Medical Commission. Until then, we can advise using of standardized SCAT5 and Child SCAT5 protocol recommended in the Consensus statement of the 5th International Conference on Concussion in Sport (Davis et al. 2017).

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THE EFFECTS OF FATIGUE ON THE BIOMECHANICAL PARAMETERS OF THROWING IN JUDOKAS OF DIFFERENT AGES: A CASE STUDY

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SUMMARY

The goal of this paper is to determine the differences in biomechanical parameters during the execution of *ippon-seoi-nage* and *harai-goshi* throwing techniques before and after exhaustion in judokas of different ages and skill levels by way of a new technology – the biomechanical „X-sens" suit. With the acquired data it may be possible to tailor training to improve specific motor skills and the technical knowlege of the athlete.

The research was undertaken on two judokas: junior – 19 year old black belt, Croatian Junior Champion and 12-year practioner of judo – and a younger cadet– 15 years old and 8-year practioner of judo.Wearing the X-sens suit, the subjects executed three repetitions of both the ippon-seoi-nage and harai-goshi throws and did so again in a state of exhaustion via the test for endurance: „throw + two push ups in 90 seconds" (T2P90S). The suit contained 17 sensors and sent the data over a wifi signal to a computer for real-time processing and analysis in the software program MVN studio.

The results are as expected and indicate that differences exist in the effect of fatigue on both judokas. The older subject shows better results in almost all variables. It is possibe to conclude that the older subject's degree of enduranceand strength – as assessed via the test for specific endurance and explosive strength – during the execution of the throws is at an enviable level compared to the younger subject.

Further research using this technology with a greater number of test subjects will provideeven more concrete and better results from which we will be able to obtain data necessary for higher-quality tailoring of training programs. This will ultimately result in a decrease of observed deficiencies in physical and technical preparation at the highest level, which is the greatest challenge for trainers.

INTRODUCTION

Success in a judo match depends on superior pyschophysical preparation with a high level of technical knowledge (Franchini et. al. 2005, Lech et. al. 2015). Looking at motor skills, strength is the most important element in judo that determines success in a match (Sertić 2004, Sertić et. al. 2009). In addition to maximum strength, repetitive strength, i.e. endurance, also occupies an important place in judo due to the very structure of competition in which there are on average five to six matches in a single day. Endurance is also clearly important in training itself as judo techniques are practiced. The dynamism of a judo match, in which one competitor attempts to throw the other, requires a high level of training in explosive strength particularly during the execution of throwing techniques, including putting one's opponent off-balance, speed in entering throw and executing the throw itself. In considering defensive postures and the execution of throwing techniques, it is possible to conclude that the muscle groups of both the upper body and lower body are used. (Detanico et. al. 2012, Franchini et. al. 2013). For the most precise determination of the level of an athlete's motor skills it is necessary to use adequate tests and measuring devices (Busko 2015) in a manner that most closely mimics the training environment and the conditions of an actual match. In this way these tests and devices contribute the most to the tailoring of training vis-a-vis those segments where deficiencies in both technical knowledge and physical preparation are observed in the athlete (Hassmann et. al. 2010). The many complex throwing techniques in judo make this sport a very

interesting candidate for biomechanical analysis (Imamura and Johnson 2014). However, because the sufficient level of technological advancement has been lacking, there has been very little research on this issue. By looking at statistical data it's possible to conclude that competitors, regardless of gender, rank and other factors, most often rely on specific techniques (Kajmović et. al. 2011, Adam et. al. 2012. Kajmović et. al. 2012., Witkowski et. al. 2012, Segedi et. al. 2014), in particular the hand technique *ippon-seoi-nage* and the hip technique*harai-goshi*. Therefore these two techniques will serve as the subject of this research. Fatigue has a marked influence on the execution of throws, especially in match conditions due to the exceptionally high level of activity. Thus, trainers need to ensure that competitors are as prepared as possible to execute throws with very little oscillation in order to score points in competition. Given that previous research on the effect of fatigue on judokas has focused on motor skills through strength testing, among other things (Detanico et. al. 2015), we attempted to link, with the aid of new technology, the effect of fatigue on the execution of throws while looking at specific biomechanical parameters and the difference in the amount of influence fatigue has on subjects of different ages and skill levels.

RESEARCH MATERIALS AND METHODS

The X-sens biomechanical suit was worn by the subject while the subject executed throwing techniques. The suit is fitted to the body and has seventeen sensors attached at the joints of the arms, legs and rest of the body, including one located on the head. These sensors utilize a wifi signal to connect to a computer where the results are gathered and processed in the software program MVN Studio. The results are then transfered to an Excel spreadsheet where they can be analized. Using the suit, it is possible to measure the movement of all joints along the x, y and z axes. The position of the pelvis and angles and angular velocity of specific joints in various phases of the throws were taken into consideration according to the needs of the research.

For the purpose of using this equipment, two judokas were involved. Subject S1 (176.5 cm tall, 72.1 kg) is a Junior category 19 year-old black belt and Croatian junior champion who has been practicing judo for twelve years. Subject S2 (177.1 cm tall, 61.8 kg) is a young cadet category 15 year-old who has been training in judo for eight years. Both served as the *uke* to the other.

The types of throws used in the research are the hand throw *ippon-seoi-nage* and hip throw *harai-goshi*. Both competitors executed the throws on their dominant side, which was the right side for each of them. After the warm up had been completed, the testing began.

Wearing the suit, S1 executed the throw *ippon-seoi-nage*in place in three repititions, after which followed exhaustion by way of the test for specific endurance, T2P90S (Sertić et. al. 2004). The subject stands on the mat in a narrow stance with feet shoulder-width apart, grasping the opponent's judogi („guard position"). At the signal „go," the subject throws the opponent via the *o goshi* technique. Then the subject drops into a pushup position and completes two pushups, getting back up into a standing position and repeating the same cycle in a timed interval of 90 seconds. The result of the test is the number of completed cycles. After the test the subject immediately executed three repetitions of the *ippon-seoi-nage* on the spot. Afterwards the subject had a fifteen minute break for a full recovery after which the hip throw *harai-goshi* was executed in the same fashion. After a full recovery, S2 performed the same tasks and underwent the same test.

RESULTS AND DISCUSSION

The result of the test for maximum exhaustion has unocovered large differences and proven to be a good indicator of which subject is more explosive, faster and more enduring in a situational test. Subject S1 completed twenty five cycles during the first endurance test while S2 completed sixteen cycles. During the second endurance test, S1 completed twenty three and S2 completed sixteen cycles.

Ippon-seoi-nage

The first variable under study (Table 1) is the position of the pelvis at the start prior to the throw and at the lowest point, or in the *tsukuri* phase – the placement of the body in the proper position for throwing (Sertić 2004). By lowering down into a squat while moving, one achieves a better position for a higher-quality execution of the throw. Subject S1 assumed a lower position prior to exhaustion than did Subject S2, which shows that the more experienced judoka is at a higher technical level. Inducing fatigue through a test in wich the subjects executed throws, completed push ups and exercised leg muscles via the transition from standing to lying on the ground led to a decrease of lowering into the squat position while undertaking the set of throws. Looking at the results of the T2P90S test, we can say that this is a good indicator of strength endurance and repetitive strength from which it is apparent that Subject S1 retained a higher level of throwing performance despite more repetitions.

Table 1. Ippon seoi nage – Variable 1.

	S1 – ippon-seoi-nage before exhaustion		**S2 – ippon-seoi-nage before exhaustion**	
	Pelvis_start	Pelvis_low	Pelvis_start	Pelvis_low
Throw 1	91.9	68.3	95.5	76.6
Throw 2	92.4	68.2	95.7	75.3
Throw 3	92.2	76.6	96.2	68.5
Average	**92.2**	**71.0**	**95.8**	**73.4**
	S1 – ippon-seoi-nage after exhaustion		**S2 – ippon-seoi-nage after exhaustion**	
	Pelvis_start	Pelvis_low	Pelvis_start	Pelvis_low
Throw 1	92.8	77.3	95.3	80.7
Throw 2	93.1	76.3	95.5	79.6
Throw 3	92.8	75.7	95.3	79.3
Average	**92.9**	**76.4**	**95.4**	**79.9**

The second variable (Table 2) with regard to *ippon-seoi-nage* is the angle of the left shoulder joint the moment the opponent is pulled off-balance – the *kuzushi* phase. The *tori* (the one executing the throw) pulls the left arm towards the face, increasing that angle further and upsetting the balance of the *uke* (the one being thrown). Prior to exhaustion, Subject S1 pulled more with his left arm than Subject S2 which confirms that he is at a higher level of technical expertise. The angle of the shoulder joint decreased in both subjects post-exhaustion, although in this case Subject S1 showed better results than Subject S2. We can ascribe Subject S1's greater pre-exhaustion angle to the fact that he is older and more experienced, as well as physically stronger. A more highly-skilled athlete, despite potentially stronger stressors, will adjust better to the conditions of both training and competition. This is demonstrated by Subject S1's better results during the exhaustion period in which S1 completed more pushups, which had a greater effect on muscle fatigue in the arms and shoulder yet such fatigue had less effect on the degree of the angle of the shoulder joint while the *uke* was pulled off-balance.

Table 2. Ippon seoi nage – Variable 2.

	S1 – ippon-seoi-nage before exhaustion	**S2 – ippon-seoi-nage before exhaustion**
	L.Shoulder_joint_ angle_initiation_X	L.Shoulder_joint_ angle_initiation_X
Throw 1	60.5	51.8
Throw 2	54.0	43.6
Throw 3	52.5	53.4
Average	**55.6**	**49.6**
	S1 – ippon-seoi-nage after exhaustion	**S2 – ippon-seoi-nage after exhaustion**
	L.Shoulder_joint_ angle_initiation_X	L.Shoulder_joint_ angle_initiation_X
Throw 1	58.2	49.5
Throw 2	57.8	49.8
Throw 3	48.7	44.3
Average	**54.9**	**47.8**

Table 3. Ippon seoi nage – Variable 3.

	N1 – ippon-seoi-nage before exhaustion	**N1 – ippon-seoi-nage before exhaustion**
	R.shoulder_X	R.shoulder_X
Throw 1	22.0	58.9
Throw 2	34.0	71.3
Throw 3	20.2	54.4
Average	**25.4**	**61.5**
	N1 – ippon-seoi-nage after exhaustion	**N2 – ippon-seoi-nage after exhaustion**
	R.shoulder_X	R.shoulder_X
Throw 1	29.7	30.8
Throw 2	29.3	20.9
Throw 3	38.3	37.2
Average	**32.4**	**29.6**

The third observed variable (Table 3) of the *ippon seoi-nage* throw is the angle of the right shoulder at the moment of the throw – the *kake* phase, when the *tori* pulls the *uke* towards himself with his arms and throws the *uke* over his body. Subject S1 was visibly weaker in pulling the *uke* toward himself, due to the effect of fatigue,

while the situation was reversed with Subject S2. This could be the consequence of weaker leg work on the part of S2 for which he compensates with strengthened arm and shoulder work because, as mentioned earlier, among the throws in which the hand technique *ippon-seoi-nage* is included, judokas use both arm and leg muscles.

Harai-goshi

For the *harai-goshi* throws we also tested the position of the pelvis in the start position before beginning the throw as well as at the lowest point the moment the throw is entered – the *tsukuri* phase (Table 4). Right as he begins to move, the *tori* must lower his center of gravity, but not as low as in the hand technique *ippon-seoi-nage*. The reason for this is to maintain balance after the throw and control the *uke*. Should the *tori* lose balance during the throw, the judge will assess the throw as uncontrolled and the *tori* will not receive any points. Both subjects equally lowered their center of gravity during the execution of the throw, which demonstrates the throw was well executed technically. A weak effect of fatigue is visible in Subject S1 but unobserved in S2. The reason for this is that for this throw the *tori* uses explosive leg strength more given the quick sweep toward the *uke*.

Table 4. Harai goshi – Variable 1.

	S1 – harai-goshi before exhaustion		**S2 – harai-goshi before exhaustion**	
	Pelvis_start	Pelvis_low	Pelvis_start	Pelvis_low
Throw 1	91.7	85.5	95.9	87.9
Throw 2	92.0	82.2	95.5	89.5
Throw 3	91.4	80.9	95.7	89.1
Average	**91.7**	**82.9**	**95.7**	**88.8**
	S1 – harai-goshi after exhaustion		**S2 – harai-goshi after exhaustion**	
	Pelvis_start	Pelvis_low	Pelvis_start	Pelvis_low
Throw 1	92.3	84.2	94.9	88.9
Throw 2	91.1	82.7	96.3	87.7
Throw 3	91.0	83.4	95.2	89.3
Average	**91.5**	**83.5**	**95.4**	**88.6**

For the second variable (Table 5) we observed the angle of the left shoulder joint the moment the competitor was pulled off-balance – the *kuzushi* phase. As with the *ippon-seoi-nage* throw, Subject S1 executes the throw at a technical, higher quality level than does S2. Although both subjects were completely exhausted from the test to assess strength endurance, as expected the older and more qualified judoka had better resuts. Fatigue strongly affected the biomechanical characteristics of the less qualified judoka. It's possible to conclude that a high level of strength endurance is one requirement for a judoka under the influence of fatigue to execute a technically proper throw that will earn points.

Table 5. Harai goshi – Variable 2.

	S1 – harai-goshi before exhaustion	**S2 – harai-goshi before exhaustion**
	L.Shoulder_joint_ angle_ X	L.Shoulder_joint_ angle_ X
Throw 1	56.5	38.0
Throw 2	63.8	43.5
Throw 3	55.0	46.4
Average	**58.4**	**42.6**
	S1 – harai-goshi after exhaustion	**S2 – harai-goshi after exhaustion**
	L.Shoulder_joint_ angle_ X	L.Shoulder_joint_ angle_ X
Throw 1	62.1	40.0
Throw 2	59.9	29.6
Throw 3	45.0	42.6
Average	**55.6**	**37.4**

The third observed variable for the *harai-goshi* throw (Table 6) is the angular velocity of the hip, i.e. the sweeping leg or the leg with which the throw is executed. The variable is observed along the **z** and **x** axes and the unit of measure is the number of degrees per second. According to Imamuri et. al. (2006), the *uke* is mostly affected by the sweeping leg, the dominant force in the execution of this throw. Thus, the greater the sweeping leg's velocity, the more explosive the throw and greater technical quality. Prior to exhaustion, both subjects had the same angular velocity of the hip and the throw was properly executed technically; that is, after the conclusion of the throw they had retained their balance. In Subject S2 the expected effect of fatigue was greater and the velocity was lower than in Subject S1. Because the throws were executed without resistance on the part of the *uke*, it is not possible to say whether Subject S2 would succeed in executing the throw in competition where the opponent would offer resistance. Nonetheles it is a good indication of where the trainer should be focusing when devising a training regiment, which in this case means exercises for explosiveness and strength endurance.

Table 6. Harai goshi – Variable 3.

	S1 – harai-goshi before exhaustion		**S2 – harai-goshi before exhaustion**	
	R.hip_angular_ velocity_Z	R.hip_angular_ velocity_X	R.hip_angular_ velocity_Z	R.hip_angular_ velocity_X
Throw 1	649.2	606.3	686.0	366.4
Throw 2	778.7	692.2	717.9	604.7
Throw 3	689.3	492.2	730.4	593.2
Average	**705.7**	**596.9**	**711.4**	**521.4**
	S1 – harai-goshi after exhaustion		**S2 – harai-goshi after exhaustion**	
	R.hip_angular_ velocity_Z	R.hip_angular_ velocity_X	R.hip_angular_ velocity_Z	R.hip_angular_ velocity_X
Throw 1	593.3	620.5	720.8	394.7
Throw 2	651.2	561.8	342.4	383.0
Throw 3	611.6	519.3	555.7	342.2
Average	**618.7**	**567.2**	**539.6**	**373.3**

CONCLUSION

The purpose of this paper is to determine how much fatigue influences the execution of *ippon-seoi-nage* and *harai-goshi* throws and how big the differences are in judokas of different ages and skill levels. Furthermore, is it possible to determine, on the basis of the research results, which aspect of strength to improve through training assuming the throws of each subject were technically proper. It has been shown that the judoka who has more technical preparation executes throws more efficiently. Fatigue was induced through a test to assess specific endurance – T2P90S – and as expected, the older and more qualified judoka had better results. But the test demonstrates how important strength endurance and repetitive strength of the arms, shoulders and legs are with regard to the quality of the technical execution of throws. A high level of the aforementioned motor skills enables the retention of a level of quality in specific criteria in executing throws which is important when speaking of judo matches. The effectiveness of the *harai-goshi* throw is found in the explosive strength of the sweeping leg that executes the throw. And here fatigue had a greater effect on the less qualified judoka. This is a good indicator for the trainer to devise a training regiment that reduces deficiencies to a minimum. The test to assess endurance is a good tool for increasing the level of motor skills which can be adjusted for various judokas by replacing the throws used in this paper with throws more appropriate for them, such as a *tokui-waza* (i.e. the judoka's favorite match-winning throw or preferred technique). Given that this was a case study comparing two judokas, further inclusion of a greater number of subjects of the same age or various qualifications will provide better results that can be applied to training. It would be interesting to compare and determine the differences in biomechanical parameters when the throws are executed on the non-dominant side, as today's top judokas must manage while executing throws on both the right and left sides (Walkowski i Poliszczuk 2014). Regardless, further research applying this technology will contribute greatly to understanding judo in one more way that has not been possible until now due to the complexities of the sport.

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apr-11 world rank

	60 kg	66 kg	73 kg	81 kg	90 kg	100 kg	+100 kg	
1	UZB	MGL	KOR	KOR	JPN	JPN	FRA	
2	JPN	GADANOV	JPN	BRA	DENISOV	NED	EGY	
3	UKR	JPN	BEL	NIFONTOV	JPN	KAZ	GER	
4	GALSTYAN	MOGUSHKOV	ISAEV	GBR	AZE	BEL	JPN	
5	MUDRANOV	ESP	JPN	JPN	GRE	KOR	JPN	
6	NED	HUN	HUN	NED	UZB	KHAYBULAEV	KOR	
7	AUT	KOR	NED	MAGOMEDOV	BRA	SAMOYLOVICH	UKR	
							STERKHOV	24
							MIKHAYLIN	27

1	rus	10
1	JPN	10
2	KOR	5
3	NED	4
	BRA	2
	BEL	2
	UKR	2

FRA	1
AUT	1
MGL	1
ESP	1
HUN	1
GBR	1
AZE	1

GRE	1
UZB	1
KAZ	1
EGY	1
GER	1

OLIMPIC MEDALS from 1992

WORLD MEDAL FROM 1993 TO 2007- EIGHT EDITIONS 14 HEARS							
	60 kg	66 kg	73 kg	81 kg	90 kg	100 kg	+100 kg
1992	-	-	-	-	-	3° SERGEEV	-
1996	-	-	-	-	-	-	-
2000	-	-	-	-	-	3° STEPKIN	3° TMENOV
2004			2° MAKAROV	3° NOSSOV	3° TAOV		2° TMENOV
2008	-	-	-	-	-	-	-

TIPE	N° MEDAL	ATHLETES
GOLD		
SILVER	2	2
BRONZE	5	5
CATEGORY	5	6
TOT MEDAL	7	

World medal from 1993

WORLD MEDAL FROM 1993 TO 2007- EIGHT EDITIONS 14 HEARS							
	60 kg	66 kg	73 kg	81 kg	90 kg	100 kg	+100 kg
1993		3° KOEMININ					3° KOSOROTOV
1995	1° OZHEGIN				3° MALZEV	2° SERGEEV	
1997							3° TMENOV
1999			2° MAKAROV			3° MIKHAYLIN	
2001			1° MAKAROV				1°MIKHAYLIN
2003		3° dgafarov	3° MAKAROV				3° TMENOV
2005						3° KABANOV	1°MIKHAYLIN
2007					3° PERSHIN		2° TMENOV

TIPE	N° MEDAL	ATHLETES	EDITIONS
GOLD	4	3	
SILVER	3	3	
BRONZE	10	9	
CATEGORY	6	10	
TOT MEDAL	16		8

WORLD MEDAL FROM 2009 TO 2011- THREE EDITIONS							
	60 kg	66 kg	73 kg	81 kg	90 kg	100 kg	+100 kg
2009			3° ISAEV	1° NIFONTOV	2° DENISOV		
2010	3° GALSTYAN				3° DENISOV		
2011		3° MOGUSHKOV				1° KHAYBULAEV	3° MIKHAYLIN

TIPE	N° MEDAL	ATHLETES	EDITIONS
GOLD	2	2	
SILVER	1	1	
BRONZE	5	7	
CATEGORY	7	7	
TOT MEDAL	8		3

BARCELLONA 1992

BARCELLONA 1992

	60 kg	66 kg	73 kg	81 kg	90 kg	100 kg	+100 kg
1	AZE	BRA	JPN	JPN	PO	HUN	GEO
2	KOR	HUN	HUN	USA	FRA	GBR	JPN
3	GER	CUB	KOR	FRA	CAN	NED	FRA
3	JPN	GER	ISR	KOR	JPN	RUS	HUN
5	FRA	BEL	GER	BEL	ROU	EST	BEL
5	HUN	ESP	FRA	SWE	GER	POL	CUB
7	MGL	JPN	POL	CAN	SUI	BEL	ESP
7	VEN	KOR	MGL	RUS	KOR	JPN	USA

ATHLETS IN THE FIRST 7

1°	JPN	7
2°	FRA	5
3°	HUN	5
3°	KOR	4
5°	GER	4
5°	BEL	4
7°	RUS	2

CATEGORIE WITH MEDALS

1°	JPN	5
1°	FRA	3
3°	HUN	4
3°	KOR	3
3°	GER	2
	BEL	0
	RUS	1

OLIMPIC CICLE

ATHLETS IN THE FIRST 7° IN THREE HEARS

1°	JPN	11
2°	RUS	9
3°	GER	8
4°	FRA	7
4°	KOR	6
6°	HUN	4
7°	BEL	3

CATEGORIES MEDALS IN OLIMPIC CICLE!!!

1°	JPN	6
3°	RUS	5
1°	FRA	4
4°	GER	4
6°	KOR	3
4°	HUN	0

ATLANTA 1996

ATLANTA 1996

	60 kg	66 kg	73 kg	81 kg	90 kg	100 kg	+100 kg
1	JPN	GER	JPN	FRA	KOR	POL	FRA
2	ITA	JPN	KOR	JPN	UZB	KOR	ESP
3	GER	BRA	FRA	GEO	NED	FRA	BEL
3	MGL	CUB	USA	KOR	GER	BRA	GER
5	RUS	BEL	BRA	ARG	ROU	NED	CHN
5	BLR	HUN	MGL	GER	JPN	HUN	JPN
7	GEO	GEO	GER	TUR	CAN	JPN	GRE
7	GBR	BUL	UZB	BRA	RUS	ARG	RUS

ATHLETS IN THE FIRST 7

1°	JPN	7
2°	GER	6
3°	FRA	4
3°	BRA	4
5°	KOR	3
5°	RUS	3
7°	GEO	2

CATEGORIE WITH MEDALS

1°	JPN	4
1°	FRA	4
3°	KOR	3
3°	GER	5
3°	BRA	2

OLIMPIC CICLE

ATHLETS IN THE FIRST 7° IN THREE HEARS

1°	JPN	12
2°	FRA	9
3°	GER	7
4°	KOR	7
4°	RUS	7
6°	GEO	5
7°	BRA	5

CATEGORIES MEDALS IN OLIMPIC CICLE!!!

1°	JPN	5
3°	GER	5
1°	FRA	4
4°	KOR	4
6°	GEO	3
4°	RUS	1

SYDNEY 2000

SYDNEY 2000

	60 kg	66 kg	73 kg	81 kg	90 kg	100 kg	+100 kg
1	JPN	TUR	ITA	JPN	NED	JPN	FRA
2	KOR	FRA	BRA	KOR	BRA	CAN	JPN
3	CUB	GEO	LAT	EST	UKR	FRA	EST
3	KGZ	ITA	BLR	POR	FRA	RUS	RUS
5	UZB	NED	USA	FRA	CAN	ITA	TUR
5	KAZ	IRI	KOR	URU	AZE	ISR	BLR
7	USA	JPN	TUN	PRK	ESP	BRA	ESP
7	AZE	KOR	POR	IRI	USA	GEO	CHN

ATHLETS IN THE FIRST 7

1°	FRA	5
2°	KOR	4
2°	JPN	4
4°	ITA	3
5°	RUS	2
5°	GEO	2
7°	BRA	3

CATEGORIE WITH MEDALS

1°	JPN	4
1°	FRA	4
3°	KOR	2
3°	ITA	2
3°	BRA	2
3°	RUS	2
7°	GEO	1

OLIMPIC CICLE

ATHLETS IN THE FIRST 7° IN THREE HEARS

1°	FRA	10
2°	JPN	8
3°	KOR	6
4°	BRA	5
4°	RUS	5
6°	GEO	4
7°	ITA	2
8°	GER	1

CATEGORIES MEDALS IN OLIMPIC CICLE!!!

1°	JPN	5
1°	FRA	5
3°	KOR	4
4°	BRA	3
4°	GEO	3
6°	RUS	2

ATHEN 2004

ATHEN 2004

	60 kg	66 kg	73 kg	81 kg	90 kg	100 kg	+100 kg
1	JPN	JPN	KOR	GRE	GEO	BLR	JPN
2	GEO	SVK	RUS	UKR	JPN	KOR	RUS
3	KOR	CUB	USA	BRA	NED	GER	NED
3	MGL	BUL	BRA	RUS	RUS	ISR	EST
5	ESP	ESP	FRA	POL	GBR	BEL	ITA
5	IRI	GEO	MDA	AZE	KOR	AZE	IRI
7	GER	ARG	POR	GER	ARG	FRA	GER
7	GRE	POR	GEO	KOR	AUS	KAZ	TUR

ATHLETS IN THE FIRST 7

1°	KOR	5
2°	JPN	4
2°	GER	4
2°	RUS	4
2°	GEO	4
6°	FRA	2
6°	BRA	2

CATEGORIE WITH MEDALS

1°	JPN	4
1°	RUS	4
3°	KOR	3
4°	GEO	2
4°	BRA	2
6°	GER	1
7°	FRA	0

OLIMPIC CICLE

ATHLETS IN THE FIRST 7° IN THREE HEARS

1°	JPN	9
2°	RUS	5
3°	KOR	8
4°	FRA	5
4°	GEO	5
4°	AZE	4
7°	BRA	2
7°	GER	1

CATEGORIES MEDALS IN OLIMPIC CICLE!!!

1°	KOR	6
2°	JPN	5
3°	FRA	4
4°	RUS	3
5°	BRA	2
6°	GEO	1

BEIJING 2008

BEIJING 2008

	60 kg	66 kg	73 kg	81 kg	90 kg	100 kg	+100 kg
1	KOR	JPN	AZE	GER	GEO	MGL	JPN
2	AUT	FRA	KOR	KOR	ALG	KAZ	UZB
3	NED	CUB	BRA	BRA	SUI	AZE	FRA
3	UZB	PRK	TJK	UKR	EGY	NED	CUB
5	ISR	RUS	BEL	NED	RUS	POL	GEO
5	FRA	UZB	IRI	MGL	FRA	GEO	IRI
7	GBR	ITA	UKR	POL	BLR	KOR	RUS
7	CAN	RGY	JPN	GBR	BRA	HUN	BRA

ATHLETS IN THE FIRST 7

1°	KOR	4
1°	FRA	4
1°	BRA	4
4°	JPN	3
4°	UZB	3
4°	RUS	3
7°	CUB	2

CATEGORIE WITH MEDALS

1°	KOR	3
2°	FRA	2
2°	BRA	2
2°	JPN	2
2°	UZB	2
2°	CUB	2
2°	AZE	2

OLIMPIC CICLE

ATHLETS IN THE FIRST 7° IN THREE HEARS

1°	JPN	8
2°	BRA	7
3°	RUS	5
4°	KOR	4
4°	FRA	4
4°	CUB	4
7°	UZB	2
7°	AZE	2

CATEGORIES MEDALS IN OLIMPIC CICLE!!!

1°	JPN	6
2°	BRA	4
3°	RUS	3
4°	KOR	2
4°	FRA	2
6°	AZE	2

RESULT PARIS + STATISTIC

	60 kg	66 kg	73 kg	81 kg	90 kg	100 kg	+100 kg
1	UZB	JPN	JPN	KOR	GRE	RUS	FRA
2	JPN	BRA	NED	MNE	JPN	KAZ	GER
3	UKR	RUS	UZB	BRA	JPN	GEO	RUS
3	AZE	KOR	FRA	MDA	CUB	CZE	KOR
5	KOR	GBR	KAZ	AZE	RUS	BEL	IRI
5	KOR	SLO	JPN	FRA	KOR	EGY	CUB
7	ARM	FRA	BEL	RUS	UKR	RUS	HUN
7	RUS	AZE	RUS	UKR	BRA	GEO	TUN

ATHLETS IN THE FIRST 7

1°	RUS	8
2°	JPN	6
3°	KOR	5
4°	FRA	4
5°	AZE	3
5°	UKR	3
7°	BRA	3
8°	UZB	2

CATEGORIE WITH MEDALS

1°	JPN	5
2°	RUS	3
3°	KOR	3
4°	FRA	2
5°	UZB	2
5°	BRA	2
7°	AZE	1
7°	UKR	1

CATEGORIES MEDALS IN THREE HEARS !!!

1°	RUS	7
1°	JPN	7
3°	KOR	5
4°	FRA	4
5°	UZB	2
5°	AZE	2
5°	BRA	1
8°	UKR	1

Russia form 2009 to 2011

		from 1°to3°	5°	7°	from 1°to3°	5°	7°	from 1°to3°	5°	7°	N° medals	
class.	nat.	world 2009	world 2009	world 2009	world 2010	world 2010	world 2010	world 2011	world 2011	world 2011	tot medals	tot from 1° to 7°
60	galstyan				3°					7°	1	2
60	mudranov					5°					0	1
66	moguskov							3°			1	2
66	gadanov		5°				7°				0	2
73	isaev	3°				5°				7°	1	3
81	nifontov	1°								7°	1	2
81	magomedov						7°				0	1
90	denisov	2°			3°			5°			2	3
100	kbaibulaev							1°			1	1
100	Samoylovich									7°	0	1
+100	mikhaylin							3°			1	0
		4			6			8			8	18

progression performance

form 4 athletes to 8 athletes in three hears

from the first hear to this it's 100% progress

one medalist in each category, in all categories we can fight for the medal

World N° medals 2009-11

		from 1°to3°	5°	7°	from 1°to3°	5°	7°	from 1°to3°	5°	7°	N° medals	
class.	nat.	world 2009	world 2009	world 2009	world 2010	world 2010	world 2010	world 2011	world 2011	world 2011	tot medals	tot athletes
1	jpn	2			10	1		5	1	0	17	19
2	kor	4			2	1		3	2	0	9	12
3	rus	3	1	0	2	2	2	3	1	4	8	18
4	fra	1			5			2	1	0	8	9
5	uzb	2			1	4		2		1	5	10
6	ned	1			2	0		1	0	0	4	4
7	mgl	1	1		1	1		0	0	0	2	4
8	bra	0	2		2	2		2	0	1	4	9
9	ger	1			1			1	0	0	3	3
10	aze	0	1		1	1		1	1	1	2	6
11	hun	1						0	0	1	1	2
12	geo		1			1		1	0	1	1	4

Russia form 2009 to 2011

		from 1°to3°	5°	7°	from 1°to3°	5°	7°	from 1°to3°	5°	7°	N° medals	
class.	nat.	world 2009	world 2009	world 2009	world 2010	world 2010	world 2010	world 2011	world 2011	world 2011	tot medals	tot atbletes
1	jpn	2			10	1		5	1	0	17	19
2	rus	3	1	0	2	2	2	3	1	4	8	18
3	kor	4			2	1		3	2	0	9	12
4	uzb	2			1	4		2		1	5	10
5	fra	1			5			2	1	0	8	9
6	bra	0	2		2	2		2	0	1	4	9
7	aze	0	1		1	1		1	1	1	2	6
8	ned	1			2	0		1	0	0	4	4
9	mgl	1	1		1	1		0	0	0	2	4
10	geo		1			1		1	0	1	1	4
11	ger	1			1			1	0	0	3	3
12	bun	1						0	0	1	1	2

European -23

- first team each hear

Univerisad

- this hear best result then ever

European medals 2005-8

Judoka	NOC	Year	position	weight	gender	Event	N° med.
Ruslan Gasymov	RUS	2005	3	U100	male	European Championships Rotterdam	12
Alexander Mikhailin	RUS	2005	1	O100	male	European Championships Rotterdam	
Salamu Mezhidov	RUS	2006	3	U73	male	European Championships Tampere	
Ivan Pershin	RUS	2006	1	U90	male	European Championships Tampere	
Ruslan Gasymov	RUS	2006	1	U100	male	European Championships Tampere	
Tamerlan Tmenov	RUS	2006	3	O100	male	European Championships Tampere	
Ruslan Kishmakhov	RUS	2007	1	U60	male	European Championships Belgrade	
Salamu Mezhidov	RUS	2007	1	U73	male	European Championships Belgrade	
Ruslan Gasymov	RUS	2007	2	U100	male	European Championships Belgrade	
Alexander Mikhailin	RUS	2007	3	O100	male	European Championships Belgrade	
Alim Gadanov	RUS	2008	3	U66	male	European Championships Lisbon	
Tamerlan Tmenov	RUS	2008	1	O100	male	European Championships Lisbon	

European medals 2009-10-11

class	judoka	NOC	Year	position	weight	gender	Event	eventage	status	continent	n° med
1°	Arsen Galstyan	RUS	2009	1	U60	male	European Championships Tbilisi	20	EC	2000	12
	Ivan Nifontov	RUS	2009	1	U81	male	European Championships Tbilisi	21	EC	2000	
	Tagir Khaibulaev	RUS	2009	1	U100	male	European Championships Tbilisi	24	EC	2000	
	Sirazhudin Magom	RUS	2010	1	U81	male	European Championships Vienna	23	EC	2000	
	Batradz Kaitmazo	RUS	2010	2	U73	male	European Championships Vienna	24	EC	2000	
	Murat Kodzokov	RUS	2011	2	U73	male	European Championships Istanbul	24	EC	2000	
	Kiril Denisov	RUS	2011	2	U90	male	European Championships Istanbul	23	EC	2000	
	Alim Gadanov	RUS	2009	3	U66	male	European Championships Tbilisi	25	EC	2000	
	Alexander Mikhail	RUS	2009	3	O100	male	European Championships Tbilisi	29	EC	2000	
	Arsen Galstyan	RUS	2011	3	U60	male	European Championships Istanbul	22	EC	2000	
	Alim Gadanov	RUS	2011	3	U66	male	European Championships Istanbul	27	EC	2000	
	Sirazhudin Magom	RUS	2011	3	U81	male	European Championships Istanbul	24	EC	2000	
2°	Varlam Liparteliani	GEO	2009	2	U90	male	European Championships Tbilisi	20	EC	2000	8
	Varlam Liparteliani	GEO	2010	2	U90	male	European Championships Vienna	21	EC	2000	
	Betkil Shukvani	GEO	2011	2	U60	male	European Championships Istanbul	22	EC	2000	
	Levan Zhorzholiani	GEO	2011	2	U100	male	European Championships Istanbul	23	EC	2000	
	Nestor Khergiani	GEO	2009	3	U60	male	European Championships Tbilisi	33	EC	2000	
	Levan Tsikauri	GEO	2009	3	U81	male	European Championships Tbilisi	23	EC	2000	
	Varlam Liparteliani	GEO	2011	3	U90	male	European Championships Istanbul	22	EC	2000	
	Iraki Tsirekidze	GEO	2011	3	U100	male	European Championships Istanbul	28	EC	2000	
3°	Mikós Ungvári	HUN	2009	1	U66	male	European Championships Tbilisi	28	EC	2000	6
	Mikós Ungvári	HUN	2011	1	U66	male	European Championships Istanbul	30	EC	2000	
	Mikós Ungvári	HUN	2010	2	U66	male	European Championships Vienna	29	EC	2000	
	Barna Bor	HUN	2010	2	O100	male	European Championships Vienna	23	EC	2000	
	Barna Bor	HUN	2011	2	O100	male	European Championships Istanbul	24	EC	2000	
	Attila Ungvari	HUN	2010	3	U73	male	European Championships Vienna	21	EC	2000	
4°	Sofiane Milous	FRA	2010	1	U60	male	European Championships Vienna	21	EC	2000	4
	Teddy Riner	FRA	2011	1	O100	male	European Championships Istanbul	21	EC	2000	
	Gilles Bonhomme	FRA	2009	3	U73	male	European Championships Tbilisi	30	EC	2000	
	Ugo Legrand	FRA	2010	3	U73	male	European Championships Vienna	21	EC	2000	

master 2010-11

class.	nations	master Kor	master AZE	tot medals
1	rus	6	6	12
2	jpn	6	4	10
3	kor	5	1	6
4	fra	4	1	5
5	uzb	3	1	4
6	aze	0	4	4
7	mgl	1	2	3
8	bra	0	1	1
9	geo	1	0	1
10	ger	0	1	1
11	hun	0	1	1
12	ned	1	0	1

Report of the General Manager 2012-2016
Ezio Gamba

QUALIFICATION RANK RIO DE JANEIRO 2016

MEN QUALIFICATION POSITION RANK OCT 2011 FOR LONDON 2012							
60 kg	*66 kg*	*73 kg*	*81 kg*	*90 kg*	*100 kg*	*+100 kg*	*TOT*
6 MUDRANOV	3 GADANOV	4 ISAEV	3 NIFONTOV	6 DENISOV	7 SAMOYLOVICH	23 STERKOV	13
8 GALSTYAN	4 MOGUSHKOV	16 KODZOKOV	9 MAGOMEDOV		8 KHAIBULAEV	24 MIKHAYLIN	

MEN QUALIFICATION POSITION RANK OCT 2015 FOR RIO DE JANEIRO 2016							
60 kg	*66 kg*	*73 kg*	*81 kg*	*90 kg*	*100 kg*	*+100 kg*	*TOT*
7 MUDRANOV	1 PULYAEV	7 YARCEV	3 NIFONTOV	7 DENISOV	10 BISULTANOV	6 SAIDOV	20
	14 HAN MAGOMED	18 MOGUSHKOV	10 KUBEZOV	12 VOPROSOV	40 KHAIBULAEV	23 KAMBIEV	
	23 SHAMILOV	23 GURSHEV	13 MAGOMEDOV	24 MAGOMEDOV			
		50 ISAEV	14 KHALMURZAEV				
			20 VOROBEV				

WOMEN QUALIFICATION POSITION RANK OCT 2015 FOR RIO DE JANEIRO 2016							
48kg	*52 kg*	*57 kg*	*63 kg*	*70 kg*	*78 kg*	*+78 kg*	*TOT*
12 DOLGOVA	2 KUZIUTINA	18 ZABLUDINA 15	24 LABAZINA 20	30 GAZIEVA 24	18 DMITRIEVA 16	13 CHIBISAVA	6
26 KUTZNETZOVA	13 RESHOVA		25 SUROKATOVA 21				10

TOT IJF MEDAL 2009-2016

TOTAL MEDALS BEFORE LONDON 2012		
1°	JAPAN	390
2°	FRANCE	278
3°	RUSSIA	276
4°	KOR	193
5°	GEORGIA	120

TOTAL MEDALS BEFORE RIO 2016		
1°	RUSSIA	438
2°	GERMANY	322
3°	ITALY	308
4°	FRANCE	268
5°	SPAIN	224
6°	UZBEKISTAN	222
7°	JAPAN	199

World Medals

WORLD MEDAL FROM 1993 TO 2007- EIGHT EDITIONS 14 YEARS

	60 kg	66 kg	73 kg	81 kg	90 kg	100 kg	+100 kg
1993		3° KOEMININ					3° KOSOROTOV
1995	1° OZHEGIN				3° MALZEV	2° SERGEEV	
1997							3° TMENOV
1999			2° MAKAROV			3° MIKHAYLIN	
2001			1° MAKAROV				1°MIKHAYLIN
2003		3° dgafarov	3° MAKAROV				3° TMENOV
2005						3° KABANOV	1°MIKHAYLIN
2007					3° PERSHIN		2° TMENOV

TIPE	N° MEDAL	ATHLETES	EDITIONS
GOLD	4	3	8
SILVER	3	3	
BRONZE	10	9	
CATEGORY	6	10	
TOT MEDAL	17		

WORLD MEDAL FROM 2009 TO 2015- 7 YEARS

	60 kg	66 kg	73 kg	81 kg	90 kg	100 kg	+100 kg
2009			3° ISAEV	1° NIFONTOV	2° DENISOV		
2010	3° GALSTYAN				3° DENISOV		
2011		3° MOGUSHKOV				1° KHAYBULAEV	3° MIKHAYLIN
2013				3°VOROBEV	3° DENISOV		
2014	2° MUDRANOV	2° PULYAEV	3° MOGUSHKOV	3° NIFONTOV	3° VOPROSOV		3° SAIDOV
		3° HAN MAGOMEDOV					
2015		2° PULYAEV			2° DENISOV		

TIPE	N° MEDAL	ATHLETES	EDITIONS
GOLD	2	2	6
SILVER	5	3	
BRONZE	13	10	
CATEGORY	7	13	
TOT MEDAL	19		

Olympic Medals from 1993 to 2007

WORLD MEDAL FROM 1993 TO 2007- EIGHT EDITIONS 14 HEARS

	60 kg	66 kg	73 kg	81 kg	90 kg	100 kg	+100 kg
1992	-	-	-	-	-	3° SERGEEV	-
1996	-	-	-	-	-	-	-
2000	-	-	-	-	-	3° STEPKIN	3° TMENOV
2004			2° MAKAROV	3° NOSSOV	3° TAOV		2° TMENOV
2008	-	-	-	-	-	-	-

TIPE	N° MEDAL	ATHLETES
GOLD		
SILVER	2	2
BRONZE	5	5
CATEGORY	5	6
TOT MEDAL	7	

Olympic Medals 1992/2016

MEDAL FROM 1992 TO 2008- FIVE OLYMPIC EDITIONS 16 YEARS

	60 kg	66 kg	73 kg	81 kg	90 kg	100 kg	+100 kg
1992	-	-	-	-	-	3° SERGEEV	-
1996	-	-	-	-	-	-	-
2000	-	-	-	-	-	3° STEPKIN	3° TMENOV
2004			2° MAKAROV	3° NOSSOV	3° TAOV		2° TMENOV
2008	-	-	-	-	-	-	-

TIPE	N° MEDAL	ATHLETES
GOLD		
SILVER	2	2
BRONZE	5	5
CATEGORY	5	6
TOT MEDAL	7	

MEDAL 2016 TWO OLYMPIC EDITION 8 YEARS

	60 kg 48	66 kg 52	73 kg 57	81 kg 63	90 kg 70	100 kg 78	+100 kg,+78
2012	1° GALSTYAN	-	1° ISAEV	3° NIFONTOV	-	1° KHAIBULAEV	2° MIKHAYLIN
2016	1° MUDRANOV	-	-	1° KHALMURZAEV	-	-	-
	-	KUZIUTINA	-	-	-	-	-

TIPE	N° MEDAL	ATHLETES
GOLD	5	5
SILVER	1	1
BRONZE	2	2
CATEGORY	6	8
TOT MEDAL	8	

in 14 olympic editions

from 1964 to 2008

5 GOLD OLYMPIC MEDALS

from 2012 to 2016

5 GOLD OLYMPIC MEDALS