5TH EUROPEAN JUDO RESEARCH AND SCIENCE SYMPOSIUM

&

4TH SCIENTIFIC AND PROFESSIONAL CONFERENCE:

„APPLICABLE RESEARCH IN JUDO”

PROCEEDINGS BOOK

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FOREWORD

5th European Judo Research and Science Symposium & 4th Scientific and Professional Conference on Judo, „Applicable Research in Judo" is being held this year, with great acknowledgement of the European Judo Union. The co-organizers of this conference, the Faculty of Kinesiology of the University of Zagreb and Croatian Judo Federation received special award from the European Judo Union for the organization of the last year's symposium and conference (12-15 of June, 2017).

Such an important award obliged us to organize a symposium/conference this year with great enthusiasm and the best we could. Since this symposium/conference is unique in the world of judo, this year we have expanded it thematically by bringing together the best scientists and experts in the field of judo from all over the world. Our first invited lecturer is Prof. Emerson Franchini, PhD., from Brasil, one of the leading scientists on judo in the world, known by his scientific excellence and creativity, that is evident from citations of his works.

The other two invited lecturers this year are: Anastasiya Khomutova PhD., from Great Britain and a young Croatian scientist Ivan Segedi, PhD. Their activity in the scientific area of judo sport represents a continuation of the previous conference/symposium editions and it was a logical choice for this year. It is necessary to emphasize that a special session at this year's symposium will be dedicated to „Women Judo Network", with a few presentations regarding a position of women in judo and/or gender equality in our sport. The session will be followed by a Round table on this topic and will, besides researchers, include important judo decision makers as panelists.

The concept of the 5th European Judo Research and Science Symposium & 4th Scientific and Professional Conference on Judo „Applicable Research in Judo" will be divided into four sessions: the first day will start with the opening ceremony and introductory presentations of the lectures invited. On the second day in the morning, conference will continue with „Women Judo Network" session, followed by presentations of other works in the afternoon. The conference will end on the third day in the morning with practical presentations.

As members of the Organizing Committee we believe that we are contributing to dissemination of the research projects on judo that are conducted at universities all over the world, that we are empowering a network of researchers and, of course, we believe that we are reducing a gap between research/scientific world and practical work on tatami.

Therefore, we would like to thank all the participants for their contribution to the promotion of science and expertise in the development of judo sport, and we wish you a pleasant stay in hospitable city of Poreč, Croatia.

For the Organizing Committee:

Mrs. Jane Bridge-Charlot – President

Prof. tenure Hrvoje Sertić, PhD. – Chairman

Mrs. Sanda Čorak, PhD. – Vice-Chairman

CONTENTS

PACING IN JUDO: RELEVANCE TO PERFORMANCE AND PROPOSED INVESTIGATIONS

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Key words: pacing in judo, performance, judo time-motion, high intensity, judo physiology**.**

INTRODUCTION

Pacing can be defined as how energy expenditure is distributed during a physical effort to avoid early exhaustion while achieving a desired performance outcome (McGibbon et al., 2018), and this aspect has been considered to influence performance in many different sports, especially in cyclical dynamic sports such as swimming (McGibbon et al., 2018), cycling (Abbiss et al., 2016), triathlon (Wu et al., 2014; Wu et al., 2015) and running (Hanley, 2016). In these sports, the main goal is essentially to finish a given distance in the shortest time possible, and pacing has been investigated extensively in endurance sports (McGibbon et al., 2018). Thus, athletes regulate their efforts based on their own physical abilities, previous experiences performing a specific competitive event and the pace imposed by their main opponents (Abbiss et al., 2016; Hanley, 2016; Wu et al., 2014; Wu et al., 2015). In high-intensity intermittent sports the number of investigations is reduced, but the importance of soccer matches has been reported to affect fast runs, fouls and duels (Link and Lorenzo, 2016). In combat sports, few studies addressed how the rhythm imposed during a given task affects performance and physiological responses (Baudry and Roux, 2009; Cimadoro et al., 2018; Dunn et al., 2017; Franchini et al., 2013a).

In judo, specifically, only *uchi-komi* (technique entrance) was used as a sport-specific effort to verify how athletes performed and responded physiologically when 1:1, 1:3 or 1:5 effort-pause ratios were used (Baudry and Roux, 2009) or when short (10s), medium (20s) and long (30s) effort duration with identical pauses (i.e., 1:1 effort-pause ratio), totalling 180s of effort, were combined to *ashi-waza* (leg technique, in the study represented by *o-uchi-gari*), *koshi-waza* (hip technique, in the study represented by *harai-goshi*) or *te-waza* (arm technique, in the study represented by *seoi-nage*) (Franchini et al., 2013a). However, in both studies judo athletes were asked to perform all-out and the duration of the exercise was controlled, which is different from official judo match conditions.

Indeed, combat sports present several aspects that are very different from the typical cyclical endurance sport, resulting in an even more complex approach to understand how combat sports athletes regulate their effort during the match. The main aspects to be considered are: (a) non-cyclical actions; (b) intermittent nature of efforts; (c) undetermined time-limit (e.g., in judo the match can be finished in a few seconds when an *ippon* is scored or can last more than the regular 4-min when the extra-time is needed due to the tied match in the regular time, with some matches reaching more than 10-min of additional time); (d) combat sport athletes can execute their actions during the whole valid time, and avoid contact in some occasions; (e) the maximal score or match ending can be achieved via techniques applied with different intensities; (f) multiple matches are performed in the same day, with short intervals (approximately 15-min) in some occasions.

In this paper, the characteristics of judo matches time-motion and physiology will be used to make inferences concerning how effort can be regulated, its relevance to performance and how this can be investigated, allowing a better understanding of this sport and, consequently, insights to improve training organization and judo athletes' preparation to cope with the physiological and tactical demands of the competition.

JUDO TIME-MOTION

Judo is a high-intensity intermittent grappling combat sport, which is limited to 4-min duration in junior and senior competitions, although matches can last a few seconds when an *ippon* is scored or more than the 4-min when there is a draw in the regular time and athletes continue to fight until a score is achieved. Typically, a judo match is composed by sequences of 20s to 30s of effort interspersed by 10s breaks until an *ippon* is scored or until the time limit is finished (Franchini et al., 2013b; Marcon et al., 2010; Miarka et al., 2012; Miarka et al., 2014). During the effort period judo athletes engage in varied actions, demanding different physiological demands, but the main actions are (Franchini et al., 2013b): (a) approach or displacement without contact – during this phase athletes try to get closer to their opponents, searching for a balanced position to establish their grips. The lower-body displacements are considered as low-intensity efforts compared to the other combat phases, while the arm movements require speed and precision to grip the opponents' *judogi*; (b) grip dispute – this phase represents more than 50% of the combat valid time and impose elevated attentional and physiological demands, as the grip is a key element to subsequent phases in the match. The initial grip control may require high levels of force, but its maintenance is limited essentially by forearm strength-endurance; (c) throwing technique attempt – normally, when the athlete is superior in the grip dispute he/she is more likely to perform a successful throwing technique, although counterattacks are also a possibility. If *ippon* is scored the match is over. A *wazari* would result in a „comfortable" advantage, but the transition action to groundwork is a key element to guarantee the victory; (d) transition – either when a score is achieved or either when no score is obtained, the transition from standing combat to groundwork combat is another important phase of the match, as most of the decisive actions during groundwork combat is determined during the transition phase; (e) groundwork combat (*ne-waza*) – the groundwork combat has gained attention in the last years, as the recent rules changes decreased the immobilization time, while allowing for more time in this combat phase, when the referee perceives that positive actions that can result in score are being executed; (f) pause – in this phase the athletes have time to partially recover from the efforts conducted, as well as to stablish the technical-tactical actions to be executed, based on their analysis and on the instructions given by their coaches.

Therefore, each of these phases have potential to represent a more or less intense pace, depending on how the athlete can control the situation. Basically, this control is based on comparisons between his/her technical-tactical, physical conditioning and psychological statuses and those from his/her opponent, and on the scoreboard information (including time and match partial score, i.e., tie, advantage or disadvantage). Thus, studies should be conducted to verify how more successful judo athletes behave in each of these phases, according to competition phase and level, weight category, age, sex, and minute of combat compared to their less successful counterparts. Although no research was specifically conducted to investigate pacing in judo (at least no article was found in indexed databases), some inferences can be made from published research.

Data from Calmet et al. (2010) indicated that high-level judo athletes differed from intermediate and novice judo athletes concerning the approach and grip phases connected to the throwing technique execution. In general, higher level judo athletes spent more time approaching and trying to establish their grip, but consumed less time between a lapel and sleeve domination and their throwing technique attempt, compared to intermediate and novice judo athletes. Thus, these results suggest a slower and longer pace strategy in the low-intensity phase of approaching and a faster and shorter pace in their high-intensity action (in that study represented by the link between two-hand grip domination and throwing technique execution). Additionally, Courel et al. (2014) reported that winners normally had a higher frequency of grip domination attempts compared to defeated athletes, and the effectiveness of grip attempt was 2 to 10 times greater in the winners. Furthermore, they also found an increased probability of winning a judo match (2 to 3 times higher) when a grip-throw matching was achieved by the athlete. Thus, the time spent in different grip dispute actions and its connection with match results can

be investigated to provide coaches with information about this relevant phase of judo combat. It is probable that judo athletes winning the match tend to try to increase the time in the preparation phase and decrease the time in grip dispute. It is also probable that as the match is closer to its time limit judo athletes have a lower high-intensity effort to low-intensity effort ratio, i.e., probably the time in the approach phase to get the grip and the pause are longer in the last minute of combat compared to the first minutes, while the time disputing the grip dominance and on attack execution become shorter in the last minute compared to the first ones. Although this seems to be a common observation, future research should determine the exact high-intensity to low-intensity ratio during these phases and its association to match result.

A pioneer study from Matsumoto et al. (1978) indicated that 67.7% of All Japan Judo Championships (1970 and 1971) matches were won by athletes attacking more, suggesting that frequency of attacks can be a valuable variable to describe match „intensity". Not surprisingly, super-elite judo athletes (Olympic or World champions with more than two medals in these events) presented a higher variation of direction of attacks and number of throwing techniques compared to elite judo athletes (Olympic and World medal winners, but without any gold medal in these events), suggesting that a higher technical repertoire is important to increase attack frequency and a key element to success at the top level (Franchini et al., 2008). Consequently, research on the frequency of attacks in different moments of the match, considering the scoreboard, and the final match result can provide valuable information concerning the best approach to deal with the technical and physical preparation of judo athletes. Specifically, the rhythm of attack during judo matches are probably different between matches finalized in the different minutes, and athletes probably would increase their frequency of attacks in the last minute of the match (4th min) when the scoreboard is the same for both opponents and in the extra-time, a period when any score can result in victory. However, this needs to be precisely determined and the frequency of attacks should be considered in relation to other high- and low-intensity actions performed during the match to have a global indication of match „intensity".

JUDO PHYSIOLOGY

One important aspect that probably influences the rhythm of attacks and match overall intensity is the physical condition of judo athletes competing against each other. Judo athletes have been characterized as presenting a well-developed anaerobic power and capacity, especially from the upper-body segments, elevated muscle power and relative maximal strength, as well as a moderate to high aerobic power (Franchini et al., 2011). Recently, Julio et al. (2017) estimated the energy system contribution during judo matches lasting 1, 2, 3, 4 and 5-min, and reported that since the first minute the predominant pathway is the oxidative, which increases its contribution from 50% for up to 81% across the match. The ATP-PCr energy system, responsible by the support of high-intensity actions (i.e., normally those resulting in scores), presented a decrease during this period from 40% to 12%, while the glycolytic system (responsible by strength-endurance actions such as the grip dispute) did not vary during the match duration, as it contributed to 6% to 10% of all energy needed to sustain the match. Considering this profile, it is probable that judo athletes with higher anaerobic and muscle power would be able to perform more attacks in the first minute of the match, whereas those with higher aerobic fitness would be more likely to keep a higher frequency of attacks in the last minute or during the extra-time, especially because increased aerobic fitness is associated with faster recovery after high-intensity efforts (Bonato et al., 2015; Gariod et al., 1995). Indeed, there is evidence that judo athletes scoring more at the beginning of the match normally present a higher anaerobic fitness and those scoring more in the last stages of the match have a higher aerobic fitness (Gariod et al., 1995), and upper-body anaerobic capacity was positively correlated to attack during the judo match (Franchini et al., 2005). However, the specific contribution of these physical fitness variables to physiological responses and the technical-tactical actions need further investigation. Specifically, a multiple regression

approach analysing a wider range of physical fitness variables and more detailed technical actions analysis during the match, considering the recent rule changes in judo, seems to be necessary to establish the relationship between these variables. Moreover, the impact of specific training protocols can be investigated concerning the influence of physical fitness change and technical actions changes during the match, especially because recent studies failed to demonstrate that increases in maximal strength and strength-endurance (Franchini et al., 2015) and improvements in aerobic and anaerobic fitness variables (Franchini et al., 2016a; Franchini et al., 2016b) were able to modify the technical and time-motion profiles during simulated judo matches.

FINAL REMARKS

The present text focused on judo matches pacing and its possible relationship with technical and physiological profile of judo athletes to increase the understanding of these aspects and possibly improve training organization. Firstly, the variations of technical variables across the matches need to be determined in competitions of different levels, different weight categories and for each sex. Then, the physiological responses related to these technical actions should be investigated and training studies should be conducted to verify how changes in physical fitness may affect technical actions and pacing during the match. However, as this topic was not investigated yet, suggestions for future research were presented. In parallel to this paper, some of our research group initial results concerning these topics will be presented during the symposium.

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SPORT PSYCHOLOGY RESEARCH AND APPLIED PRACTICE IN COMBAT SPORTS AND MARTIAL ARTS

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INTRODUCTION

Sport psychology work within combat sports (MMA, boxing, judo, etc.) has received comparatively little attention in the way of academic research or applied case studies within recent sport psychology literature, despite an abundance of attention within sport sociology and related fields (for instance, Sanchez Garcia and Spencer, 2013; Woodward, 2007). With the recent emergence of a new, international and multi-disciplinary academic field dedicated to martial arts studies (see Bowman 2015), interest in the value of sport psychology research for understanding and making effective interventions into such practices is warranted. This short paper will focus on an overview of mental preparation for competitive fights, athletes' practice of cutting weight and resolving ethical dilemmas of working in this domain.

PSYCHOLOGICAL PREPARATION

Mental preparation in sport is very important and should be included to the training process together with physical, technical and tactics related training (Ziv & Lidor, 2013). The reality of combat sports competitions is unique, therefore requires a unique 'fighter mindset' and commitment (Jensen et al, 2013, p. 6). Some combat sports athletes disregard psychological preparation to competitions and think that if they have trained enough physically, it will consequently lead to being mentally ready (Simpson & Wrisberg, 2013).

Combat sports athletes, just like any other athletes, might struggle with pre-performance anxiety, and have a feeling of fear directly before the competition (Jensen et al., 2013). In order to manage such feelings, which sometimes can lead to a negative effect on performance, athletes, with the help of sport psychologists, can use standard arousal regulation techniques, the most common of which include breathing control, relaxation, imagery and self-talk (Weinberg & Gould, 2015). One recent study suggests a positive effect of using REBT (Rational Emotional Behaviour Therapy) in order to decrease irrationality and increase unconditional self-acceptance, which ultimately leads to improvements in emotional management and performance (Cunningham & Turner, 2016).

WEIGHT CUTTING

Having weight categories in combat sports can lead athletes to attempt different methods of weight management – whether it is maintaining a specific weight or using different techniques for 'cutting' their current weight to an appropriate one for competition. This is a fast-developing area for sport psychology research, as more practitioners start working with combat athletes. Weight cutting, constant monitoring of food intake and dieting often lead to eating disorders for athletes, with one study suggesting a prevalence of up to 13.5% in comparison with 4.6% in a non-athlete control group (Sundgot-Borgen & Torstveit, 2004).

Exploring psychological and physiological effects of rapid weight cutting, a study on two groups of 20 male judo competitors found out that dietary restrictions had an impact on athletes' mood by increasing fatigue, tension and anxiety, which impairs performance (Degoutte et al, 2016). One of the recent studies on weight cutting among Dutch judokas revealed that weight cutting practices are widespread in this group of athletes, and may

start as early as the beginning of their teenage years. Also, whilst in this study it was found out that mainly clubs and coaching staff support gradual weight loss, many athletes still resort to aggressive, short term weight cutting practice, which may have long lasting negative effects on mood, anxiety and overall performance (de Bruin, Gal & Beek, 2017).

Other studies support these findings, finding out that up to 60% of combat sport athletes (Brito et el., 2012) use rapid weight loss techniques, which include increased training, saunas and diuretics. Regardless of such extensive data on negative consequences of weight cutting, this practice is one of the main components in the culture of contemporary combat sports. According to Peterson, Ekstrom & Berg (2013) in their study of national Swedish athletes in wrestling, judo, and taekwondo, many athletes use weigh cutting to gain a mental advantage over their opponents. Such procedures create an image of a 'real athlete' (p. 99) and deliver a sense of focus and commitment. Nevertheless, the topic of weight cutting and its psychological consequences remains largely under-research in the area of sport psychology.

ETHICAL ISSUES

Weight cutting practices of athletes can be quite dangerous and many sport psychology practitioners have to deal with ethical dilemmas whilst working with such athletes. For example, one of the debated aspects can be a referral of an athlete struggling with eating habits to a clinical psychologist (de Bruin, 2017). Other ethical issues that might occur in applied sport psychology practice within combat sports might include struggles with violent aspects of the sports (Lane, 2008), when some athletes would be trying deliberately to injure their opponent; working with athletes of the opposite sex (Yambor & Connely, 1991), and forming effective relationships with coaches (Sharp & Hodge, 2013).

CONCLUSION

In order to summarise this short overview, it is important to note that although sport psychology training has been included into holistic training programmes for elite and amateur athletes for many years, research and applied practice within combat sports and martial arts still remains relatively limited. As this field of work has been expanding and attracting more professionals involved in applied practice and conducting research, it is important to discuss what sport psychology can offer to those in the field, as well as what ethical issues sport psychologists might face when working in such environments.

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POSITION OF WOMEN IN JUDO: CAN WE DO BETTER?

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Key words: women, judo, position of women, gender equality, world, Europe.

INTRODUCTION

Every day we are witnessing more and more women all over the world that are participating in sport activities, including judo. Still, women are underrepresented not only as competitors, but also in a position of coaches, refeeres, and especially in leadership roles. Therefore, many international and national sport federations and sport organizations, according to policy proposals (i.e. European Commission and International Olympic Committee) developed many 'gender equality projects and methods' to empower women to be more inovolved in sport and to prolong their career after competing period.

As a sport judo has all prerequsites for gender equality. For many years now, important international competitions such as continental and world championships are organized for men and women, on the same mats, same rules, same duration of matches and referees. Although in many countries, especially European countries, women started to train judo together with the male athletes, judo for women was included as a sport at the Olympic games program, at 1992 in Barcelona, 28 years after Tokyo 1964, when judo become Olympic sport for men. As a consequnce, establishement of the system of national competitions for women in judo, started later than for men.

As a second important barrier, judo as combat and contact sport is (perceived as) male dominated sport. At national federations – IJF and EJU members, registered number of competitors and women in all other positions (coaches, referees, administrative staff, commission members) are much smaller than those of men. Therefore, the main rationale for conducting this survey among IJF members was, first, to obtain exact numbers of women in different positions in judo, and secondly, to collect information on already started projects and ideas for empowering women in judo. This study presents survey results and analysis and give reccomendations for national judo federations, continental and to the International judo federation. The main research question is - can we do better when it comes to position of women in judo?

METHODS

As there is no statistical data on position of women in judo, a first and logical step was to conduct a survey on position of women in judo within national judo federations. A survey was mailed to IJF members during the period of three months, from October to December 2017. Survey consisted of 1 closed and 6 open-ended questions: a first one was on the numbers/shares of women on different position within federation and at clubs and other questions were focused on the activities, already started or planned and other gender equality issues.

After sending 3 reminders, a response rate is pretty low - 26% - or 52 national federations out of all IJF members (198 federations) completed the questionnaire. According to the continents IJF Secretary received following number of fulfilled questionnaires from 5 continents: EUROPE (23), AFRICA (12), AMERICA (6), ASIA (6) and OCEANIA (5)[1]. As those national federations that participated in the survey were not randomly selected, so it

[1] IJF and Comission for Gender Equality would like to thank all the national federations that participated in this survey. The list of the countries that participated are in Apendix 1.

could be concluded that they are the ones that are more active regarding the position of women. This is the main limitation of this study. This paper illustrates data for all countries that contributed, and European ones (23), so that the results can be compared.

RESULTS AND DISCUSSION

First question was quantitative one, as we asked for the numbers or share of women on different positions within a national federation. In total, 47 national federations, answered this question, but with a lot of missing data. It is obvious that many countries are not collecting data or not collecting it in a proper way, about coaches, referees, and especially club administration officials on gender basis.

Table 1. Women on different positions/occupation within national judo federations (in %)

Position/Occupation/Leadership role	Average share of women – all national federations	Average share of women – European federations
Competitors - seniors	**24**	**29**
Coaches	17	19
Referees	18	19
Club administration officials	**24**	**28**
Club presidents	10	12
National federation presidents	10	9
Members of national executive committee	17	14
National commisions members	18	19

Results are showing that the biggest shares of women are among athletes and that are expected results. These results correspond with the similar shares of women at a position of club administration officials. But when it comes to leadership roles, the underrepresentation of women is obvious. Structures of committees shows dominance of men and it is the same case with national commission memberships. **The higher is the position, the less women are engaged** – the number of women as presidents of national federations (10%), or in the case of Europe (9% or two national presidents) is very low.

IJF is not 'alone' in this position regarding gender equality. Statistics in many national sports federations show a significantly lower involvement of women in different sport positions, especially in terms of managements positions. It is important to make conclusion about the gap between share of women at the position of competitors and all other positions. If the shares are the same across all the positions different activities can be proposed as in the case where shares are different.

Share of women in judo as competitors is higher than share of women at all other positions; in this case national judo federations and IJF have a task of retaining the women in judo. When the shares are alike and small, the most important is promotion of sport itself. Judo is in both positions: there is need to promote judo as sport for women to get more than 24% of women competitors and also to retain and not to lose the women already involved in judo.

Only one third of the repondents – national judo federations have already established a Commission on gender equality (34%) but almost three quarters (73%) are following recommnedations from their national Olympic committees and 58% already started some activities. Europian national federations are following the same pattern

with a higher percentage of the federations that are following NOC recommendations and those that started some activities to empower women in judo, but with exactly the same 10% of those who established a commission for gender equity.

From this survey we can not be sure if these results can be representative for all the IJF members and this is limitation of the study One of the possible conclusion could be that only small number of countries think and perceive gender equality as an important issue in development of judo in their countries.

Majority of the national federations have already started some activities to empower women in judo; usual activity is 'organization of seminar' for coaches and referees where women are participating with men. Some NJFs also organize seminar for those who would like to work at administrative positions in clubs or federations.

Table 3. Activities already started by national judo federations

Type of activity	Number (shere of NSFs: all)	Number (share of NSF: EJU)
• Seminars/trainings for coaches and referees	8 (35%)	4 (8%)
• Seminars for administrative positions/management seminars	3 (13%)	1 (2%)
• Participation in empowering sport programs (NOC or other organizations)	3 (13%)	0 (0%)
• Research, sholarship	2 (7%)	1 (2%)
• Special projects to empower women (promotion, encouraging women to take positions, network of women in judo, Open days etc)	7 (30%)	7 (14%)
TOTAL	23 answers (44%)	13 answers (25%)

National federations are also organizing special projects focused on women, for example, to promote women in judo like Sweedish Federation that has a great success with female management supply program and Judo for women is recognized as an area priority within the federation. France is organizing tours and activities promoting women athletes and judo for women, Croatia conducted research and are forming a network of women in judo within a country and Ireland established a position of Ambassador for Women in Judo. African countries such as Kenya, Ghana and Senegal are active in empowering women but are at the same time fighting for the financial support for their federations. Japan through AJJF has established the Women's Judo Promotion Committee with objective to discuss and implement strategies to improve the status and environment for women so that they are able to continue their sport careeres as active coaches and referees. These are all very good examples but they are still only examples.

One of the main survey questions was about main obstacles for stronger involvement of women it the work of federation. It is obvious (from the survey results) that there are many obstacles for stronger involvement of women in judo and that they are very diverse; 10 categories were derived from total of 109 obstacles stated by national judo federations in an open-ended question.

Table 4. Main obstacles for stronger involvement of women in judo

Main obstacles:	Number (share of NJFs - all)	Number (share of NSFs: EJU)
• Stereotypes (women are not able…not expert same as men…)	7 (6%)	1 (2%)
• „There are no obstacles"	5 (5%)	4 (8%)

• Perception of judo as a male sport and/or dangerous sport	6 (6%)	0 (0%)
• Social engagement of women (family obligations, lack of time, lack of motivation, religion barriers)	18 (17%)	7 (14%)
• Absence of women specific training/promotion	4 (4%)	2 (4%)
• Tradition and culture	6 (6%)	3 (6%)
• Lack of role models; lack of women's network	5 (5%)	3 (6%)
• Lack of support (financial resources, support from male colleagues)	11 (10%)	3 (6%)
• Overall small participation of women in judo	8 (7%)	2 (4%)
• Lack of qualified female officials/lack of sport management knowledge	3 (3%)	2 (4%)
• Other obstacles (infrastructure, lack of selfconfidence, unawareness of gender standards; lack of incentive policy)	36 (33%)	10 (20%)
TOTAL	109 answers	37 answers

Answers vary from very general ones like 'tradition and culture' to specific ones like 'absence of specific programs for women'. There is a need to distinguish obstacles that IJF and national judo federations can influence and make a change from those that need more societal engagement. Survey results clearly state that social engagements of women are many (family obligations and as a consequence lack of time and motivation) but still all other obstacles are also very important.

Lack of support is the main obstacle and has many variations – lack of staff, time, finance within federations to create special programs for women in judo. From the survey results is seems that 'the story of women involvement in judo' goes like this – the share of women athletes is much lower and for those that finished their athletes career, there are not so many positions to take; coach and referee positions are most common but management and leadership positions usually are not available. Management and/or leadership programs usually are also - not available. Besides stereotypes that women can not do the job same as men, there is a lack of support from male colleagues within federations. Upon that, there are few role models that could motivate young women to stay in judo. Some federations stated that „there are no obstacles for stronger involvement of women in the work of our federation but they are doing nothing to empower women to participate more in different roles and positions. When leadership is involved, some federations stated that „special attention has not been given to recruitment, mentoring, empowerment, rewarding and retention of women leaders".

Last open-ended question in the survey was about possible help of IJF to national federations. Survey results showed that 41 (79%) out of 52 national federations have ideas/proposals for IJF regarding women in judo. It is important to list majority of the proposed activities in order to capture national federation original ideas:

- ✓ **Educational activities**: Guidelines for national federations for future work with best practice examples; IJF can held special seminars/worshops for empowering women in judo; annual seminars to be settled in IJF Calendar; Encourage national federations to send women at different training sessions organized by IJF; Launch an international leadership trainee program within the IJF with the ultimate goal to recruit women to executive position in national federation and/or commission positions within continental judo federations and the IJF; Career awareness program and skills aquiring program; Empowerment program.
- ✓ **Planning**: develop Action plan guiding national judo federations in developing a set of different activities; Set targets to achieve gender equality.

- ✓ **Promotional activities**: Sponsoring women athletes in international tournaments; Create promotional campaign for gender equality to be promoted between all the IJF members; Visits to federation by former female athletes who are important coaches, referees or has key roles at IJF; „Making marketing materials with arguments – why judo is so good for women; Network activities for women.
- ✓ **Normative prerequsites**: Quota: set a minimum of women working in each commission; Help in establishing a Commission for gender equality; IJF can make it mandatory to have women in certain positions – otherwise men will always dominate.
- ✓ **Funding**: Assistance in funding women judo instructors; establishing a fund for organizing seminars for women; Grants.
- ✓ **Leadership**: If the IJF takes a leading role in women's judo promotion, the NFs will surely follow; Appoint more female officials within the different commissions of the IJF to give young females more role models for the possibility of an international leadership career for themselves; Have a role model of competitors, referees, coaches and administators to promote judo to a female audience.

CONCLUSIONS

Judo as a sport is in accordance with gender equity when it comes to competitions and sport development (system of joint championships for men and women; mix teams; same awards) and it gives a great floor for the improvement in judo management and leadership. But due to various factors (late start of Olympic games, late start in many countries, the role of women within different tradition and cultures) there is a gap between the share of athletes and share of women in judo in all other positions (coaches, referees, administratives) especially on leadership position.

Survey conducted for the need of IJF relevealed the most important obstacles and also gave many propopsals for improvement of position of women in judo. Therefore, it is important for the develpment of judo as an Olympic and modern sport, to follow recommendations of I.O.C. and to improve the position of women in judo, at all levels. It is also importan to point out the need to distinguish between the obstacles that are too general to be solved through specific sport so that all the activites can be focused on the activities that can be effective.

Majority of the proposals from national judo federations are focused on EDUCATION (seminars, workhsops), PROMOTION (materials and campaigns, videos, role models) and ACTION PLANNING (guidelines, examples of best practice). Only a small number of national judo federations are active in empowering women in judo – many are waiting for IJF to be a leader in gender equality issues. Some of the countries that have alredy succeed in improving the position of women in judo, as Sweden and France or the countries that are undertaking many activities to empower women such as Japan can also serve as best practice examples.

To answer the main question – yes, we can do better when it comes to position of women in judo, but all of the organizations have to work together and to harmonize all the activities.

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Appendix 1.

LIST OF THE PARTICIPANTS OF THE SURVEY:

Europa: Faroe Islands, Andorra, Ireland, Malta, Portugal, Estonia, San Marino, Great Britain, Sweden, Norway, Belarus, Denmark, Belgium, Austria, Poland, Croatia, France, Spain, Russia, Albania, Bulgaria, Serbia, Latvia.

Africa: Cameroon, Uganda, Nigeria, Senegal, Kenya, Ghana, Seychelles, Mali, Central Africa, Djibouti, Tunisia, Zambia.

Asia; India, Japan, Lao, Pakistan, Yemen, Iran.

America: Mexico, Ecuador, Canada, Venezuela, Panama, USA.

Oceania: Australia, Solomon Islands, Palau, Papua New Guinea, French Polynesia

JUDO AND RHYTHM; THE IMPORTANT STAGE OF THE ATHLETE'S DEVELOPMENT

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Key words: judo, rhythm, music, dance, combat.

INTRODUCTION

This paper relates to judo and rhythm during training in various ways such as music, dance, or even the beating of different objects.

RHYTHM IN MUSIC

Music for the ancient Greeks was considered the most essential part of their cultivation and education (Marrou, 1956). The truly educated man was „the musician". The theory of harmony and numerical proportion goes to Pythagoras (Ferguson, 2008). Pythagoras (6th century BC) discovered the possibility of being represented by the fundamental musical relationships in the octave with simple numerical proportions (Clark, 1989).

RHYTHM IN SPORT

Different sports use different techniques to teach athletes rhythm, one of them is Table Tennis (Anping, 2009). A psychological perspective temporally structured or rhythmical interventions can play a critical role in facilitating the execution of movement patterns in high-pressure performance environments (MacPherson, Collins, & Obhi, 2009).

RHYTHM IN COMBAT

Herodotus (484 BC - 425 BC / 410 BC) is the founder of the science of history (Luce, 1997). His work is a record of the history of the wars between the Greeks and the Persians (Irby-Massie; J. D. Mikalson, 2004). Mikalson, in his book „Herodotus and religion in the Persian Wars" explains how the king of Sparta Leonidas with 300 soldiers broke the rhythm of 300,000 Persians in narrow pass of Thermopylae (J. Mikalson, 2010).

RHYTHM IN JUDO

Toshiro Daigo 10th dan in his book (Daigo, 2005) on page 76 said that, „The important thing for getting the proper techniques is that you should do randori with rhythmical footwork's (advancing and retreating) and body movements" Attending a EJU seminar, (improve your club) had the great opportunity to see Hiroshi Katanishi sensei teaching (tai sabaki) footwork's, by using rhythmical moves to attack or break the opponent's balance or to break opponent's rhythm. Katanishi sensei clearly explains that softness is equal important and related to improving your rhythm.

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CRITICAL JUDO ELEMENTS IN SELF-CONTROL DEVELOPMENT AND EMOTIONAL CONTROL

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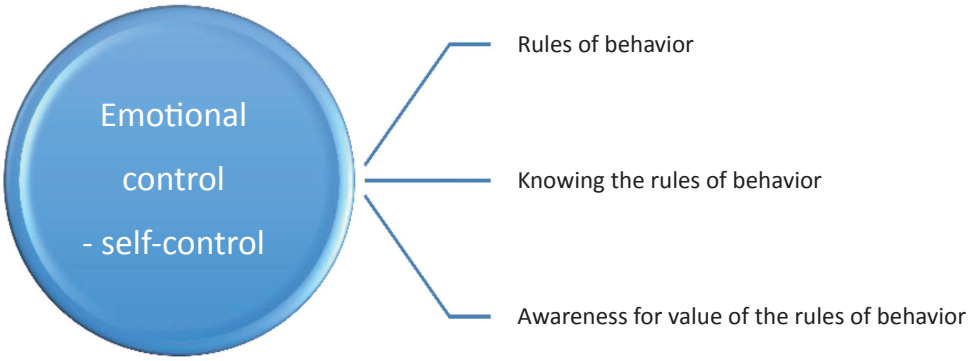
Key words: judo, Jigoro Kano, self-control, emotional intelligence.

INTRODUCTION

Jigoro Kano, the founder of judo, taught physical and mental exercise using the goals of human development (Kano J., Jujutsu, 1887). With development of judo in Japan and in the world, the benefit of exercise becomes recognizable with different social points of view and mentalities. In the mental aspect of exercising, Seiryoku Zenyo and Jita Kyoei argue through their principles that judo becomes a mechanism which helps successfully in person's development (Kano J., 2005). One of the factors that is often highlighted when presenting a mental development of judoka is achieving of self-control. According to definition, self-control can be found in a group of psychological features defined under emotional control (Takšić V. M., 2010).

MATERIALS AND METHODS

Detecting mechanisms that control the emotional status, as well as counting self-control, are the key to defining benefits of judo practice as an activity that develops emotional control. The starting point is the basic setting of emotional control function and its development. Defining self-control is in a direct correlation with knowing the rules of conduct and respecting them.

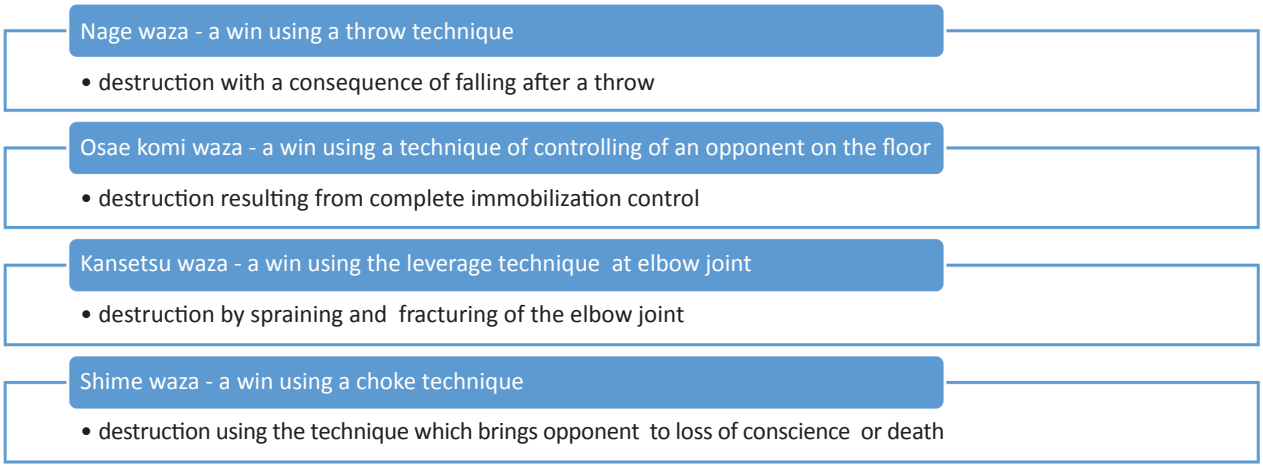


Scheme 1 – Definition of emotional control functioning and behaviour

Following the rule of social norm and behaviour is therefore one of the key rules in defining a person who with his emotional control as a social entity is recognizable as ethical or moral. A person that is exposed to common situations when he needs to follow some rules develops those characteristics more. Sport is therefore an activity which consists of rules, and in that way develops control of self-control and emotional control. What is the benefit of practicing judo and why would judo develop more or better emotional control? In sports competition, the goal is to win an opponent (individual or in team) so that by the specificity of the value of the results in a single sport, we have a result of higher value.

DISCUSSION

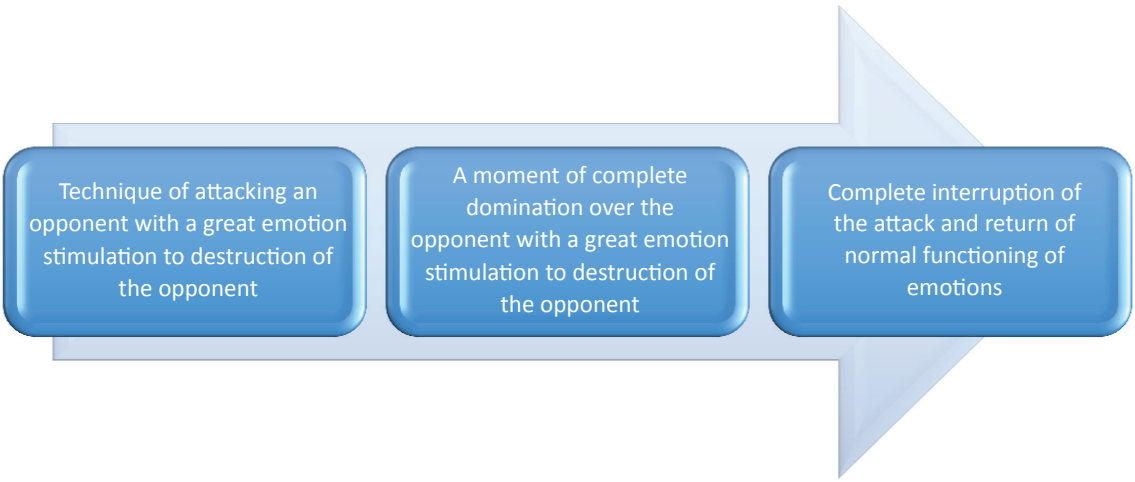
The competition is conducted according to the rules and compliance with the rules is defined by the control of emotional intelligence. The emotional state of an individual in situations when he/she is at the boarder of respecting or disregarding of the rules produces the development of self-control. Equivalent of sports in the emotional value of development is not the same. The fundamental difference with sports games, various sports, and judo is in the boundary value of an emotional state when it comes to respecting the sport rules in order to win. Structural judo is a martial art that uses techniques in its technical structure to beat opponents in the fight. The actual techniques are in their original form intended for the destruction of the opponent, and the victory itself is in the original form the complete destruction of the opponent. Judo as a sport is regulated by the rules that set the limit of complete destruction but with the use of maximum components of physical, technical and tactical readiness.



Scheme 2 – display of the technique structure and its original consequences towards opponent

The emotional regulator is exceptionally high in the situation of mutual maximum use of all the factors to win in combat. The very fact that we fight with someone using the techniques with a goal to win, and also that we defend against opponents who equally attack with full strength causes the state of elementary stress which is associated with our survival. When considering the goals of judo techniques in the fight, respecting of the rules is under extraordinary emotional strain. Only a burden that is repeated systematically through practice arises the development of self-control.

Of course we should not forget that with the same „weapon" technique we defend ourselves against an opponent, which by the same dangers as a result of each of the opponent's attacks, stress greatly increases. The moment of victory is governed by the rule signalled by the referee of the fight or the opponent himself (by surrendering). The emotional state in the situation where someone with a large number of the mentioned techniques attacks us and endangers us with full force, as we do him, at the critical moment of performing the technique (eg, attack by leverage on the elbow) requires an exceptional self-control. The sporting fight at competition is just the crown of training, hence through the training process that requires great technical, physical, tactical and mental preparation, the process is also brought into a state of great emotional arousal and self-control. The mechanism that develops at these border states that require compliance with the rules, develops a mindset in athletes that works even in conditions outside the training and competitions.



Scheme 3 – display of the flow of emotional states in athletes who win in a fight

Scheme 4 – display of the flow of emotional state in athletes who are losing a fight

The second factor in judo training that is clearly dominated since the very beginning is respect for hierarchy and teacher or trainer and dojo behaviour. The rule of ranking the belts in accordance with the mastery of certain judo knowledge and experience determines the position of the initial and final salutes (rei), respecting exclusively such hierarchy. This has a positive impact on relationships based on the level of knowledge and experience gained. This experience inevitably affects the behaviour and attitude towards respecting similar values in everyday life.

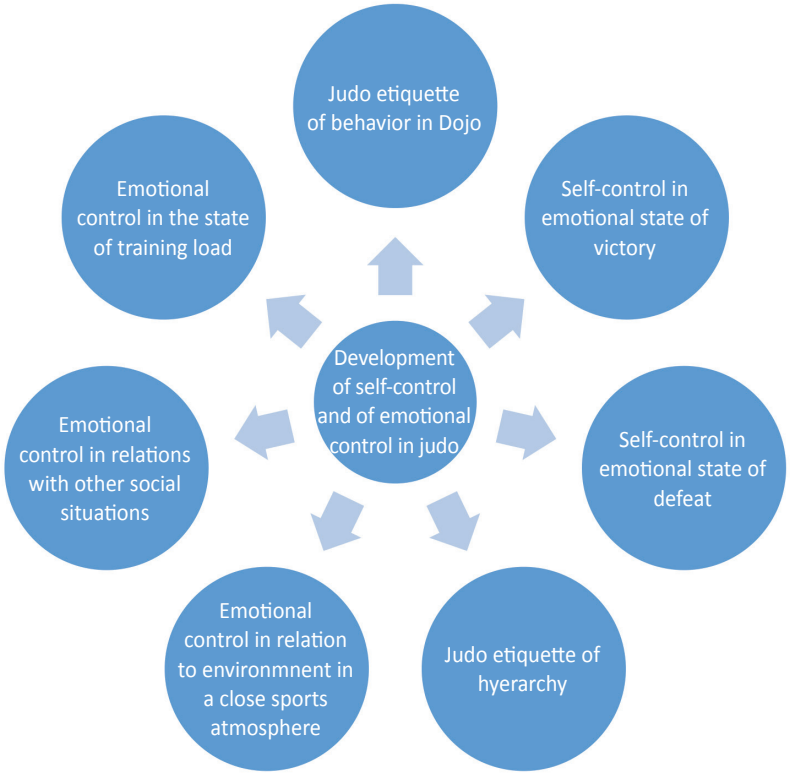
Usual behaviour norms when training (Kano J., Dojo ni okeru shugyosha ni tsugu, June, 1936):

- Wearing of assigned sportswear,
- A bow when entering dojo or tatami,
- Starting of practice with a defined position of trainer or teacher and students,
- Defined position of individuals according to knowledge level assigned by the belt,
- Traditional bow (rei).

The bow itself is a particular factor influencing the emotional state of the athlete during training or competition. Regardless of today's greetings performance in a more formal sense, a bow from a psychological state profoundly effects the emotional state of an athlete emphasizing the beginning and ending of training, retreat, or fights. With such behaviour, the athlete is constantly trained to control the various causes of stress and the processes of emotional control through clear understanding of the rules.

CONCLUSION

Judo as a sport with its structure definitely brings athletes in situations when they are in full domination or in total inferiority to the opponent. Such states are regulated by the rules that control such boundaries, and through training the athlete achieves self-control of various emotional states. Developing emotional control in conditions that are in some parts extreme, also affects compliance with other rules and norms of behaviour in everyday life. Therefore, this work is a possible platform for further research and demonstration of judo values as a sport that positively influences the relationship of emotional intelligence, self-control, and behaviour.



Scheme 5 – Correlation of development of emotional states of self-control emotions in judo

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SCIENTIFIC RESEARCH IN JUDO: A POTTED HISTORY

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Key words: research, science, international, history, judo development.

EARLY JUDO DEVELOPED THROUGH RESEARCH

Whilst studying at Tokyo Imperial University Faculty of Literature, Jigoro Kano researched the Tenjin Shin'yō-ryū and Kito-ryū styles of jūjutsu. On graduation aged 22, he gained employment as a teacher at the Gakushuin, or Peers College for the sons of the wealthy upper class. Shortly afterwards he founded his own school, the Kanō Juku, based in Shimoya Kitainaricho at the Eishoji Temple (Waterhouse, 1982; Watson, 2000).
He collected together all the jūjutsu literature he could find and tried to preserve useful elements and discard any shortcomings in creating a synthesis of the various styles (Hoare, 2009). Rather than call his jūjutsu, Kano-ryū jūjutsu, he called it judo – the use of the term 'dō' better illustrating his thoughts on education and the concept of a person treading a path or way through life.

He called his school for the study of judo the Kōdōkan. In the definition of the name Kōdōkan 'kō' means teaching, study and learning, 'dō' means the way or path, and 'kan' means building or hall (Kano, 1986). Therefore, the name suggests also the mission of the Kōdōkan as 'A place to study the way'. The Kōdōkan definition of judo is 'The way of softness and flexibility' (Mifune, 1956). In 2009, the Kōdōkan published part of the 1964 work Kano Jigoro, edited by Dr. Morohashi Tetsuji in English (Bennett, 2009). Kano discusses his extensive research of jūjutsu styles, how he purchased books and antique scrolls and learnt through discussion, exchanging texts and oral teachings, followed by reflection and analysis. We can see clearly that the very creation of judo is founded on a scientific research process. In fact, Kano refers to judo as 'this science' in a lecture in 1889 advocating the introduction of judo into the school curriculum (Bennett, 2009).
Kano summarised his amalgamation of jūjutsu principles into the concept of ju-no-ri (avoid challenging an opponents' force directly in favour of it to one's advantage), which he often explained in biomechanical terms (Kano, 2005). Hoare (2009) suggests that there are four reasons why the young Jigoro Kano was able to achieve so much: his father's abilities and networks, his connections to the Imperial family, his wealthy background, and his role as a teacher at the Gakushuin where he helped educate the future emperor (Hoare, 2009).

RESEARCH VISITS

After seven years of working at the Gakushuin, in 1899 Kano was sent on a research visit to Europe by the Imperial Household to investigate educational practices (Stevens, 2013). On return to Japan he became the principal at Kumamoto Government College, where Lafcadio Hearn joined as a young English literature lecturer. Hearn was impressed with judo and wrote that the master of jujutsu never relies on his own strength, instead using the strength of his antagonist (Hearn, 1903).
In his lifetime Kano travelled overseas a total of 13 times, taking opportunities to engage in fact-finding, to give lectures, and to disseminate information about judo.

INTERNATIONALISATION

The popularity of judo spread throughout the world. Prolific author and later member of the London Budokwai, E. J. Harrison, joined the Kōdōkan in 1895 and achieved shodan (Callan, 2017; Harrison, 1914). In 1901, Kano

taught judo to the president of the Cambridge University Judo Club, Professor Hughes while he was in Japan (Hoare, 2009). In 1902 Kano sent Yamashita Yoshitsugu to the United States where he taught judo to USA president Theodore Roosevelt (Brousse & Matsumoto, 2005).

It is also known that in 1906 a jūjutsu club was formed at Trinity College, Cambridge University by E. C. D. Rawlings, with 25 members (Callan, 2008), and in 1905 Edmund Desbonnet introduced the Japanese Method to France having seen a demonstration by Yukio Tani in London (Brousse & Matsumoto, 1999). The emerging popularity of the Japanese jujutsu and judo around 1905, can be attributed to the Japanese victory in the Russo–Japan war (Brousse, 2015). The Times reported in May 1904 that the Japanese had been 'applying the principles of ju-jitsu to the art of war' ('The War in the Far East', 1904).

War also influenced the development of judo forty years later, when following the Second World War, the Potsdam Declaration of 15th of August 1945 defined the terms of Japan's unconditional surrender and General Douglas MacArthur assumed the role of Supreme Commander for the Allied Powers and established General Headquarters (GHQ). GHQ banned the use of the term 'budō', and the practice of all budō in schools and community clubs in November 1945. However, as a private institution, the Kōdōkan was allowed to continue to operate. The GHQ finally officially lifted the ban on judo in schools on 13 October 1950. The term 'kakugi' was used to refer to combat sports, with the term 'budō' not officially accepted again until 1989 (Nippon-Budōkan, 2009).

The Japanese government established the Nippon Budokan Foundation, for the study of traditional budo arts in 1961 (Nippon-Budōkan, 2009). Japan hosted the Olympic Games in 1964 with the event hosted in the specially constructed Budokan, on the edge of the Emperor's garden. The victory by Dutchman Anton Geesink in the Open category, in front of a global television audience, shattered the Japanese domination of judo, and helped define judo as a truly global sport (Brousse, 2015).

ACADEMIC JOURNALS

To help connect with members, and manage the sending of instructors to the provinces, in 1914 the Kōdōkan formed the Judokai, which produced a monthly journal 'Judo'. Kano stated that the new publication would include a scholarly column on the arts and sciences for reference, especially for judo trainees and instructors. In 1922, the Judokai was renamed as the Kōdōkan Bunkakai (Culture Association), to emphasise the development of a cultural spirit. In the same year a new publication was launched, 'Taisei'. Containing topics including - How can we train to strengthen our bodies - and - What kind of injuries occur in judo - could be considered as one of the first academic journals about judo (Bennett, 2009).

Douglas Mann introduced the topic of 'Judo and Science' to London Budokwai members in one of the earliest edition of their quarterly bulletin in 1949 (Mann, 1949). Fellow club member, Moshe Feldenkrais was one of the early researchers based in Europe. He published an article about transfer of training, and the correct actions of techniques under the title 'Research work at the Budokwai' (Feldenkrais, 1950).

'Archives of Budo' is an online journal first published in 2005 (Sikorski, 2005) whilst the 'Journal of Combat Sports and Martial Arts' was first published in 2010 (Pierantozzi & Muroni, 2010), both of these are published in Poland, where there is an active judo research community.

KODOKAN RESEARCH ACTIVITIES

In 1922, Kano developed a system of regional yudansha, the Kōdōkan Yudansha Association (KYA). Article 6 of the regulations states: 'Each regional KYA must create a Research Division and a Council. The Research Division is charged with researching judo, and must report findings and opinions to the Central KYA' (Bennett, 2009)

The Kōdōkan Koenkai (Support Society) was created in 1926 to promote the Kōdōkan and help secure the finances. Writing to potential donors, the president Go Seinosuke stated that „there are scholars in physical education departments at universities frequently research on the benefits of judo training" (Bennett, 2009).

In 1932, at the Gakushi Kaikan Hall in Kanda-Hototsubashi, the inaugural meeting of the Kōdōkan Judo Medical Research Group was held. Attended by nine invited doctors, they were tasked to investigate twelve research areas including warming-up, instruction for youth, physiological development, bone stress from each technique, Seiryoku Zen'yo Kokumin Taiiku no Kata, unconsciousness, atemi, judo injuries, life expectancy, dōjō hygiene, and women's judo. The group still exists as the Kōdōkan Judo Scientific Research Group.

In the 1950's authors published research papers with the affiliation 'Kodokan, Society for Scientific Research of Judo' (Igai, Masuda, & Ogawa, 1956a, 1956b). In 1960 Kato published a review of the development of Japanese Physical Education research (Kato, 1960).

INTERNATIONAL JUDO RESEARCH

In the late 1950s the British Judo Association held a series of Technical Conferences where they presented a number of scientific topics including physiology and mechanics. Later in 1957, Robert Smith published 'Notes of Judo Research'.

In France, the European Society for the Scientific Study of Judo (ESSSJ) was founded by Professor Michel Brousse in 1989.

In 1999, at the World Judo Championships in Birmingham, UK, the International Judo Federation (IJF) held the first International Science of Judo Symposium, having appointed two IJF Research Commissioners, Professor Michel Brousse and Dr. David Matsumoto. Symposia were held at subsequent World Championships, and in 2007 in Rio de Janeiro, the International Association of Judo Researchers (IAJR) was formed with support from Professor Yasuhiro Yamashita. The founding officials were: Dr Mike Callan (Great Britain) President, Professor Emerson Franchini (Brazil) General Secretary, Professor Takeshi Nakajima (Japan) Treasurer, Professor Michel Brousse (France) and Professor Taketo Sasaki (Japan), executive officers. Dr. David Matsumoto (USA) was elected as Honorary Vice President.

The International Association of Judo Researchers organised symposia between 2007 and 2013, and discussions are ongoing with the IJF to recommence international judo research symposia on a regular basis.In 2016 Professor Emerson Franchini from the University of São Paulo's School of Physical Education & Sports (EEFE-USP) was recognised as the leading judo-related researcher in the world by publications when he was awarded a symbolic bronze medal due to ranking third worldwide by authorship of scientific articles on Olympic sports published in indexed journals, according to the Olympic Research Medals Dashboard (Alisson, 2018).

An analysis of Olympic Research was carried out by Wizdom.ai, in judo they claimed 1186 researchers from 53 countries had published 729 publications between 1934 and 2018 indexed by PubMed and CrossRef (wizdomai, 2018).

In 2010 the European Judo Union instigated the EJU Science of Judo Poster Exhibition. In a review of the first four years of posters, Professor Sacripanti presented a short analysis at the EJU Education meeting in Wavre, Belgium in September 2013. He found that over four years there had been 68 posters presented by academics from 35 universities and research centres in 15 countries. The major themes covered included coaching, training and teaching.

The Scientific and Professional Conference on Judo: „Applicable Research in Judo" was created in Croatia in 2014 hosted jointly hosted by the Faculty of Kinesiology University of Zagreb, and the Croatian Judo Federation and supported by the European Judo Union, the conference continues to make a significant contribution to judo research and is led by Professor Hrvoje Sertic.

Worthy of note is the Iberian Association of Researchers in Judo (AIBIJ) founded around 2013 and including professors Jose Manuel Garcia Garcia (University of Castilla-La Mancha), Vincent Carratala (University of Valencia) and Luis Monteiro (Lusófona University of Sciences and Technology).

The Japanese Academy of Budo was established in 1968 and continues to lead the organisation of academic research in judo within Japan. 2017 saw the 50th Anniversary Conference of the Japanese Academy of Budo held in Osaka, in partnership with the International Association of Judo Researchers and the International Martial Arts and Combat Sports Scientific Society.

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FOLLOWING THE CHANGES OF ANTHROPOLOGICAL STATUS OF YOUNG JUDOKAS DURING THE TWO-YEAR TRAINING PROCESS

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Key words: motor abilities, puberty, judo training.

INTRODUCTION

The performance of the training process, though most obvious, is still only one part of this complex process. Planning, creating, monitoring, and control are perhaps the most important parts of this process. In order for all segments of the training to be successfully integrated into the whole, the coach must be familiar with many aspects of the process itself. In the first place, this is a sportsman, i.e. the subject of the training process, and its anthropological and biological features. On the other hand, one has to have all information about the sport activity also.

Judo represents a complex sport activity that, if properly performed, can have a significant positive impact on the development of all abilities and characteristics of judokas (Sertić, Segedi and Prskalo, 2010). Proper sports training should start in childhood so an athlete can progressively and systematically develop body and mind (Bompa, 2000).
The period of puberty is one of the most demanding periods in athletes' lives, and this is the problem of this work.

Monitoring of the changes of some anthropological abilities of judokas during two years of training in this period is the main goal of this work.

METHODS

The group of subjects (10 subjects) was consisted of those athletes who started and finished the two-year training process (in the period between their 10±6 months to 12 years±6 months) in one of judo clubs in Croatia. At the beginning of monitoring process, all subjects had minimum of three years training experience.

Sample of variables consisted of seven tests that were standard battery of tests for assessing motor abilities of athletes - judokas in chosen judo club (SDM – leg explosive power; IZDRZAJ – upper body strength endurance; TRB – abdomen repetitive strength; KOTRLOP – whole body coordination; PRENPRE – speed coordination; PRET – lumbar and hamstrings flexibility; RAV – balance). All subjects have been tested three times: at the beginning of training process, after one year and after two years of training process.

The data were processed in the statistical package Statistica for Windows, version 13.1, using t-test for dependent samples.

RESULTS AND DISCUSSION

Table 1. T-test for Dependent Samples - difference between initial and transitive phase

	Mean	Std.Dv.	t	p
SDM1	**155,0000**	**23,90258**		
SDM2	**172,6000**	**25,01644**	**-5,5096**	**0,000376***

IZDRZAJ1	105,9000	43,83669		
IZDRZAJ2	130,1000	80,41068	-0,8950	0,394112
TRB1	40,0000	7,40870		
TRB2	43,8000	5,07280	-2,0165	0,074540
KOTRLOP1	20,7400	4,99159		
KOTRLOP2	20,5000	5,05195	0,6577	0,527189
PRENPRE1	11,9700	0,72273		
PRENPRE2	11,6700	0,70404	1,5620	0,152729
PRET1	57,5000	14,14410		
PRET2	60,5000	18,88121	-1,0866	0,305446
RAV1	10,1300	5,07763		
RAV2	11,1600	6,39396	-0,8612	0,411488

Table 1. points to the fact that after the first year of the training process there was a statistically significant change only in variable SDM. It can be concluded that the first year of the observed process did not lead to a strong development of motor abilities.

Table 2. T-test for Dependent Samples - difference between transitive and final phase

	Mean	Std.Dv.	t	p
SDM3	**190,4000**	**24,05180**		
SDM2	**172,6000**	**25,01644**	**4,5235**	**0,001440***
IZDRZAJ3	**171,9000**	**71,98217**		
IZDRZAJ2	**130,1000**	**80,41068**	**3,1993**	**0,010844***
TRB3	**49,8000**	**9,22316**		
TRB2	**43,8000**	**5,07280**	**2,5610**	**0,030637***
KOTRLOP3	19,3400	5,86954		
KOTRLOP2	20,5000	5,05195	-1,4023	0,194359
PRENPRE3	**11,2700**	**0,47854**		
PRENPRE2	**11,6700**	**0,70404**	**-2,4914**	**0,034345***
PRET3	59,8000	20,60636		
PRET2	60,5000	18,88121	-0,1653	0,872367
RAV3	20,3400	14,27509		
RAV2	11,1600	6,39396	1,8887	0,091529

During the second year, respondents are experiencing major changes in anthropological status (Table 2.). There was a statistically significant progress in variables SDM, IZDRZAJ, TRB and PRENPRE.

Table 3. T-test for Dependent Samples - difference between initial and final phase

	Mean	Std.Dv.	t	p
SDM3	**190,4000**	**24,05180**		
SDM1	**155,0000**	**23,90258**	**7,4604**	**0,000038***
IZDRZAJ3	**171,9000**	**71,98217**		
IZDRZAJ1	**105,9000**	**43,83669**	**3,1373**	**0,011981***
TRB3	**49,8000**	**9,22316**		
TRB1	**40,0000**	**7,40870**	**4,8229**	**0,000943***
KOTRLOP3	19,3400	5,86954		
KOTRLOP1	20,7400	4,99159	-1,8809	0,092668
PRENPRE3	**11,2700**	**0,47854**		
PRENPRE1	**11,9700**	**0,72273**	**-3,0061**	**0,014808***
PRET3	59,8000	20,60636		
PRET1	57,5000	14,14410	0,6658	0,522252
RAV3	**20,3400**	**14,27509**		
RAV1	**10,1300**	**5,07763**	**2,3575**	**0,042773***

By analysing the results, we can come up with some interesting conclusions. Improvement only in one variable during the first year of the monitoring training process is not strange if we take into account the age of the subjects. In the first year, subjects entered the period of increased physiological changes in their body and were expected to have been unable to progress significantly in motor skills. For significant progress first they should adapt to this phase so significant advances in motor status are reported after the second year of the training process. It is interesting to note that the variables for assessing qualitative motor skills: whole body coordination (KOTRLOP) and balance (RAV) record modest progress in the observed period. These results point to the fact that the qualitative motor abilities are most affected during this period.

This information is important from the point of the technique training. It seems that coaches will need to invest more energy to make the athlete's technique progress in this period.

CONCLUSION

Longitudinal studies are the best way to monitor changes of one group of subjects. The insight in changes of anthropological status of subjects can lead to the improvement of the training process. Monitoring of the training process is the first step in controlling and managing the training process and getting the most effect of it.

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CORRELATING MOVEMENT ASYMMETRY WITH COMPETITION PERFORMANCE AND COMPETITION VOLUME IN YOUTH MALE JUDOKAS

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Key words: judo, SJFT, youth sport, symmetry, functional laterality.

INTRODUCTION

The main aim of sport training is the development of motor skills, technical elements, muscle groups. Among others, that are the most useful from the point of view of competing in a given sports discipline or event (Amiri-Khorasani & Kellis, 2015; Boguszewski, Buda, Adamczyk, & Białoszewski, 2017; Smith, Chimera, & Warren, 2015) stretching exercises are considered as basic components of warm up aiming to prepare the musculoskeletal system for performance and to prevent injuries. OBJECTIVES:: The purpose of this study was to examine the effects of different agonist and antagonist stretching arrangements within a pre-exercise warm-up on hip static (SROM. Majority of movement coordination abilities of athletes practicing combat sports are the speed of adequate movement reaction, ability to maintain balance and time and space orientation, which are, to a large extent, conditioned genetically, but they are also subject to evolution during the training process (Markiewicz & Starosta, 2014).

Training and normal motor development usually lead to an occurrence of laterality, which results in the dominance of one side of the body over the other (Bogdanowicz, 1992). Youth judokas' training should be focused on evolving youth judokas movement patterns to both body sides (Šimenko, 2012) and use of both left and right fighting stances (Marek, Radosław, & Mirosław, 2012). Transfer of movement techniques from one side to the other increases athlete's effectiveness and enables them to win by taking the opponent by surprise (Sterkowicz, Lech, & Blecharz, 2010).

In judo, dominance of one body side to another has been noted by Wałowski, Poliszczuk and Poliszczuk (2016) as a slight asymmetry in favour of the muscles on the right side of the body that are responsible for trunk rotation. Asymmetries in special judo fitness test (SJFT) in dominant and non-dominant body side have also been demonstrated in studies by Šimenko and Karpljuk (2016) and Sogabe, Maehara, Sasaki and Sterkowicz (2015).

The aim of this study is to test whether the execution of SFJT on dominant and non-dominant side correlates with competition success and competition volume of youth judokas.

METHODS

Participants

Sample included 12 youth male judokas. Participants of the study were 12.97 ± 0.59 years old, their height was 162.23 ± 10.27 cm, their weight was 52.32 ± 11.05 kg. All of them were right-hand dominant. They all have been training judo for a total of 6 years. All of them had the 4. kyu belt degree at the time of measurement.

Sample of variables

Variables used for statistical analysis were: *SJFT_15s_1_D* – first part of 15 s SJFT*, SJFT_30s_2_D* – second 30 s part of SJFT*, SJFT_30s_3_D* – third 30 s part of SJFT*, TT_D* – total number of throws of first, second and third phase

of SJFT*, HR_D* – heart rate immediately after 3rd phase of SJFT*, HR_1min_D* – heart rate after 1 minute of SJFT*, SJFT INDEX_D* – final index of SJFT on the dominant side. The same variables were collected for the non-dominant side: *SJFT_15s_1_ND, SJFT_30s_2_ND, SJFT_30s_3_ND, TT_ND, HR_ND, HR_1min_ND and SJFT INDEX_ND.* We have also calculated an asymmetry index of SJFT tests *(SJFT_AS)* as an absolute value between SJFT on dominant and non-dominant side |D – ND|. Competition performance was collected from the final points and standings (*Points*) of selected judo athletes from the 2016 competition year on the freely accessible web page of Slovenian Judo Federation at their cup ranking list (*https://judoslo.si/ranking/individual/male/27/0/2016*). The number of competitions (*Competitions*) that the selected athletes attended in order to achieve the points for the Slovenian judo cup were also collected from the same webpage.

Data collection

InBody 720 (Biospace Co., Ltd.) was used to collect data on body weight, whilst body height was measured by the GP (Swiss) anthropometer. The SJFT consists of an ippon-seoi-nage throwing technique (Figure 2) that must be executed as fast as possible and as many times as possible between two partners (6 meters apart from one another – Figure 1) in three time periods of 15, 30 and 30 s, with 10 s rest intervals (Detanico & Santos, 2012; Sterkowicz,1995). Training started with a regular 25-minute warmup, followed by demonstration of the SJFT. Judokas performed the first test with their dominant side, as instructed by Sterkowicz (1995). The non-dominant side was tested 45 minutes after the first test, to ensure adequate regeneration between tests. Heart rate was monitored by Polar V800 heart rate monitor and polar H7 chest belt. Time was measured by regular stopwatch. SJFT index was calculated according to the following formula: (heart rate at the test pulse P1 + 1 min after the test P2) / total number of throws in all three series N (Sterkowicz, 1995).

(P1 + P2) / N = INDEX

The above equation suggests that the lower the index, the better the test result (Drid, Trivić, & Tabakov, 2012).

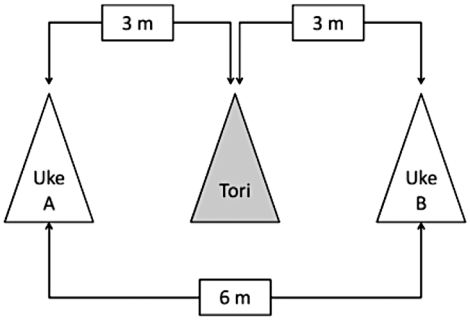

Figure 1: Positioning on tatami in SJFT (Drid, Trivić, &Tabakov, 2012)

Figure 2: Ippon-seoi-nage throw (Drid, Trivić, &Tabakov, 2012)

Statistical analysis

Data was analysed using the SPSS 25.0 software for Windows. We used descriptive statistics to analyse the variables, with Spearman's correlation coefficient used to determine the correlation between selected variables (with the statistical significance was set at $p \leq 0.05$).

RESULTS

In Table 1 it is shown that judokas in average accumulated 39.08 ± 47.26 points on 5.08 ± 3.4 competitions. The SJFT values from the dominant side were greater than the values achieved on non-dominant side in SJFT_15s_1 (5.33 vs 5.17), SJFT_30s_2 (9.42 vs 8.67), SJFT_30s_3 (8.92 vs 8.5) and TT (23.67 vs 22.33). Heart rate at the end of the SJFT (191.5 vs 192.17) was lower on the dominant side as well as after 1 min after the SJFT (155.75 vs 157.83). SJFT index was lower on the dominant side (14.75 vs 15.74) which means that judokas performed better on the dominant side. Asymmetry index between SJFT in dominant and non-dominant side is 1.04 ± 0.92.

Table 1. Descriptive statistics of variables (N=12)

Variables	MEAN	SD ±	MIN	MAX
AGE	12.97	0.59	11.50	14.10
HEIGHT (cm)	162.23	10.27	146.30	182.50
WEIGHT (kg)	52.32	11.05	34.60	71.20
POINTS	39.08	47.26	0.00	135.00
COMPETITIONS	5.08	3.40	1.00	12.00
SJFT_15s_1_D	5.33	0.65	4	6
SJFT_30s_2_D	9.42	1.08	8	12
SJFT_30s_3_D	8.92	0.79	8	10
TT_D	23.67	1.83	21	27
HR_D	191.50	6.61	183	204
HR_1min_D	155.75	10.75	131	174
SJFT INDEX_D	14.75	1.36	12.93	16.52
SJFT_15s_1_ND	5.17	0.39	5	6
SJFT_30s_2_ND	8.67	0.65	8	10
SJFT_30s_3_ND	8.50	0.90	7	10
TT_ND	22.33	1.67	20	26
HR_ND	192.17	7.76	179	207
HR_1min_ND	157.83	14.21	132	188
SJFT INDEX_ND	15.74	1.29	13.73	17.60
SJFT_AS	1.04	0.92	0.06	2.90

***D** – dominant side, **ND** – non-dominant side, **SJFT_15s_1** – number of throws in the first part of SJFT, **SJFT_30s_2** – number of throws in the second part of SJFT, **SJFT_30s_3** – number of throws in the third part of SJFT, **TT** – total*

number of throws in first, second and third phase of SJFT, ***HR*** *– heart rate immediately after 3rd phase of SJFT,* ***HR_1min*** *– heart rate after 1 minute of SJFT,* ***SJFT INDEX*** *– final index of SJFT,* ***AS –*** *asymmetry index between SJFT in D and ND side.*

In Table 2 it is shown that accumulated points very strongly and positively correlate with competitions ($p \leq 0.01$, $r = 0.844$), strongly corelate with SJFT_30s_2_ND ($p \leq 0.01$, $r = 0.737$) and TT_ND ($p \leq 0.01$, $r = 0.785$), and moderately correlate with SJFT_30s_3_ND ($p \leq 0.05$, $r = 0.592$). Points have strong negative correlation with SJFT index in the non-dominant side ($p \leq 0.05$, $r = 0.683$). Additionally, the number of competitions positively and strongly correlates with SJFT_15s_1_ND ($p \leq 0.05$, $r = 0.652$), SJFT_30s_2_ND ($p \leq 0.01$, $r = 0.748$) and TT_ND ($p \leq 0.01$, $r = 0.749$). Asymmetry index of SJFT did not correlate with any variables.

Table 2: Correlations between selected variables

VARIABLES	CORRELATIONS = *r* POINTS	COMPETITIONS	SJFT AS
COMPETITIONS	.844**	-	-
SJFT_15s_1_ND	-	.652*	-
SJFT_30s_2_ND	.737**	.748**	-
SJFT_30s_3_ND	.592*	-	-
TT_ND	.785**	.749**	-
SJFT INDEX_ND	-.683*	-	-

***** -*** *Correlation is significant at the 0.01 level,* **** -*** *Correlation is significant at the 0.05 level,* ***D –*** *dominant side,* ***ND –*** *non-dominant side,* ***SJFT_15s_1*** *– number of throws in the first part of SJFT,* ***SJFT_30s_2*** *– number of throws in the second part of SJFT,* ***SJFT_30s_3*** *– number of throws in the third part of SJFT,* ***TT*** *– total number of throws in first, second and third phase of SJFT,* ***HR*** *– heart rate immediately after 3rd phase of SJFT,* ***HR_1min*** *– heart rate after 1 minute of SJFT,* ***SJFT INDEX*** *– final index of SJFT,* ***AS –*** *asymmetry index between SJFT in D and ND side.*

DISCUSSION

Our findings demonstrate that the competition success is statistically significantly associated with the number of throws in the 2nd part, 3rd part and the total number of throws of the SJFT test in the non-dominant side. That could mean that there is a great importance of youth judokas performing good throwing techniques also on the non-dominant body side at the competitions. These findings could also be attributed to the importance of transferring the movement-execution of techniques from one side to the other, which increases athlete's effectiveness and enables them to win by taking the opponent by surprise (Sterkowicz et al., 2010). This is also supported by the association of SJFT index in non-dominant side and competition success-total points.

Highlighted is the association between the number of competitions and the number of throws in the 1st part, 2nd part and the total number of throws of the SJFT test in non-dominant side. These findings are important for understanding why coaches need to prepare their judokas to effectively execute techniques for the non-dominant body side as well. It is well known that with more competitions and better results, opponents prepare for competitions by observing each other's performance, and the use of most frequent and effective techniques. However, judokas learning to effectively execute their most frequent and effective technique in the non-dominant side could take their opponents by surprise, which is essential in winning competitions and achieving good results all year round.

It is normal for a judoka to have a dominant side and rely on that side for the majority of attacks. But it is to his/her advantage if he/she can complement it with opposite side attacks. It is almost impossible to acquire perfect symmetry and expertise in both left- and right-side attacks, but every judoka should acquire an adequate level of left and right technique balance for competition (Takahashi & et al., 2005). Research show that high-skilled judokas showed increased motor functions symmetry in arm and leg movements (Mikheev et al, 2002).This is also confirmed by observations of Hicks and Soames (2001) of then eminent judo competitors such as A. Parisi, T. Koga, J. Pawłowski, and U. Werbrouck. Hicks and Soames' (2001) observations showed that during contest, judokas assumed right or left stances and that they were able to execute the same throws, symmetrically to the right and the left side.

Therefore, in coaching process of youth judokas early performance specialization is unacceptable (Sterkowicz et al., 2010)especially in ball games or combat sports. High level of skills in ath- and Study Aim: letes with left-side dominance allows them to have a tactical advantage over the opponents and to increase their chances of success. The awareness of this advantage boosts athlete\u2019s self-confidence in fighting. The purpose of this study was to determine: (a. Evolving youth judokas movement patterns to both body sides is of great importance (Šimenko, 2012), as is the use of both left and right fighting stances (Marek et al., 2012) from a technical-tactical point of view (Šimenko & Karpljuk, 2016). Additionally, from the medical perspective, the uneven training increases the risk of morphological and strength asymmetries and the related risk of injury (Mala et al., 2015; Stradijot, Pittorru, & Pinna, 2012).

Additionally, the literature, which is only familiar with normative values of SFJT for male and female seniors and female youth categories (Sterkowicz-Przybycien & Fukuda, 2014; Franchini, Boscolo Del Vecchio, & Sterkowicz, 2009), could strongly benefit from the results of this study, because the latter could be used to develop normative values of SFJT for youth male judo competitors.

CONCLUSION

The study presents associations between the competition performance and the volume of competitions with the SJFT in the non-dominant side. It highlights the importance of bilateral movement development and good execution of the throwing techniques for the non-dominant body side of youth judokas in order to achieve greater competition performance. The SJFT test results could be as a framework to create normative values of SJFT for youth male judo competitors.

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JUDO FOR THE 21ST CENTURY. HOW SUCCESSFUL WAS THE RULE MODIFICATION?

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Key words: rule modification, nage-waza, penalties.

INTRODUCTION

Judo is Japanese martial art which was founded by Jigoro Kano in 1882 from traditional fighting style called ju jutsu. He wrote the first rules for the purpose of practicing judo in his school. Kano was also responsible for the first rule modification: to make the fighters safer, he prohibited techniques that can endanger life or cause serious injuries. This was a start of judo rules evolution. On the beginning, judokas were not divided by weight categories because it was believed that superior technique will always overcome strength. The last competition that was held regardless of weight was World Championship held in Paris in 1961 (Brousse, 2015). On the first Olympic that judo was included, there were already four weight classes. The aim was to put more highlight on technical and tactical skills of judokas and to limit strength and power difference between competitors (Sterkowicz, Blecharz & Lech, 2000). During the years judo became one of the most popular martial art and combat sport. On the first World Championship held in 1956, there were 31 competitors from 21 countries. On the 2011 World Championship, there were 871 competitors form 132 countries. Rules did not suffer any major changes until 2010. when direct leg grab was forbidden and lowest technical point (Koka) was excluded. Touching the leg under the opponent's belt was now allowed when:

a) we are countering opponent's initial attack,
b) as a part of combination which started with technique that not include lag grab,
c) when opponent have an unorthodox kumikata (crossed kumikata).

It seemed that these rules fulfil the main idea behind them – to promote positive judo and make it more attractive to audience by limiting the use of techniques that include lag grabs below the belt, thus bringing the fighters to position that is more upright (Ito, Hirose, Nakamura, Maekawa, Tamura & Hirotsu, 2013). Nevertheless, the IJF shocked judo community in 2013 with decision to completely ban any contact with the arm below the belt. Second major change introduced was the reducing of the importance of penalties (any positive score beats up to 3 penalties, gaining fourth penalty was still the disqualification) (International Judo Federation – IJF, 2013). By applying this rules, one of Kano's favourite and at the moment the most utilized technique kata-guruma and many other important techniques such as sukui-nage, kuchiki-taoshi, morote-gari, etc. were banned (Miarka, Julio, Del Vecchio, Calmet & Franchini, 2010). This was certainly a big step towards reshaping the sport as we use to know. The aim of the research was to see what difference have made the rule change in the way of conducting a judo fight (attack attempted, scores obtained, penalties awarded and nage-waza used).

METHODS

For the purpose of this research 140 fights from 2011 World Championships held in Paris and 140 fights from 2014 World Championships held in Chelyabinsk were analysed. We took the 20 most important fights from every male weight category (all fights from last 16 until the end of the competition). Video analysis was conducted by 3 judo experts, all judo black belt 3 dan-degree, with at least 25 years of experience in judo. Analysis was conducted

in Lince software, free performance analysis tool which allows the experts to create observational instruments and conduct video analysis.

To determine the differences between the frequencies of the techniques used, we have used statistical analysis Chi-square test ($\chi 2$ test) at the level of statistical significance $p < 0.05$, while z-test was used to determine the proportions of the parameters and their individual difference between the two championships.

RESULTS

There were 2289 registered activities (Table 1) which included tachi-waza attacks that resulted with a score (329), tachi-waza attacks without a score (1405), ne-waza attacks resulted with a score (33), and penalties awarded (522). As we can see from the Table 1, in 2014 we had increase in all the observed variables: we had more scores (+30.1%), more attacks (+24.1%), more ne-waza scores (+166.7%) and penalties (+90%).

Table 1. Number of activities registered in 2011 and 2014 World Championship

	Scores	Attack without score	Ne-waza scores	Penalties	Total
2011	143	627	9	180	959
2014	186	778	24	342	1330
All	329	1405	33	522	2289

In Table 2 we can see the share of nage-waza subgroups used in these two World Championships. Results of Chi-square analysis showed that there is a significant difference ($\chi 2=27.55$; sig<0,001) in the techniques used in Paris 2011 and Chelyabinsk 2014. In 2011, techniques that belong to te-waza and ashi-waza group were most frequently used (35.9% and 34.8%), followed by sutemi (21.9%) and koshi-waza (7.4%). The same order with somewhat different percentages was found in 2014: te-waza (31.1%), ashi-waza (30%), sutemi-waza (23.8%) and koshi-waza (15%).

Table 2. Chi-square test for the Nage-waza groups used in 2011 and 2014 World Championship

	Ashi-waza	Koshi-waza	Sutemi-waza	Te-waza	All
2011	265 (34.8%)	56 (7.4%)	167 (21.9%)	273 (35.9%)	761
2014	278 (30%)	139 (15%)	221 (23.8%)	289 (31.2%)	927
All	543	195	388	562	1688
					$\chi 2=27.55$; sig<0,001

We used the z-test to determine the proportions of the parameters and their individual difference between the two championships (table 3). There was significant decrease of using te and ashi-waza techniques, significant increase in using the koshi-waza, while for sutemi-waza no differences were found (sig=0.055).

Table 3. z-test for the Nage-waza groups used in 2011 and 2014 World Championships

	2011	2014	Z	sig
Ashi-waza	265 (34.8%)	278 (30%)	3,73	<0.001
Koshi-waza	56 (7.4%)	139 (15%)	-14,37	<0.001
Sutemi-waza	167 (21.9%)	221 (23.8%)	-1,92	0.055
Te-waza	273 (35.9%)	289 (31.2%)	3,53	<0.001

DISCUSSION

International Judo Federation made a lot of important rule modifications between 2009 and 2013 in order to promote „positive" actions/score instead of „negative" actions/penalties (Calmet, Pierantozzi, Sterkowicz, Challis, & Franchini, 2017). Results of our study show that these modifications have increased the number of attacks, both successful and unsuccessful, which clearly justifies the interventions made. When we take into consideration that we had to sacrifice a significant part of the judo syllabus, the fact that we have more scores in tachi-waza and ne-waza made in decisive matches is encouraging. On the other hand, a large increase in penalties awarded upon competitors is alarming. Balafoutas, Lindner & Sutter (2013) anticipated that minimizing the importance of penalties could lead to increase of prohibited actions, which can influence the match attractivity. Further research which will include the exact reasons of penalties awarded could give us a better explanation of this large increase.

Based on their structure, all throwing techniques are divided on koshi-waza (hip techniques), te-waza (hand techniques), ashi-waza (foot/leg techniques) and sutemi-waza (sacrifice techniques). One of the most important reason for rule modifications was the increase of „wrestling" techniques that include leg grab at the expense of more traditional judo techniques (Boguszewski, 2010; Carratala, Garcia, Monteiro & Diaz de Durana, 2010; Adam, Smaruj & Tyszkowski, 2011; Ito, Hirose, Nakamura, Maekawa, & Tamura, 2014). The result was significant decrease in hand and foot/leg techniques and increase in hip techniques. According to the research published by Kruszewski, Jagiełło & Adamiec (2008), hip techniques are the most effective group of techniques, thus this change can be considered as positive one.

CONCLUSION

After considering the results obtained in this study we can say that increase in number of scores and attacking attempts justifies the rule modification. Also, increased percentage of hip techniques could also be considered as positive. Contrary, large increase in the number of penalties is certainly not the wished outcome, thus further research on penalties is needed.

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PSYCHOLOGICAL PREPARATION PROGRAM FOR YOUNG JUDO PLAYERS, THEIR COACHES AND PARENTS

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Key words: sport psychology, young athletes, martial arts, combat sports.

INTRODUCTION

Experts and coaches in sport constantly try to come up with new ways and methods in order to control as much as possible from the never-ending list of factors involved in athletes sport preparation, development and the final competition outcome. They are all prepared to do what ever can be done so that the athlete can reach his/her full potential and stay at this level for as long as possible without experiencing the injuries, burn-out or set-backs. Great, motivated and devoted coaches spent countless hours planning and thinking about the physical, technical and tactical preparation of their athletes, while developing detailed programs of preparation considering numerous factors that can contribute to highest possible efficiency. They also often consult different experts and spend numerous hours educating themselves. It is interesting that some of them (used to) leave the psychological preparation of their athletes to themselves or the chance hoping that, when the time comes, they will be adequately motivated, focused only on the relevant factors, confident, in a right emotional state and optimally aroused. Not many athletes would dare to go into the competition without properly training their physical skills but are often left with doing exactly that with their mental skills. There are still some coaches who believe that „mental toughness" is a thing you either do or don't have and that, in their sport, psychological preparation doesn't play an important role. On the other hand, when athletes fail and don't reach their goals we can often hear that they were not concentrated, motivated or confident enough, or that they were anxious and choked.

In today's modern sport, psychological preparation is considered to be as important as physical, technical and tactical preparation (Blumenstein, Lindor & Tennenbaum, 2005). Furthermore, psychological skills can be trained just like all other skills and their training also requires thorough assessments, careful planning, time for learning the skill and practicing it during the training before it can be implemented into the competitions, evaluated and constantly upgraded (Beckmann & Elbe, 2015; Nowicki, 1995; Rushall, 2006). Also, psychological preparation can go so much further than that and help athletes live according to their values, achieve their goals, balance their sport, education and personal life, recover from setbacks and injuries, get adequate social support and end their careers feeling satisfied and accomplished. However, it is important to emphasise that psychological preparation should be guided and implemented only by educated and certified professional who finished the required formal education in the sport psychology area.

Some sport psychologists (Beckmann & Elbe, 2015) suggested that some (adapted) mental preparation techniques included in basic skills training could be used with children around 12 years old. In our work, we successfully implemented mental skills training techniques with even younger athletes. Therefore, the *aim of this study* is to briefly present one sport psychology preparation model used in group settings in judo clubs with young athletes from 10 to 15 years old. The model is based on psychoeducation and basic psychological skills training.

„PSY SPORT READY CLUB" PSYCHOLOGICAL PREPARATION PROGRAM

The name of the program is *„Psy Sport Ready Club"* because it includes athletes, coaches and parents and provides an overall model of psychological preparation for the whole club and all those directly involved in child's

sport participation. Parents and coaches are probably the most important adults involved in children's sport participation because their behaviors, attitudes and beliefs can largely influence athletes sport experiences (Byrne, 1993). Some authors in this area (Byrne, 1993; Hellstedt, 1987) suggested using triangle to visually present the relationships between coach, athlete and parents in sport indicating two-way relationships between each dyad. Therefore, we used this idea of the triangle to emphasise our acknowledgement and inclusion of all three parts in our group psychological preparation program.

The general aims of this program are:

(1) *presenting* the importance of psychological preparation to the athletes at the begining of their sport career,

(2) *educating* parents and coaches how to provide adequate support for the young athletes during their sport participation and development, and

(3) *introducing* some basic psychological preparation skills and techniques to the athletes and their coaches as well as encouraging their *implementation* into everyday trainings and competitions in order to develop a strong and healthy base for young athlete's sport participation.

Numerous studies from different sports, including those conducted on athletes from combat sports, suggested that elite athletes before and during their best and peak performances were, among other things, highly focused and totaly concentrated, had high levels of self-confidence and positive expectations, experienced optimal levels of arousal, were able to cope with and control anxiety, and reported using mental preparation plans and routines (Cohn, 1991; Gould, Dieffenbach & Moffett, 2002; Gould, Eklund & Jackson, 1992a; 1992b). These were the areas we chose to include into our workshops with young athletes.

There are four general topics covered in four group workshops:

(1) Anxiety.
In this workshop young athletes are learning to understand what is the role of precompetitive and competitive anxiety, where anxiety comes from, how to recognize early symptoms of somatic anxiety and how to interpret them as facilitative. Furthermore, they are introduced to the techniques which can be used to regulate over- and under-arousal of their body and encouraged to practice them regularly.

(2) Self-confidence.
In this workshop athletes are experiencing tools and techniques which can help them develop and maintain self-confidence during their sport participation and in everyday life. Also, they are learning to understand the relations between thoughts, feelings and sport performance and are introduced to adaptive ways of cognitive appraisal of competition situations.

(3) Concentration.
In this workshop athletes are learning what it means to be concentrated and which are important signs they need to be concentrated on during their fights. Furthermore, they are learning to recognize different internal and external distractions and are introduced to techniques which can help them direct, maintain and bring back their focus during trainings and competitions.

(4) Competition preparation.
In this workshop athletes are educated about importance of proper mental attitude during the competition preparation and are actively involved into developing pre-competition routine, as well as re-focus techniques, and routines to optimally fill in the time during brakes both whithin and between the fights.

They are introduced to the pre-competition mental warm-up as well as post-competition evaluation technique and are encouraged to implement all those to their competitions.

The techniques and methods used during the workshops are carefully chosen and adapted to answer the needs and cognitive level of younger athletes. Also, athletes are constantly engaged and involved in group work, experiencing it by themselves and talking about their experience to the other athletes. Athletes are expected and encouraged to actively use, practice and integrate the learned techniques into ther regular training sessions, as sugessted in the literature (Beckman & Elbe, 2015; Nowicki, 1995). Furthermore, coaches are actively involved and educated alongside the athletes in order to help them better implement the techniques into the real sport situations. Whenever possible, those workshops are conducted in the sports hall.

Parents are provided with one separate workshop where they are educated about importance and role of the parents in sport, desirable and undesirable behaviors of parents in sport as well as provided with numerous practical advices about how to comunicate with their athlete prior and after trainings and competitions in order to provide optimal support during their child's sport participation. They exchanged experiences and were actively involved in the different exercises and practical tasks during the workshop. Furthermore, despite their presence during the workshops for athletes and parents, coaches participate in separate workshop created to fit their needs. On this workshop the accent is put on their situations and challenges they face on the sport field, helping them resolve some dilemmas, exchange experiences and improve their coaching approach.

After finishing the program, athletes are provided with certificate of participation and club is given the certificate indicating it is the *„Psy Sport Ready Club".* This means that parents, coaches and athletes from this club were actively participating in the program and have acquired some basic knowledge about sport psychology for young athletes. If needed, the number of workshops is sometimes increased to cover some other topics depending on the clubs needs and requirements. Furthermore, the exercises and techniques are constantly evaluated, discussed, adapted and changed if needed because we learn from our participants and we are constantly developing ourselves by participating in numerous educations and reading relevant literature.

CONCLUSION

Sport psychology is considered to be highly important area in modern sport. Furthermore, mental skills training programs are part of the everyday sport preparation for numerous athletes from different sports around the world. Some of the techniques and methods used in sport psychology can be successfully introduced to young athletes at the beginning of their sport career. This can help them implement those techniques as soon as they are involved into the competitive sport experience, making them more prepared in all areas important for successfull and fulfilling sport participation. Since we are talking abouth young athletes, it is equally important to educate their parents and coaches in order to provide them the optimal support in their long-term sport development and to respect their developmental needs. In this study we introduced one comprehensive psychological preparation program which we have successfully implemented in judo group setting, as well as some other sports.

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THE AWARDING OF PENALTIES IN LIGHTWEIGHT WOMEN'S JUDO

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Key words: combat Sports, penalties, *Shido*, International Judo Federation, sports performance.

INTRODUCTION

Judo contests can be won by technical scores being awarded for throwing, pinning or forcing a submission. They can also be won through receiving less penalties than an opponent. In recent years the International Judo Federation (IJF) has updated its rules in an attempt to increase the number of wins due to technical scores. Penalties in judo are broken down into two types, *Shido* (a „minor infringement" penalty such as illegal gripping or stepping outside the combat area) and *Hansoku-make* (a „major infringement" resulting in a disqualification such as a dangerous activity or something against the spirit of judo). Based upon the rules of 2010 - 2014, during a contest, an individual can receive up to three *Shidos*, and the fourth will be *Hansoku-make* (3 warnings and then disqualification). *Shidos* do not result in points being awarded to the opponent, only technical scores can result in points on the scoreboard. At the end of the fight, if scoring is equal on the scoreboard, the *Judoka* with less *Shidos* wins. If the fight continues to golden score, the first receiving a *Shido* loses, or the first technical score will win.

There are three categories of *Hansoku-make:* accumulation of four *Shidos,* direct *Hansoku-make* for a grave infringement, direct *Hansoku-make* for something against the spirit of judo.

This research spans two sets of rules:

- the International Judo Federation (2009) for the period from 1/01/2010 until 31/12/2012
- the International Judo Federation (2013) for the period from 1/01/2014 until 31/12/2016

The differences in these rules relating to *Shido* and *Hansoku-make* was predominantly around „leg grabs" and is outlined below:

2010 - 2012 period

- All direct attacks or blocking by gripping the leg (below the belt) with one or two hands are prohibited. The punishment after the first attack is *Hansoku-make* (disqualification),
- Grips of the legs are authorised in sequence of a technique or a counter attack if it's real and well-differentiated in time,
- Gripping the leg is also authorised when the opponent takes a cross guard grip; however, if the cross guard has occurred by the judoka ducking their head under the opponent's arm, they are not authorised to grip the leg, if they do so the punishment would be *Hansoku-make.*

2014 – 2016 period

- All attacks or blocking with one or two hands or with one or two arms below the belt in *Tachi-waza* will be penalised by *Hansoku-make*. It is possible to grip the leg only when the two opponents are in a clear *Ne-waza* position and the *Tachi-waza* action has stopped.

The intention of this rule change was to make it easier for referees to determine what was a „leg grab" and what was not.

Previous research has considered the awarding of *Shido* in a judo contest (Escobar-Molina *et al.,* 2014) but rarely is an analysis of *Shidos* the main aim of the research. *Shido* is often considered within a greater remit such as a technical and tactical analysis of judo. Miarka *et al.,* (2014), Adam *et al.,* (2013), Franchini *et al.,* (2013) and Sterkowicz, (1998).

Of the research that is available it appears to be clear that males receive more *Shidos* than females, heavier weight categories receive more *Shidos* than lighter weight categories and that recent rule changes appear to have increased the number of *Shidos* awarded.

METHODOLOGY

Participants

To consider rules changes the current researchers analysed footage from contests from the 2010 senior World championships in Tokyo and the 2014 senior World championships in Chelyabinsk. Lightweight women's judo was considered as the three lightest weight groups - under 48kg, under 52kg and under 57kg. In the 2010 World championships there were 45 athletes in each of the weight groups and in the 2014 World championships there were 34 athletes in the 48kg category and 42 in each of the 52kg and 57kg, giving a total number of 135 and 118 participants respectively (n=251). This presented a total of 267 contests and 2345 *matte* to *Hajime* blocks.

Ethical approval

Ethical approval was sought and granted from the Faculty of Science and Technology „Faculty Research and Ethics Panel" (FREP) at Anglia Ruskin University in 2010 for the duration of the study.

Equipment

Throughout this study Sportscode Elite (V8 and V10, Hudl) was used to analyse the footage. Analysis was conducted using IBM SPSS statistics (Version 24 for Macintosh) and Microsoft Excel for Macintosh (version 15.5). Video recordings were made in the stadium on a Canon Legria HF R806 camcorder. Contests that could not be recorded in this way were downloaded from https://www.youtube.com/user/judo. All video was imported into Sportscode. Through comparing the collected video and the results sheets from the competition all 267 contests were accessed and analysed.

Data collection

All contests were broken down into *Hajime* to *Matte* (work time) and *Matte* to *Hajime* (rest time) with the latter including *Matte* to *Hajime* blocks where penalties were awarded. The *Matte* to *Hajime* blocks where penalties were recorded were then exported into a separate timeline for further analysis by the lead researcher who watched each weight category and manually recorded what each *Shido* and *Hansoku-make* was awarded for.

Intra-operator reliability and Inter-operator reliability

There were three separate tests of reliability within this study. Firstly, the footage that was coded was subject to two statistical tests for intra-operator reliability. The two statistical tests were Cronbach's Alpha test and Cohen's Kappa test.

The lead researcher then watched each weight category and manually recorded what each *Shido* and *Hansoku-make* was awarded for. Three *judoka,* all black belts, one a qualified UK referee, then watched the same videos and

manually recorded their answers to establish if the researcher was reliable. The data was identical and therefore no statistical reliability test was conducted.

RESULTS

This research considered all penalties for the under 48kg, under 52kg and under 57kg weight categories in the 2010 World championships (Tokyo) and the 2014 World championships (Chelyabinsk). From the 2345 *Matte* to *Hajime* blocks there were 377 penalties awarded. The results are broken down so that weight category and year can be evaluated. There were 8 penalties that were not categorised due to the position of the referee on the video. Table 1 shows the results of the analysis and is broken down into weight category and year.

Table 1: The number of penalties by classification, weight category and year

	2010				2014				
Reason for shido/Hansokumake	**U48kg**	**U52kg**	**U57kg**	**Total 2010**	**U48kg**	**U52kg**	**U57kg**	**Total 2014**	**sum**
To intentionally avoid taking Kumikata	2	4	2	8	16	11	17	44	52
To adopt in a standing position, after Kumikata, an excessively defensive posture.	6	2	9	17	5	9	5	19	36
To make an action designed to give the impression of an attack but which clearly shows that there was no intent to throw the opponent. (False attack) OR To pull the opponent down in order to start *Ne-waza* unless in accordance with Article 16	8	4	2	14	13	10	11	34	48
In a standing position, to continually hold the opponent's sleeve end(s) for a defensive purpose or to grasp by "screwing up" the sleeve end(s).	0	1	0	1	1	4	5	10	11
In a standing position, to continually keep the opponent's fingers of one or both hands interlocked	1	1	0	2	0	0	0	0	2
To insert a finger or fingers inside the opponent's sleeve or bottom of his trousers	0	0	0	0	1	0	0	1	1
In a standing position to take any grip other than a "normal" grip without attacking	2	0	0	2	2	3	4	9	11
In a standing position, before or after Kumikata has been established, not to make any attacking moves	23	34	26	83	22	21	30	73	156
To hold the opponent's sleeve end(s) between the thumb and the fingers ("Pistol" grip).	0	0	0	0	2	0	0	2	2
To put a hand, arm, foot or leg directly on the opponent's face.	0	0	1	1	0	0	0	0	1
To go outside the contest area or intentionally force the opponent to go outside the contest area either in standing position or in Newaza	10	5	4	19	9	8	10	27	46
To kick with the knee or foot, the hand or arm of the opponent, in order to make him release his grip or to kick the opponent's leg or ankle without applying any technique	0	0	0	0	0	0	1	1	1
Cover the upper part of the lapel of the Judogi jacket to prevent the grip.	0	0	0	0	0	2	0	2	2
Don't know (video issue)	0	0	4	4	2	2	0	4	8
All attacks or blocking with one or two hands or with one or two arms below the belt in Tachi-Waza will be penalized by Hansoku-make.	1	0	0	1	1	1	1	3	4
As result of 4 x Shido	0	0	1	1	1	1	4	6	7
Sum of all shido's in category	52	51	48	151	73	70	83	226	377

Table 1 shows that the most prolific reason for a *Shido* across both years was for passivity or „*In a standing position, before or after Kumi-kata has been established, not to make any attacking moves*". This yielded three times the number of *Shidos* than any other penalty. The other high scoring reasons for a *Shido* were to intentionally avoid *Kumi-kata,* excessively defensive posture (*Jigotai*), false attack/pull down into *Ne-waza*, and going outside the contest area.

Only two categories for *Hansoku-make* were observed:

- All attacks or blocking with one or two hands or with one or two arms below the belt in *Tachi-Waza* will be penalised by *Hansoku-make*,
- As result of four *Shido.*

There were only seven instances where *Hansoku-make* was awarded for receiving four *Shidos*. The reasons for the four 4th *Shido* were 'passivity' (3), 'false attack' (2), excessively defensive posture (1), stepping outside the contest area (1).

DISCUSSION ON PENALTIES

Analysing penalties in judo is relatively simple in comparison to analysing other aspects such as techniques, tactics and *Kumi-kata* because the referee gives a signal that allows the observer to understand what the *Shido* or *Hansoku-make* was awarded for. However, complications do arise, such as not being able to view the referee very well on the video, and penalties being changed or annulled. To our knowledge this is the first research that has broken down *Shidos* and *Hansoku-makes* by category so that the frequency of each can be analysed and the most frequent identified.

Prevailing Shidos

The highest number of *Shidos* awarded from one classification was for „passivity" with 156 awarded across all categories and both years. Passivity was one of the only classifications to reduce with the rule changes (from 83 to 73). Given the rule changes were designed to make judo more dynamic and better for spectators this could be considered a small reduction. The IJF should consider why the award of *Shido* for passivity is so prevalent. For example, is it easier to force a passivity penalty on an opponent than to attack and score? Is it because without „two handed grip breaking" athletes cannot move into a more offensive position once a grip has been established? Is it as prolific across all weight categories or just lightweight women?

The „next category" of *Shido in terms of prevalence* is less clear. To intentionally avoid gripping up in *Kumi-kata,* to be overly defensive, to step out of the area and false attacks all had a similar frequency. It could be argued that all of these *Shidos* and passivity are related to an inability to attack, probably through superior *Kumi-kata by the opponent.* The IJF rules to date favour the judoka with the dominant *Kumi-kata.* If *Judoka* A is outgripped and cannot remove the grip with one hand, then she has limited options. She could try to work into a more favourable position, but this takes time and there is likely to be a penalty for passivity, she could wait for player B to attack and counter but this is risky, she could present a defensive posture or she could attack and hope „it is good enough" to not warrant a false attack. On the other hand, judoka B, with the dominant grip either waits for the correct time to attack, sets up the attack or waits for judoka A to „make a mistake". In essence, if you win the *Kumi-kata* the rules are in your favour.

To change this bias would be difficult, for example giving the player with the more dominant grip less time than the player out gripped would be difficult to referee. One option is the return of two handed grip breaking, another might be the removal of the *Shido* for „intentionally avoiding the grip" potentially allowing athletes to engage more cautiously.

Shidos not observed

There are a large number of types of *Shidos* not used at all in either 2010 or 2014. This would need to be verified against all weight categories and a larger number of competitions before it can be suggested that changes should, or should not, be made. In contrast to the infringements cited above the *Shidos* not used were often from gripping infringements, taking the *Judogi* in the mouth and some dangerous techniques. This is not surprising as infringements of this type should not happen at an elite level.

The use of Hansoku-make

Types of *Hansoku-make* not seen included going on the mat with a metallic object, spine locks, being rude to the referee, against the spirit of judo. It is justified to say that these rules are in place for the safety of the athletes

involved and as these rules are fixed across all ages and at international competition, it is also likely some of these rules would be seen at a lower performance level as national federations, as they base their rules on the IJFs.

FINAL COMMENT

Overall there seems to be a larger number of penalties awarded for passivity and 'negative judo'. For example, 46 *Shidos* awarded for 'stepping out of the area' yet not one for 'pushing out of the area'. An 'overly defensive posture' was penalised 36 times yet not one penalty for 'forcing the opponent to into a bending position'. Rule makers should consider if there is a 'level playing field' after the two *Judokas* have initially fought for their grips. Currently there appears to be a trend for the *Judoka* who loses the grip fight to also be the *Judoka* who is penalised, in essence if you lose the grip fight you have to fight both your opponent and the referee and this is further compounded by recent rule changes such as the removal of leg grabs and the banning of two-handed grip break.

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THE POSSIBLE IMPACT OF THE NEW RULE CHANGES OF 2017 IN JUDO: STUDY REGARDING THE INFLUENCE ON THE OUTCOME OF THE BRONZE MEDAL FIGHT OF THE WOMEN'S EJU RANKING LIST 2017 COMPARED TO 2014-2016.

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Key words: bronze edal, EJU Ranking List, new rules women judo.

INTRODUCTION

The IJF (International Judo Federation) changed the competition rules from 2017 onwards in order to make them easier to understand and as well to have them simplified. Some changes only concerned the men's competition (duration from 5 minutes to 4 minutes) but some changes had an impact for all competitors (change in penalties and awarding points). A previous study (Bayram, 2017) concluded that the change did not affect the number of ippon and total number of scores, another study (Calmet, Pierantozzi, Sterkowicz, Takito, & Franchini, 2017) was made about the changes and focused on the comparison of the scores, penalties and match duration. The aim of this study was to compare the outcome of the bronze medal fight of the women's categories before and after the change by using the competition outcomes of the tournaments included in the EJU Senior Ranking List.

METHODS

The data of this study were provided by the official EJU results as available on the website of the European Judo Union (European Judo Union, 2018). As the data were provided from an open access website and the athlete's personal information was not used, no ethical issues are in place in analyzing or interpreting these data as they are used for statistical research.

The EJU ranking list consists of a number of tournaments (Senior European Cups). Only the four best results for the year and the year before are taken into consideration and the points are not decreased year to year. Only the top eight in each category is counted and there's a minimum of one contest to win to get points.

Regarding the bias of winning or losing a lot of research has been made: for example the colour of judogi (Matsumoto, Konno, Hata, & Takeuchi, 2007), (Julio et al., 2015); both disputed by Dijkstra (Dijkstra & Preenen, 2008) and Dijkstra (Dijkstra, Preenen, & van Essen, 2018), the home advantage (Brito, Miarka, Díaz de Durana, & Fukuda, 2017), Be seeded or not be seeded – a study with Olympic judo athletes (Guilheiro & Franchini, 2017) and the winner and loser effect (Claes, 2016). In the actual study an analysis of 407 bronze medal fights has been made; the two fighters ranking list (at the end of the concerned year) is taken into consideration to define whether the highest ranked obtained the bronze or not.

Table 1: Overview 2014 – 2017 of fights and winner of the bronze medal (loser semi-final of highest ranked).

Year	Number of 'bronze' fights	Loser semi-final	Loser semi-final (in %)	Highest ranked	Highest ranked (in %)
2014	104	54	52 %	83	80 %
2015	102	50	49 %	74	73 %

2016	107	51	48 %	77	72 %
Total 2014 – 2016	**313**	**155**	**50 %**	**234**	**75 %**
2017	**94**	**46**	**49 %**	**68**	**72 %**

DISCUSSION AND CONCLUSION

It can be stated that there is no significant change in the outcome of the bronze medal fight due to the rules change of 2017. Before the rules change, in average, in 5 % of the fights, the loser of the semi-final obtained the bronze medal, in 2017 this was 49%. The 50% was mainly due to a higher percentage in 2014 (52 %).

Regarding the ranking itself, for the period 2014-2016, there was a winning bias of 75%. However this was also influenced by the outcome of 2014 (80 %). If compared only to 2016, twice (2016, 2017) in 72% of the fights, the winner was the highest ranked.

As a general conclusion, it is evidenced that the new rules, implemented in 2017, did not affect the outcome of the bronze medal fights for women in the tournaments included in the EJU Ranking list.

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APPLICABLE GAMES FOR YOUNGER AGE GROUPS OF WRESTLERS AND JUDOKAS

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Key words: elementary games, combat sports, motor abilities, conative characteristics, ten to fifteen years of age

INTRODUCTION

The biggest advantage of games in combat sport is developing abilities which are important for providing the final goal which is victory in real fight. Through games young sportsmen have nearly the same intensity like in real match but they do not realize that for real and through fun games kids are providing strength, power, coordination, endurance, stamina etc.

On the other side elementary games, relay race games and simple forms of fight have so much benefits for social relation between members of group. That fact is very important for decreasing giving up from combat sports because the most popular sports are games and combat sports are not game but children can fight through games. Elementary games are less complex and their characteristic is that they do not have strict rules. That means coaches can modify the rules for their special occasions and goals what they want to improve with that game. Developing all abilities throughout elementary games is the biggest advantage that games give in return (Kostanjević, 2007). Criteria for elementary games (Horvatin Fučkar, 2011). are: age (biological and chronological age, sensitive periods for developing abilities), gender (male or female), goals (in that period, or that training), performance level, technique level, conditions, facilities and equipment, demands and requirements.

Another games benefit is developing psychological skills like self-confidence, carriage, combativeness, preparing for injustice, etc. All this personality traits are really helpful in real fight in combat sports.

Aim of this study is to describe some basic characteristic of games and their application in wrestling and judo training. In this paper games are classified in three classes: elementary games, relay race games and simple forms of fighting.

GAMES FOR WRESTLING AND JUDO

Rope Pull - This game is one of the best for hands grip which is very important in wrestling and judo fight. Group must be divided in two groups and goal of this game is to be better in pulling the rope. Better group is the one who first pulls the other across marking point.

Guliver - One sportsman is in high parterre position and the other players is trying to overturn opponent on chest with arms and legs grips. The goal is to take „Guliver" in position of low parterre for ten seconds. This game is great to develop defense technique in parterre position.

Pirates and Islanders - One group is „pirates" and the other group is „islanders". Goal of this game for „pirates" is throwing and pushing the „islanders", who are in low parterre position on the mat in the center of the circle, and after they change the role the winner is faster group.

Ice Granny - This is one of the most frequent game in practice because they have the great influence in worming up on amusing way, and is connected with some basic movement ethnic in free style wrestling. On the beginning

of the game trainer chooses two or three „Ice grannies" and their duty is to catch the others in shortest possible time. When they touch the others, they are in „ice" position with hands on their head and with outspreads foot.

King of the Ring - The best description of this game is sumo wrestling. Goal of the game is to be the last one in the ring who is not standing out of the circle or felt on the ground longer than three second.

Coordination and Balance Games - Bilateral balance games are pushing opponent with hands or the other part of body. Unilateral balance games are pushing opponent with hands or other part of body.

Strength Games - Pushing out from standing, sitting or parterre position – different grips and position. Fight for grip, hug or buttock – different position.

Speed and Agility Games - Different fighting positions of starting to do some tasks or technique in simple form.

Relay Race Games - This kind of games are the best way to integrate group like one team, and through these games sportsmen are highly motivated for best performance what is beneficial in developing any kind of ability for specific demands in wrestling and judo sport.

This paper is concise so for more information on these subject could be found in literature, especially in the paper Sigur, R. (2015).

DISCUSSION

Games are the basic part of human life in all parts of life from the begging to old days. Games are the best way for developing technique (coordination) in any kind of sport, especially for young sportsmen. In this paper are described basic characteristics of elementary and relay race games, and simple forms of fighting (Marić et al.,2007), for young aged-group of sportsmen in wrestling and judo.

Games with the elements of martial arts are common among children. We can say there is a need for this type of games that children have in themselves like need for playing and motion (Carlson, 2011). That kind of need often leads to rough and tumble play in kindergartens, abounding with wrestling and they are much more frequent among boys. (Koustourakis, Rompola, & Asimaki, 2015). That activity is described as: „Poke and grappling between children not using much force and laughing at the same time, play fighting-wrestling until the partner falls on the ground" (Koustourakis et al., 2015). That kind of game in not negative (Carlson, 2011). By promoting simple forms of fight among children in wrestling and judo, we increase children needs for development of numerous psychophysical abilities. Perhaps the most important fact in applying these games to the training gives positive results and positive effects but for that is necessary to be in controlled conditions (sports equipment, prevention equipment, competent coach) - and that is a way to make judo and wrestling to be much more interesting for children in that younger age group.

In preschool period and elementary school period games have the greatest value for developing all kind of abilities which have good influence for fight performance in combat sports. Pleasure, fun and happiness are product of practicing games on training and physical activity (Šimek, 2003).

CONCLUSION

Games are the basic part of human life in all parts of life from the begging to old days. Games are the best way for developing technique in any kind of sport, especially for young sportsmen. In this paper are described basic information about the elementary, relay race games and simple forms of fighting for young aged-group of sportsmen in wrestling and judo training. Emphasize is on the importance of the age in which they are applied, and that is through 5th grade to 8th grade of elementary school. Some of the games are described so that the coaches

leave the possibility of modifying them but not to lose the basic purpose, so to facilitate greater use of the games in training of young-age sportsmen in wrestling and judo. In that modification is very important to take care of younger sportsmen's safety.

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CONSTRUCTION AND VALIDATION OF MEASUREMENT INSTRUMENT FOR ENDURANCE EVALUATION IN JUDO

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Key words: Judo, Endurance, Performance evaluation

INTRODUCTION

Testing athlete's abilities is very important for coaches and for athletes to determine if they are achieving the desired results by training. Strength and endurance are considered potential predictors of success in judo bout (Franchini, Artioli and Brito 2013., Franchini, Miarka, Matheus and Del Vecchio 2011) and a precise assessment of these abilities can be a good indicator for coaches training planning and programming. Precise and reliable specific endurance tests can serve as training tools and fitness enhancement. The author, as a part of a project where he measures the impact of fatigue, caused by endurance tests, on the kinetic parameters of various judo throwing techniques, is using a new and sensitive technology that can be damaged by a large number of throwing performance. Given that it is not possible to use specific judo endurance tests because they involve a large number of throws, and reviewing of literature one can conclude there aren't any tests that could measure reliably the specific judo endurance in which are equally involved the muscles of the arms and legs so the author was forced to create a new test.

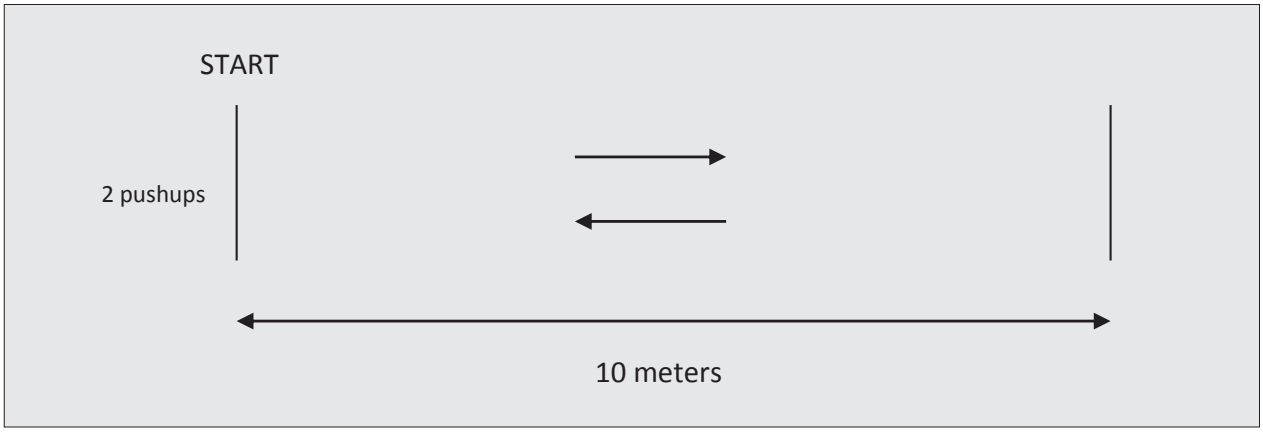
METHODS

Sample of subjects consisted of 13 judokas of different age from 13 to 37. All of them were involved in judo training for at least seven years and train three times a week.

Sample of variables consisted of two standard endurance tests (300 meters, and BAC2SKL - Sertić, Đapić, Baić 2004.) and one new endurance test, that is called TRC10/10-2SKL.

1. First standard endurance tests 300 meter: Was performed in judo hall. Examiners ran 15 times 20 meters; time was measured with shorter time being a better result.
1. Second standard endurance test BAC2SKL: Examiners performed cycle consisting of one judo throwing technique *O goshi* and two pushups for the time of 90 seconds. The result in the test is the number of throws and pushups in 90 seconds, for example 13 throws and 26 pushups.
1. New endurance test TRC10/10-2SKL: The test is performed on the judo matt with minimum spatial dimensional size of 12 m^2. For the implementation of the test it is necessary to mark the start line and the other line 10 meters away. The test is conducted by one examiner. The examinee stands behind the start line. On the mark „START" he starts to run to the other line 10 meters away. When he stands with his leg on the line on the other side he turns and runs back. After passing the start line he descends to the position of the pushup and performs two reps. This is a complete cycle and the test lasts 10 cycles. After the tenth cycle, the examinee stands up and that is the end of the test. The result in the test is the time that takes to run 10 cycles (running 20 meters (10-10) + 2 pushups), with shorter time being a better result.

Picture 1. Test TRC10/10-2SKL



Statistical package STATISTICA/W 13.1 was used. Central parameters, dispersion parameters, and indicators of distorted parameters were analysed from descriptive statistics to establish sensitivity. The normality of the distribution was tested by the Kolmogorov-Smirnov test, reliability was tested using the method of internal consistency – Crombach's alpha and validity by using factor analysis.

RESULTS AND DISCUSSION

Table 1. Descriptive statistics

Variable	Valid N	Mean	Minimum	Maximum	Std.Dev.	Skewness	Kurtosis
TRC10/10-2SKL	13	87,23077	75,50000	104,0000	8,959667	0,529665	-0,772901

Value of Skewness shows that TRC10/10-2SKL test is appropriate for this sample of subjects and it can be used on population of different age from youth cadets to seniors.

Values of Cronbach alpha (0,956400), Standardized alpha (0,962249) and Average inter-item corr. (0,927245) in the analysis of the reliability pointed to the high reliability of the TRČ10/10-2SKL test.

Factor analysis of the tests BAC2SKL, 300M and TRC10/10-2SKL according to the G-K (Guttman Keiser extract criteria), produced one common factor with very high correlations of variables with a factor (tables 2. and 3.). Based on these results can be concluded that all measure instruments (tests) measure the same dimension and that they are factually valid tests for endurance evaluation.

Table 2. Factor loadings

VARIABLES	FACTOR 1.
BAC2SKL	**0,890961**
300M	**-0,895704**
TRC10/10-2SKL	**-0,974256**
Expl.Var	3,482082
Prp.Totl	0,870521

Table 3. Eigenvalues

Value	Eigenvalues (Spreadsheet1) Extraction: Principal components			
	Eigenvalue	% Total variance	Cumulative Eigenvalue	Cumulative %
1	3,482082	87,05206	3,482082	87,05206

CONCLUSION

This study, along with metrical characteristics, pointed that new measure instrument (test) TRC10/10-2SKL can be used as good instrument for the endurance ability assessment.

The test TRC10/10-2SKL proved to be reliable for the population of younger and older age groups. Further and more extensive research of the test TRC10/10-2SKL would give even better and more reliable results. Due to the influence on the upper and lower limbs, it will be a good substitute for specific judo tests for endurance testing in which throws are used to work with sensitive new technology to evaluate kinetic throwing parameters. It can be also used in training process to enhance the level of athletes' functional abilities.

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SUWARI SEOI SAFETY: FROM CHILDREN DOJO TO HIGH LEVEL COMPETITION- (BIOMECHANICAL PART)

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Key words: biomechanics, children safety; judo throws, elastocaloric effect, impact biomechanics, crash test methodology, match analysis.

In this research note we face the problem of safety connected to a class of throws that are more often applied in every level of competitions.

Recalling the farsightedness of the founder of the judo, Jigoro Kano, on the safety of practitioners: establishment of the ukemi waza, and ban on the application of Yama Arashi, which has extended over time due to the sensitivity of the successors in the ban on kawazugake and Kani Basami.

This work is focused on the Tori safety in the application of the class of throwing applied with two knees on the mat, these techniques are very effective in competition, if right applied, but they seem to have a bad reputation, often connected to their premature application or to the chronic damage that can cause long-term agonistic activity, especially at a high level.

We must give credit to the Japanese masters who seem to have, even in the texts, a greater sensitivity about the safety of the practitioners, in fact it is possible to read affirmation like the following ones.

Numerous top judo competitors have had operations to remove damaged cartilages as a result too many drops with full force onto the knees. Currently (1990) in Japan, judo competitors under 16 (junior high school and under) are forbidden to attempt drop seoi nage on both knee in competition. With this rule, Japan hopes to maintain an overall high standard of basic judo technique, rather than give a handful of individuals to satisfaction of bringing home few medals. However, it must be said that as much as 80% of seoi nage seen in competition are this dropping version. (Hidetoshi Nakanishi, 1992, „Seoi nage", pp. 9-10, Ippon Books).

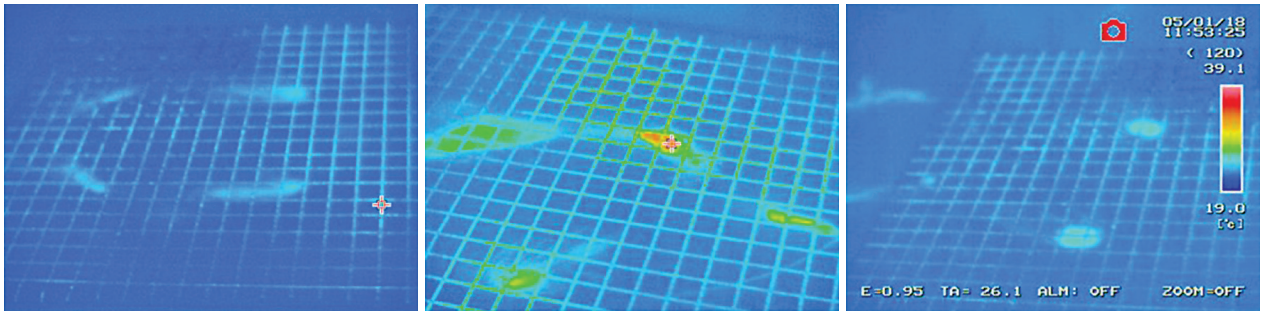
However, to our knowledge it has never been a scientific study on this subject in Japan and, to our great amazement, in Europe, only one, and in very recent times. While the family of techniques that is applied with two knees on the ground has gone over time, increasing, without increasing the immediate traumas, this posed the problem if these techniques were really dangerous. A group of researchers has decided to investigate in a comprehensive way, both on the immediate traumas, and on the chronic in the long run, and on the situations of competition. So, it was decided to develop the research on three complementary lines. Biomechanics of the technique aimed at the safety of Tori, from children in the dojo up to high-level competitions, a questionnaire that must have the greatest diffusion, seen the worldwide use of the technique, that provided information on the long term chronic trauma and an in-depth study of match analysis that highlight errors or safeguards, most common in competition.

The purpose of the research is to clarify:

1) if the technique is dangerous, in its correct execution, for children and athletes,
2) if the technique is dangerous for the accumulation of traumas in the long run,
3) if it is possible to find a possible safe form that could be gradually taught to children,

4) if there are technical tools to make it more safe and effective for adult athletes,
5) establish with a good degree of safety the age and time of teaching of these techniques, effectively,
6) build up a mathematical model of interaction between knees and tatami,
7) build up a safe way to train children and
8) build up a training way to increase safety and effectiveness for adult athletes.

The experimental part was developed with a thermal imaging camera that allowed to highlight the actual impact surfaces and therefore to trace the stress received by the knees, both for the children and for the athletes of the Italian National Team. The results have made clear that, if well done and with a certified tatami, the technique has a negligible probability of immediate trauma.



The three main shapes of impact surfaces for Suwari Seoi Family throws

EFFECT OF THE SAFE FALL PROGRAMME ON CHILDREN'S HEALTH AND SAFETY: DEALING PROACTIVELY WITH BACKWARD FALLS IN PHYSICAL EDUCATION CLASSES

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ABSTRACT

The aim of this study is to show that the implementation of the Safe Fall programme in physical education classes can help to reduce the negative effects of unintentional backward falls in the adolescent population, by teaching them how to protect themselves when falling. A quasi-experimental research design was applied in a sample of 120 children (M = 15.1 years, SD = 2.45), attending a secondary school in Seville (Spain). Data was collected on an ad hoc observation scale INFOSECA (which records five basic elements during a backward fall: position of the neck, the hands, the trunk, the hips, and the knees), applying descriptive, correlational, and contrast statistics. The criteria for considering statistical significance was $p < 0.05$ in McNemar's test. The data indicates that learning safe and protected ways of falling backward is possible through the implementation of the Safe Fall programme, and no differences were found in terms of gender.

Key words: falls, childhood, prevention, education, school health.