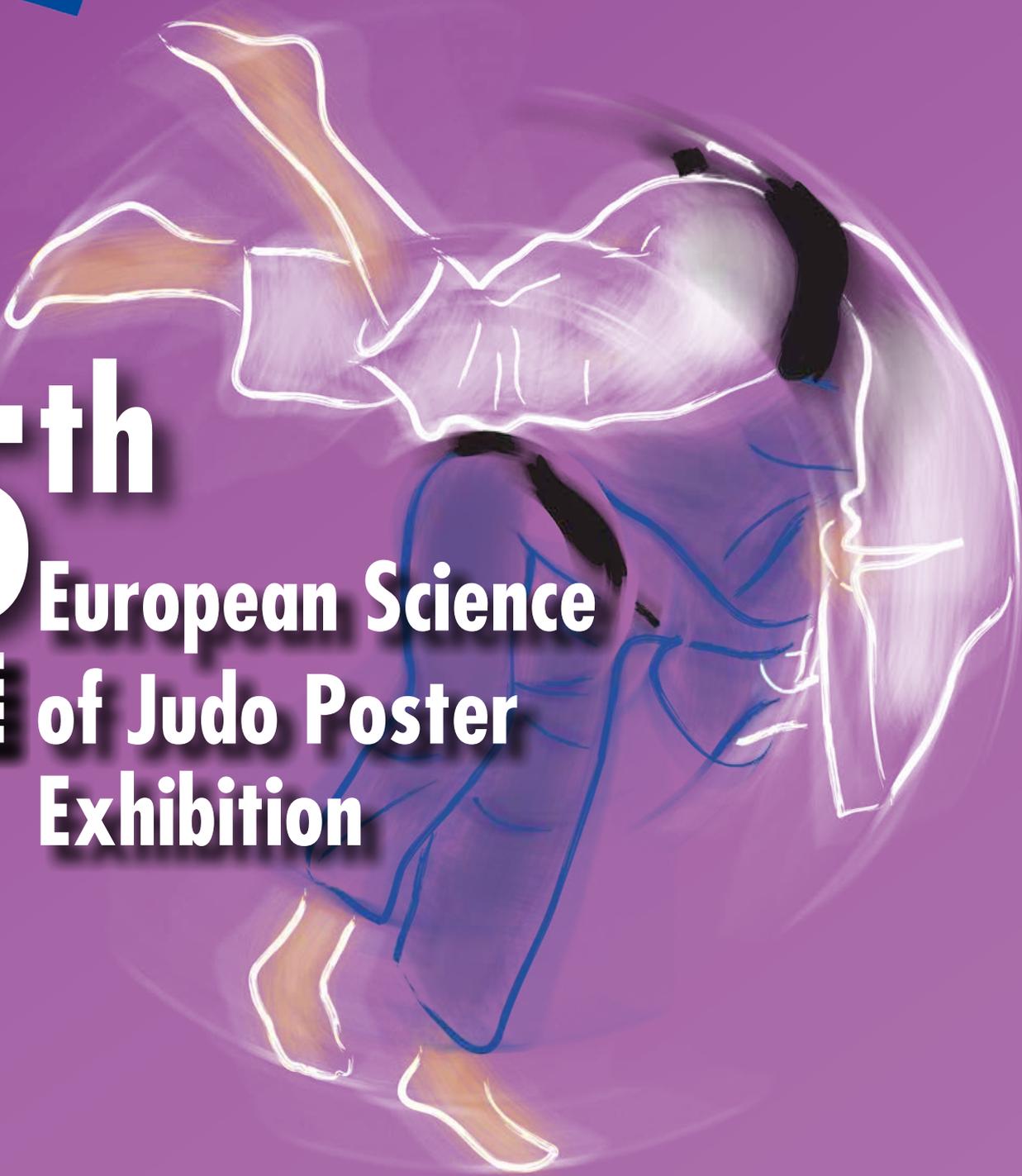




*Judo – more
than sport!*

5th

European Science of Judo Poster Exhibition



**Welcome Note**

Dear Friends, Dear Colleagues,

Since 5 years the EJU organizes the European Science of Judo Poster Exhibition.

This year the presentation of the researchers' works was held in MONTPELLIER (France) within the Seniors European Championships.

On this occasion, 62 authors and co-authors realized 20 posters.

This year's edition was won by Luís Fernandes Monteiro, Luís Miguel Massuça, José M. García García, Vicent Carratalá, Bibiana Calvo Rico. They showed in their poster the Physiological and neuromuscular pattern of Olympic judo athletes in a five minutes high intensity exercise.

The second place is awarded to Ranieri Urbani, Paola Sist; for the research: Non-invasive approach for the assessment of oxidative stress after intense Judo training of high-level athletes

The third place was awarded to Hrvoje Sertić, Hrvoje Lindi for their work: Differences of body weight of judokas in junior age between the official weigh in and the start of competition.

The European Judo Union thanks all the researchers for their contribution and the quality of their work.

We also thank the members of the Scientific and Expert commission for their work in the scientific domain and in judo.



Mr Franco Capelletti
Vice President EJU

Summary

Physiological and neuromuscular pattern of olympic judo athletes in a five minutes high intensity exercise	4
Luís Fernandes Monteiro	
"Differences of body weight of judokas in junior age between THE OFFICIAL WEIGH IN AND THE START OF COMPETITION"	6
Hrvoje Sertic	
"Non-invasive approach for the assessment of oxidative stress after intense judo training of high level athletes"	8
Ranieri Urbani	
A Biomechanical Evaluation of Hirano Tokio's Kuzushi [unbalancing] Concept in Skill Acquisition	10
Professor Carl De Créé	
Beta-alanine supplementation seems to increase physical performance and recovery in competitive judokas.	12
Dr. Carlos Montero Carretero	
Weight loss in elite judoists: dietetic program	14
Alejandro Martinez-Rodriguez	
The correlation between oxygen uptake and the special judo fitness test in female judokas	16
Cristina Casals	
Judo as a technology of health's formation	18
Mikhaylova Dar'ya Alexandrovna.	
Injuries in judo: a systematic literature review including suggestions for prevention	20
Elena Pocecco	
Tendencies of efficacy of technical-tactical actions in judo	22
Dr. Hans-Dieter Heinisch	
Construction and validation of the tests for the assessment of specific coordination in judo	24
Ivan Segedi, Ph.D.	
Athlete Development Pathways in Judo	26
Jenny Gal	
Educational Judo benefits on the preschool children's behaviour	28
Katarzyna Sterkowicz-Przybycien	
Nage waza system of attacks of high level judokas	30
Michel Calmet	
Training in judo with simulated impairments : a link between moral and industrial values?	32
Teresa Assude	
Energy Expenditure to the Uchi-komi Fitness Test	34
Ramdane Almansba	
Age Relation to Technique and Tactics in Judokas	36
Stanislaw Sterkowicz	
Judo lessons for children in Kôdôkan (Tokyo)	38
Professeur Luc Collard	
Judo: A Strategy For Intervention In Children At Risk Of Social Exclusion	40
Carlos Pablos Abella	
Physiological, motoric and anthropometrical profile of young elite Slovak judokas	42
MA. Miloš Štefanovský, PhD.	



Presentation Title:

Physiological and neuromuscular pattern of olympic judo athletes in a five minutes high intensity exercise

Keywords (max 7) **woman, fatigue, judo, physiology, strength**

Project manager*: **Luís Fernandes Monteiro**

Institution: **Lusófona University, Lisbon, Portugal**

Mailing Address: **Campo Grande, n.376, 1749-024 Libon, Portugal**

Telephone: **00351 917571790**

Fax **na**

Email address: **luis.monteiro@ulusofona.pt**

Co-author 1 Name: **Luís Miguel Massuça**

Institution: **Lusófona University, Lisbon, Portugal**

Co-author 2 Name: **José M García García**

Institution: **UCLM, Toledo, Spain**

Co-author 3 Name: **Vicent Carratalá**

Institution: **UV, València, Spain**

Co-author 4 Name: **Calvo Rico, Bibiana**

Institution: **UCLM, Toledo, Spain**

**EJU
Laureate
2014**

Abstract

Judo is a sport characterized by brief bouts of intermittent exercise that requires neuromuscular performance (Góngora-Bonitch et al., 2012). Last year, Monteiro et al. (2013) observed that these high intensity matches cause major episodes of fatigue in male judo athletes. Nevertheless, there is a gap in studies concerning the effect of sex in the neuromuscular pattern of a judo contest.

This study aims: (1) to determine physical demands of COPTEST; and (2) to determine the effect of gender on arm extensor muscles fatigue throughout this five minutes duration test.

Forty-two judo Olympic athletes participated in this study (male, n=30; female, n=12). All participants performed an intermittent judo test - the COPTEST (a 5 minutes duration test, with 9 Nage-komis, 9 Uchi-komis, 9 Juji-gatame and 4 repetitions of Bench-press (BP) with power-load (~50%1RM) in each minute, i.e., T1 to T5). BP load was the previous calculated power-loadings of the arm extensor muscles, and 4 measures were collected: (1) velocity; (2) force; (3) power; and (4) RFD. Power-load was tested on free-weights. The heart rate (HR), expressed in beats per minute (bpm), was monitored by means of cardiac monitors (Polar® Model 610i) and data were registered in each minute of the test (T1 to T5). These data was used to calculate HRmax and the %HRmax. The repeated measures ANOVA were used (between T1-T2 till T5), and the level of significance was set at 0.05.

Results showed that: (1) The proposed exercise (i.e., COPTEST) is a Maximal Exercise for male (%HRmax: between 88% to 94%) and for female (%HRmax: between 89% to 95%) judo athletes; and (2) No significant effect of gender were observed on the pattern of %HRmax and, on the pattern of arm extensor muscles velocity, strength, power and RFD (all, p=NS).

It can be concluded that: (1) The COPTEST is a stress test of maximum intensity with Heart Rate close to 90-100%; (2) The pattern of fatigue in male and female judokas is similar; (3) The COPTEST, may be a valid tool for evaluating effort-intensive in Olympic male and female judokas; and (4) The results don't explain the shift from 5 minutes to 4 minutes in judo female contest in the current International Judo Federation's Rules.

References: Góngora-Bonitch, J, Domínguez-Bonitch, J, Paulino, P, & Feriche, B. (2012). The Effect of Lactate Concentration on the Handgrip Strength during Judo Bouts. *The Journal of Strength and Conditioning Research*, 26, 7, 1863-1871.

Monteiro L, Massuça L, García JM, Carratalá V, Calvo Rico B (2013). Effect of fatigue on strength performance. In 4th European Science Symposium – 27 April 2013, Budapest, Hungary

*The prize money will be given to the Project Manager

Physiological and neuromuscular pattern of Olympic Judo athletes in a five minutes high intensity exercise

Monteiro L.¹, Massuça L.¹, Garcia J.M.², Carratalá V.³, Calvo Rico, B.²

¹ Lusófona University (Portugal)

² Castilla La Mancha University (Spain)

³ Valencia University (Spain)



Figure 1. Percent of heart rate (%HRmax) of male and female judokas in the COPTEST.

Introduction

Judo is a sport characterized by brief bouts of intermittent exercise that requires neuromuscular performance (Góngora-Bonitch et al., 2012). Last year, Monteiro et al. (2013) observed that these high intensity matches cause major episodes of fatigue in male judo athletes. Nevertheless, there is a gap in studies concerning the effect of sex in the neuromuscular pattern of a judo contest.

In accordance, this study aims: (1) to determine physical demands of COPTEST; and (2) to determine the effect of gender on arm extensor muscles fatigue throughout this five minutes duration test.

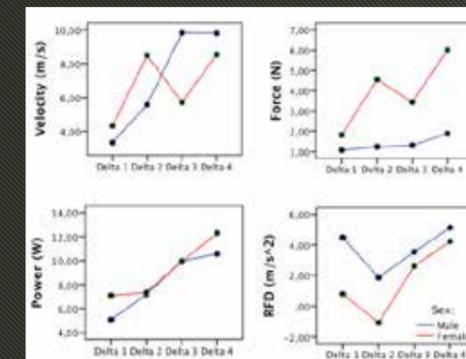


Figure 2. Neuromuscular pattern of male and female judokas in the COPTEST.

Methods

Forty-two judo Olympic athletes participated in this study (male, n=30; female, n=12). All participants performed an intermittent judo test - the COPTEST (a 5 minutes duration test, with 9 Nage-komis, 9 Uchi-komis, 9 Juji-gatame and 4 repetitions of Bench-press (BP) with power-load (~50%1RM) in each minute, i.e., T1 to T5). BP load was the previous calculated power-loadings of the arm extensor muscles, and 4 measures were collected: (1) velocity; (2) force; (3) power; and (4) RFD. Power-load was tested on free-weights. The heart rate (HR), expressed in beats per minute (bpm), was monitored by means of cardiac monitors (Polar® Model 610i) and data were registered in each minute of the test (T1 to T5). These data was used to calculate HRmax and the %HRmax. The repeated measures ANOVA were used (between T1-T2 till T5), and the level of significance was set at 0.05.

Results

(1) The proposed exercise (i.e., COPTEST) is a Maximal Exercise for male (%HRmax: between 88% to 94%) and for female (%HRmax: between 89% to 95%) judo athletes; and

(2) No significant effect of gender were observed on the pattern of %HRmax and, on the pattern of arm extensor muscles velocity, strength, power and RFD (all, p=NS).

Conclusion

(1) The COPTEST is a stress test of maximum intensity with Heart Rate close to 90-100%;

(2) The pattern of fatigue in male and female judokas is similar (i.e., the effect of sex does not differentiate fatigue in judokas);

(3) The COPTEST, may be a valid tool for evaluating effort-intensive in Olympic male and female judokas (it's considered a good test and a valid contribution to the training and coaches);

(4) The results don't explain the shift from 5 minutes to 4 minutes in judo female contest in the current International Judo Federation's Rules.

References

Góngora-Bonitch, J., Domínguez-Bonitch, J., Paulino, P.; & Feriche, B. (2012). The Effect of Lactate Concentration on the Handgrip Strength during Judo Bouts. *The Journal of Strength and Conditioning Research*, 26, 7, 1863-1871.

Monteiro L, Massuça L, Garcia JM, Carratalá V, Calvo Rico B (2013). *Effect of fatigue on strength performance*. In 4th European Science Symposium – 27 April 2013, Budapest, Hungary



Presentation Title:

Differences of body weight of judokas in junior age between the official weigh in and the start of competitionKeywords (max 7) **WEIGHT LOSS, FOOD RESTRICTION, WEIGHT CATEGORIES, BODY MASS**Project manager*: **PROF. HRVOJE SERTIĆ, PH.D.**Institution: **FACULTY OF KINESIOLOGY UNIVERSITY OF ZAGREB**Mailing Address: **HORVAĆANSKI ZAVOJ 15, 10000 ZAGREB, CROATIA**Telephone: **00385 1 3658 666**Email address: **hrvoje.sertic@kif.hr**Co-author 1 Name: **HRVOJE LINDI, MA**Institution: **EJU SPORT DIRECTOR****EJU
Laureate
2014****Abstract**

Body weight regulation is one of the specificities of judo. In a situation where judokas already have minimal amount of subcutaneous adipose tissue regulation of body weight is achieved by increasing the volume of training combined with partial or even complete termination of nutrients. To allow judokas optimal recovery official weigh-in was moved the on the night before the competition. Now the question is - will judokas be within acceptable limits of body weight for a particular category on the competition? The main objective of this study was to determine the difference between the weight at the official weigh-in and the weigh - in before the start of competition. It can be assumed that the greater difference means more drastic weight loss before the competition. For this purpose the differences in body weight in 1,102 women and 1,794 men were analyzed during 10 junior European cup tournaments. The results showed that the statistically significant ($p < 0.01$) higher average difference in body weight occurs in women (1.64 kg) than in men competition (1.48 kg). Also, if one analyze weight categories individually it can be noted that the greatest differences didn't occur in the lightest weight categories but in the second lightest weight category (men's up to 60kg - an average of 2.21 kg and girls up to 48kg - average of 2.09 kg). After that category difference gradually decreases until superheavy category. It is interesting to note that a significant connection between differences in body weight and success on competition exists only in the category up to 60 kg. These results clearly indicate that body weight is not the decisive factor for victory in judo bout, and because of the preservation of health coaches are urged to access the process of losing weight carefully, especially when it comes to young judoka.

*The prize money will be given to the Project Manager

DIFFERENCES BETWEEN BODY WEIGHT OF JUDOKAS IN JUNIOR AGE IN THE PERIOD FROM OFFICIAL WEIGH-IN AND THE START OF COMPETITION**PROF. Hrvoje Sertić, PH.D.*, Hrvoje Lindi, MA****

*FACULTY OF KINESIOLOGY UNIVERSITY OF ZAGREB

**EJU SPORT DIRECTOR

**INTRODUCTION**

Body weight regulation is one of the specificities of judo. In a situation where judokas already have minimal amount of subcutaneous adipose tissue regulation of body weight is achieved by increasing the volume of training combined with partial or even complete termination of nutrients. To allow judokas optimal recovery official weigh-in was moved the on the night before the competition. Now the question is - will judokas be within acceptable limits of body weight for a particular category on the competition? The main objective of this study was to determine the difference between the weight at the official weigh-in and the weigh - in before the start of competition. It can be assumed that the greater difference means more drastic weight loss before the competition

METHODS

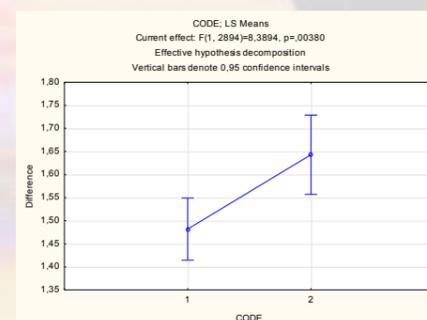
Results of body weight of 1,102 women and 1,794 men in junior age were analyzed for the purpose of this research. Data were collected during 10 junior European cup tournaments.

Object of the research was the variations (difference) in body weight on official weigh-in and body weight on weigh-in just before the first fight.

Standard statistical methods, one-way analyses of variance (ANOVA), and the correlation analyses were used.

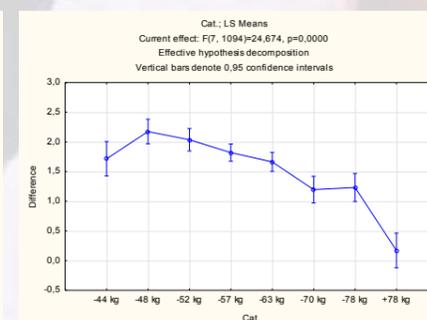
The obtained results (shown in table 1 and graphs 2. and 3.) indicate that the body weight of judokas varies less with increase of weight category. This indicates that judokas in the lower weight categories more drastic regulate their weight for official category weigh-in.

Graph 1. Results of ANOVA between the average body weight variations (differences) in men and women weight categories



1 - results of variations (differences) in men weight categories
2 - results of variations (differences) in women weight categories

Graph 2. Results of ANOVA between the body weight variations (differences) in women weight categories



Graph 3. Results of ANOVA between the body weight variations (differences) in men weight categories

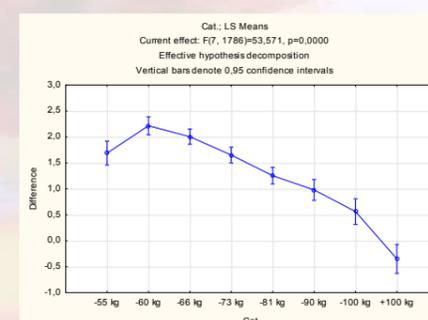


Table 2. Connection between the body weight variations (differences) and the result in weight category up to 60kg

Correlations (60)				
Marked correlations are significant at $p < .05$				
N=253 (Casewise deletion of missing data)				
Variable	Means	Std.Dev.	Difference	RANK
Difference	2,2105	1,2706	1,00000	0,13313
RANK	45,0395	187,533	0,13313	1,00000

CONCLUSIONS

These results clearly indicate that: 1. Coaches should have individual approach to weight regulation for different weight categories as well for the female and male judokas. 2. Variation (difference) of body weight must be regulated carefully. Body weight is not the decisive factor for victory in judo bout. Because of the preservation of health coaches are urged to access the process of losing weight carefully, especially when it comes to young judoka.

RESULTS

Table 1. Descriptive statistics parameters for men and women weight categories

	Valid N	Mean	Minimum	Maximum	Std.Dev.
-55kg	145	1,688483	-2,89000	5,800000	1,215488
-60kg	253	2,2106	-2,1000	5,650	1,2706
-66kg	354	2,031441	-3,00000	6,600000	1,407990
-73kg	327	1,647706	-2,90000	6,500000	1,334087
-81kg	299	1,258796	-2,50000	8,460000	1,483359
-90kg	187	0,978021	-2,50000	5,000000	1,234907
-100kg	121	0,558264	-3,40000	6,550000	1,673773
+100kg	98	-0,34949	-6,10000	6,100000	1,635897
-44kg	66	1,716212	-0,20000	3,800000	0,834091
-48kg	129	2,175814	-0,65000	5,210000	1,009606
-52kg	154	2,036753	-0,40000	5,000000	0,959720
-57kg	263	1,820228	-0,80000	5,780000	1,063951
-63kg	217	1,663318	-1,80000	5,700000	1,273443
-70kg	109	1,196055	-1,55000	5,300000	1,346515
-78kg	99	1,232020	-3,10000	5,200000	1,516650
+78kg	64	0,078906	-5,00000	4,950000	1,383973

Minimum - minimal variation of body weight, maximum - maximal variation of body weight



Presentation Title:

Non-invasive approach for the assessment of oxidative stress after intense Judo training of high level athletesKeywords (max 7) **Aerobic/anaerobic exercise, oxidative stress, RONS, muscle cell cultures**Project manager*: **Ranieri URBANI**Institution: **Via Giorgieri 1, 34127 TRIESTE**Mailing Address: **8562A, rue Chanteny,
H1P 2J2 Saint-Léonard, Québec (Canada)**Telephone: **+39-040-5588763**Fax: **+39-040-5583691**Email address: **rurbani@units.it**Co-author 1 Name: **Paola SIST**Institution: **Department of Life Sciences, University of Trieste, ITALY****EJU
Laureate
2014****Abstract**

The exercise-induced oxidative stress has received considerable attention with many original researches published in recent years.

Physical activities (aerobic, anaerobic and resistance exercises) evoke an increased production of high oxidative substances (ROS), depending mainly on the intensity of the muscle actions.

If the stress is too high, structural modifications, damage of lipids, proteins and nucleic acids may occur as a result of high intensity exercise of moderate to long duration. Biomarkers of this oxidative effect can be recognized for a few days.

The majority of studies have reported an increase in oxidative stress following a period of acute exercise, both aerobic and anaerobic, and this abundance of evidence seems to support the concept of exercise-induced oxidative stress regardless of the mode and volume of exercise.

Judo is an acyclic sport whose performance is determined by a combination of different physical abilities, and an intermittent sport with high-intensity actions.

The combination of anaerobic and aerobic energy systems as observed for Judoka athletes provides more pathways for free-radical generation with respect to single exercise training.

In this study it was investigated the use of non-invasive simple battery for the assessment and monitor of oxidative stress of Judo athletes for a better characterization of the oxidative stress response to both anaerobic and aerobic incremental exercise typical of Judo discipline.

The preliminary results are concerned to high level Judo athletes with respect to recreational athletes as control sample.

A cell model of myotubes and myoblasts has been studied as an in vitro model of exercise in trained skeletal muscles to investigate response and adaptation to cellular stress.

The prototype of a chamber for electrical stimulation has been produced in our laboratory which allows simultaneous and uniform stimulation of a large number of independent cultured muscle cells.

*The prize money will be given to the Project Manager

Non invasive approach for the assessment of oxidative stress after intense Judo training of high level athletes

Ranieri Urbani and Paola Sist
Department of Life Science, University of Trieste, Italy
Judo Club: ASD DOJO TRIESTE, Trieste, Italy
contact: rurbani@units.it

**Abstract**

The exercise-induced oxidative stress has received considerable attention with many original researches published in recent years. Physical activities (aerobic, anaerobic and resistance exercises) evoke an increased production of high oxidative substances (RONS), both oxygen and nitrogen containing radicals, depending mainly on the intensity of the muscle actions.

The combination of anaerobic and aerobic energy systems as observed for Judoka athletes provides more pathways for free-radical generation with respect to single exercise training.

The aim in this study was to investigate the use of non-invasive simple battery for the assessment and monitor of oxidative stress of Judo athletes for a better characterization of the oxidative stress response to both anaerobic and aerobic incremental exercise typical of Judo discipline.

Introduction

The majority of studies in the last two decades have reported an increase in oxidative stress following a period of acute exercise, both aerobic and anaerobic, and this abundance of evidence seems to support the concept of exercise-induced oxidative stress regardless of the mode and volume of exercise (Fisher-Wellman *et al.*, 2009). High levels of free radicals may cause biological damage when there is an overproduction of RONS and a deficiency in antioxidant defense system.

If the stress is too high, structural modifications, damage of lipids, proteins and nucleic acids may occur as a result of high intensity exercise of moderate to long duration. Biomarkers of this oxidative effect can be recognized for a few days.

On the other hand, moderate intensity (less than 50-60% of the aerobic capacity or of the maximal muscle tension) exercises has been shown to exert low stress without oxidative damage impulse in the normally nourished subjects. Regular training and "normal" diet results a proper defense against excess oxidative stress.

Although high levels of free radicals may damage cellular components, low-to-moderate levels of oxidants play multiple regulatory roles as mentioned above.

Judo is an acyclic sport whose performance is determined by a combination of different physical abilities, and an intermittent sport with high-intensity actions.

Considering that a match can last a few seconds or up to eight minutes (5 min of match + 3 min of golden score), the typical time structure in the match is 20-30 s of activity with a 5-10 s interval, during which the athletes spend about 51% of the time trying to perform a good grip, resulting in a high physiological demand on the upper body (Franchini *et al.* 2007). Time-motion analysis (Sterkowicz *et al.*, 2000) has shown that judo contests are characterized by maximal efforts (100% VO₂) of 10-15s interspaced with recovery periods of sub-maximal strength that involve pushing, pulling and lifting actions. Therefore, both the aerobic and the anaerobic metabolic systems are alternatively stimulated.

Acknowledgment: P.S. acknowledges the European S.H.A.R.M. project – SUPPORTING HUMAN ASSETS IN RESEARCH AND MOBILITY for her fellowship. The University of Trieste is also acknowledged for the 2014 FRA project fund.

Experimental design**Subjects**

This preliminary study recruited Caucasian low level trained (recreational) athletes' members of one regional Friuli Venezia Giulia Judo team (ASD DOJO Trieste) as indicated in the following table.

Subject	Age (sd)	Body Mass Index
Male (n = 5)	49 (± 3)	26.1
Female (n = 1)	41	24.4
Young male (n = 2)	19 (± 0)	20.7

The high level athletes, indeed, are members of two North East teams and the data are represented in the two following tables:

Team 2	Age (sd)	Years of Judo training	Body Mass Index
Male (n = 8)	18 (± 2)	9 (± 3)	23.5 (± 3.3)
Female (n = 4)	17 (± 2)	7 (± 4)	21.9 (± 4.6)

Team 1	Age (sd)	Years of Judo training	Body Mass Index
Male (n = 4)	17 (± 1.5)	9 (± 1.5)	22.9 (± 2.4)
Female (n = 1)	20	15	22.5

Methods

1. Creatinine concentration was estimated from each urine sample by the Jaffé (1886) alkaline picrate method.

2. FRAP assay assess the *in vitro* total antioxidant capacity using the method of Benzie and Strain (1996) which measures reducing ability of biological fluids correlate to antioxidant power.

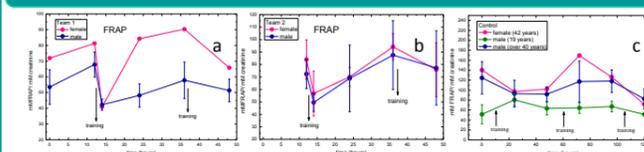
3. AGEs (Advanced Glycation End-products) are formed as result of free radical reactions with proteins and were determined using the fluorescence method by Campos and coworkers (2012) on urine samples at excitation and emission wavelength of 370nm and 440 nm, respectively.

4. MDA (Malondialdehyde) was determined using the TBARS method (Thiobarbituric Acid Reactive Substances) based on the reaction of by-products of lipid peroxidation (LPO), as the malondialdehyde, with thiobarbituric acid (TBA) to yield a red compound.

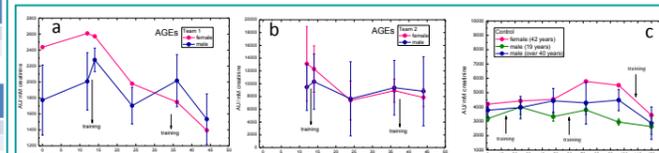
Urine sample derivatization was carried out following the method described by Agarwal and coworkers (2002) and the MDA product was determined on a Dionex HPLC apparatus equipped with a UV-visible detector AD25 and with a fluorescence detector GF2000. The injection volume was 25 µL and the column a LiChrospher RP-18 (5 µm, 250 mm, Agilent).

References

- Agarwal R, Chase SD. 2002. Rapid, fluorimetric-liquid chromatographic determination of MDA in biological samples. *J Chrom B*, 775: 121-126.
- Benzie and Strain, *Meth. Enzymology*, Part A, 1996, v. 299.
- Campos C, Guzman R, Lopez Fernandez E, Casado A. 2011. Evaluation of urinary biomarkers of oxidative/nitrosative stress in adolescents and adults with Down syndrome. *BBA Molecular Basis of Disease*
- Fisher-Wellman K, Bloomer RJ. 2009. Acute exercise and oxidative stress: a 30 year history. *Dynamic Med.*, 8:1-25.
- Franchini E, Del Vecchio FB, Matsushige KA, Artioli GG. 2011. Physiological profiles of elite judo athletes. *Sports Med* 41(2): 147-166.
- Jaffe M. 1886. Über den niederschlag welchen pikrinsaure in normalen harn erzeugt und über eine neue Reaction des Kreatinins. *Z Physiol Chem*, 10: 391-400.
- Sterkowicz S, Maslej P. 2000. An evaluation of the technical and tactical aspects of judo matches at the senior level. *Divis. Comb. Sports, Ac. Phys. Edu., Poland*.

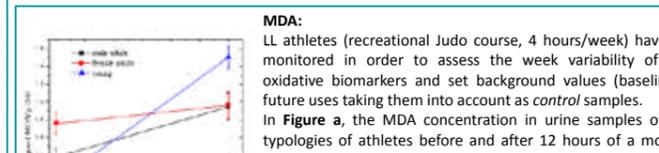
Results and Discussion**FRAP:**

Urinary *in vitro* antioxidant capacity was evaluated by FRAP method. Values for high level (HL) athletes are overall lower (Figure a and b) with respect to those for low level (LL) athletes (control samples, Figure c) in the whole period of investigation. Noteworthy after training sessions the FRAP value decreases rapidly and in few hours returned to the initial value. These effect may be ascribed to a well adapted metabolism to high level training exercises which is able to produce minor amounts of uric acid as antioxidant agent. Some differences have been observed between male and female HL athletes where the female FRAP values are higher than those of male athletes over the whole range of time considered.

**AGEs:**

In Figure a and b, AGEs levels are very similar in trend as a response to the high level training sessions among HL athletes, but Team 2 shows markedly higher values than those relative to Team 1 athletes due to the more intensive training protocols used by Team 2 in preparation to the Italian Championship 2014.

In comparison to the LL athletes (Figure c) a higher variability of AGEs was observed for HL athletes suggesting a strong dependence of end-products by the intensity and volume of training session.

**MDA:**

LL athletes (recreational Judo course, 4 hours/week) have been monitored in order to assess the week variability of stress oxidative biomarkers and set background values (baseline) for future uses taking them into account as control samples.

In Figure a, the MDA concentration in urine samples of three typologies of athletes before and after 12 hours of a moderate training session are presented. MDA levels were significantly different both as starting values and after 12 hours post-training recovery with the major variation for young athletes (11 years in average) in comparison to a male and female adult athletes. This is mainly due to the still low degree of adaptation of young organisms to respond to oxidative stress. In other words, there is not yet pronounced the upregulation in the body's antioxidant defense system as derived from an adaptation to regular exercise training.

We found significantly lower increase of levels of MDA in women than in men mainly due to antioxidant properties of the female sex hormone estrogen.

Figure b shows MDA values of HL athletes with respect to those of LL athletes during a week of training. For HL athletes after the training session there is sharp increase of MDA concentration while the LL athletes shows a marked decrease followed by an sharp increase after 12 hours as a consequence of a MDA accumulation in the urine which is cleared after several hours. On the contrary, the antioxidant metabolic system of HL athletes are able to clear urine MDA level in few hours due to the efficient adaptation and a good fitness status.

Conclusions

1. An increased antioxidant capacity may not necessarily be a desirable condition if it reflects a response to increased oxidative stress. Similarly, a decrease of antioxidant capacity may not necessarily be an undesirable condition if the measurement reflects decreased production of reactive species;
2. In a biochemical study it is recommended to use a battery of tests, including different assays for total antioxidant capacity and different assays for oxidative stress markers;
3. Mixed training discipline like Judo may provoke an increase of oxidative stress if the inefficiency of the antioxidant system in response to the supplementary production of free-radicals during exercise is present. Nevertheless, if the training programs are sufficiently long and intense to trigger a consequent adaptive response of the antioxidant system, a decrease of oxidative stress occurs. In our study, in fact, LL athletes show a longer recovery time for RONS clearance;
4. Based on this finding, it may be observed that regular Judo exercise can serve as a stimulus for the enhancement in endogenous antioxidant defense of judoka as a result of their regular and strenuous exercise.



Presentation Title:

A Biomechanical Evaluation of Hirano Tokio's *Kuzushi* [unbalancing] Concept in Skill Acquisition

Keywords (max 7) **Hydrodynamics, judo, kata, kinematics, kuzushi, pedagogy, Tokio Hirano**

Project manager*: **Professor Carl De Créé**

Institution: **University of Rome "Tor Vergata"**

Mailing Address: **Leegheid 21, B-2800 Mechelen, Belgium**

Telephone: **+32-492-032-066**

Fax: **+44-870-762-1701**

Email address: **prof.cdecree@earthlink.net**

Co-author 1 Name:

Institution:

Co-author 2 Name:

Institution:

Co-author 3 Name:

Institution:

Abstract

Hirano Tokio (1922-1993) was an extremely talented *jūdōka* who developed his own pedagogical approach for applying and teaching *kuzushi* [unbalancing] and *tsukuri* [preparation], two critical skills in performing *jūdō* throws. In his approach, Hirano emphasized the use of rotational unbalancing preceded by strategic movements that mimic water waves. The purpose of this poster is to assess the physical and biomechanical foundations of Hirano's didactic system in contrast with standard *Kōdōkan* pedagogy. French biomechanist Trilles and Italian physicist Sacripanti have extensively analyzed the biomechanical foundations of traditional *Kōdōkan tsukuri* and *kuzushi*, but no biomechanical analysis of Hirano's wave system has previously been attempted. Of Hirano's seven kinds of postulated waves the majority is wind-propagated but some are the product of other meteorological or geological phenomena. The fluid dynamic modeling of these proposed waves is mathematically complicated involving Boussinesq differential equations. Given the involvement of numerous parameters that determine the hydrodynamic behavior of water (depth, amplitude, saliency, temperatures, currents, shape of the coastal line, water density, wind), all of which are absent in the surroundings of two *jūdōka* indoors on a *tatami*, Hirano's system represents a mere metaphysical visualization. The unavailability of empirical data obtained from teaching large numbers of students make it so far impossible to conclude to what extent it facilitates *kuzushi* and *tsukuri* skill acquisition. Hirano's success in competitive *jūdō* may well be explained by him having been exceptionally gifted rather than being the merit of the wave system itself; separating the system from the skills of the individual is difficult. Ultimately, Hirano's wave-based didactic model does not alter the biomechanical analysis of *kuzushi/tsukuri* as proposed by Sacripanti, as it still is all about general action invariants aimed to close the distance between both opponents, break the opponent's symmetry, and apply one of the infinite options to achieve this.

*The prize money will be given to the Project Manager

A Biomechanical Evaluation of Hirano Tokio's *Kuzushi* [unbalancing] Concept in Skill Acquisition

Carl De Créé
Department of Medicine & Surgery, University of Rome "Tor Vergata", Italy

**Abstract**

Hirano Tokio, a highly skilled Japanese *jūdō* champion, developed a number of didactic methods based on postulated water waves, meant to address the *Kōdōkan's* pedagogical inaccuracy of approaching *kuzushi* as a two-dimensional phenomenon. It is our aim to assess the biomechanical foundations and merit of Hirano's *kuzushi* system. Our analysis shows that the hydrodynamic physics that are at work in these water waves are entirely different from the biomechanics of *jūdō*. The metaphorical use of these waves may contribute to acquiring diversified and effective of three-dimensional *kuzushi* strategies.

Introduction

Hirano Tokio 平野時男 was born on 6 August 1922 in Sumoto 洲本市 on Awaji-shima 淡路島 island near Kōbe 神戸 [Hirano 1985]. He obtained his black belt 1st *dan* in 1936 just three months after his 14th birthday. In 1937 he entered the *Heian Chūgakkō* 平安中学校 [Heian Junior Middle-School] in Kyōto, and became an *uchi-deshi* 内弟子 [in-living apprentice] of Fukushima Seizaburō 福島清三郎 (1890-1950) and Ushijima Tatsukuma 牛島辰熊 (1904-1985), both 9th *dan* and famous *jūdō* teachers at the *Budōsenmongakkō* 武道専門学校 [Martial Arts Vocational School] in Kyōto.

In October 1941, aged 19, Hirano, 4th *dan*, entered the *kōhaku-shiai* 紅白試合 [red and white *jūdō* contests] at the *Kōdōkan* 講道館, where he defeated a line-up of 15 *yōdan* (4th *dan*) holders, and received instant *batsugun* 抜群 promotion to *godan* (5th *dan*). In 1952 he left Japan for Europe, and ended up as a technical director of the *jūdō* federation BELAJA in Belgium, while being a frequent guest teacher at international *jūdō* camps.

Kōdōkan jūdō's didactic approach for skill acquisition in *nage-waza* divides throws into three phases: 1. *tsukuri* 作 [preparation], 2. *kuzushi* 崩し [unbalancing], and 3. *kake* 掛け [execution]. To teach *kuzushi* Kanō modified a 6-direction model (*roppō-no-kuzushi*), which he imported from *Tenjin Shin'yō-ryū jūjutsu* into an 8-direction model, called *happō-no-kuzushi* [Figure 1].

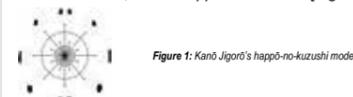


Figure 1: Kanō Jigorō's happō-no-kuzushi model.

Many *jūdōka* struggle with mastering proper *kuzushi*, one of the reasons being that above model is two-dimensional and provides horizontal directions only. In reality *kuzushi* is a three-dimensional process. Hirano Tokio addressed this problem by proposing three *kata* in which he defined insight into *kuzushi* defining a complex system of different types of *kuzushi*.

Aim

To assess the biomechanical foundations and pedagogical values of Hirano Tokio's *kuzushi* [unbalancing] concept as part of skill acquisition in mastering *Kōdōkan jūdō* throws.

Methods

- Critical literature analysis of historic sources
- Critical analysis of historic film footage
- Personal interviews
- Biomechanical analysis of movements

Results

Human body: physics position of unstable equilibrium ***Kuzushi*:** transfer of the barycenter of the opponent outside the optimal trapezoid support base
***Tsukuri*:** shortening of the distance between the two *jūdōka* with minimal energy using three classes of "Action invariants" according to the *Jacobi Principium of Minimum (or Least) Action*, and can be reduced to the *Hamilton-Lagrange Equation* and to the *Hamilton Action Principle* [Sacripanti 2010]:

$$S(q, t) = \int L(q, \dot{q}, t) dt$$

(S: Action of a physical system [i.e. the chosen throw], L: the Lagrangian [the system's energy] component, and q is the generalized Lagrange coordinate).

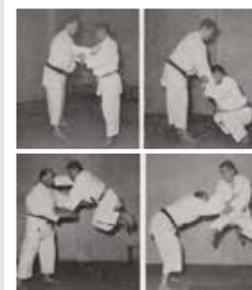


Figure 2: Hirano Tokio demonstrating Tobi-agari 跳上 [jumping up entry], here applied as an entry to his favorite technique tai-otoshi 体落 [body-drop].

Tobi-agari 跳上 [jumping up entry], a form of vertical *kuzushi* included in Hirano's *Jōge-no-kata* 上下の形 [Forms of up- and downward movement] eliminates the friction produced by the foot soles on the *tatami*, but requires additional energy for jumping up and temporarily move against the Earth's gravity (9.81 m/s²), the air resistance and the opponent's grip + force applied [Figure 2].

$$W = \int \vec{F} \cdot d\vec{s}$$

In his *Endō-no-kata* 円動の形 [Forms of circular motion] Hirano defines 6 types of circles as forms of rotational *kuzushi* in three dimensions. An example of this is *Konpasu-en* コンパス円 [compass circle] [Figure 3].



Figure 3: Hirano Tokio showing a Konpasu-en コンパス円 [compass circle] entry to apply ko-soto-gari 小外刈 [minor outer-reap throw]. From [Tegetaar 2012], with permission.

Hirano also created *Handō-no-kata* 反動の形 [Forms of reactions], also known under its previous temporary designation *Nanatsu-no-kata* [Seven Forms], which contains three-dimensional *tsukuri-kuzushi* movements modeled after the movement of water waves [Figure 4]:

1. *Ōnami* 大波 [large or surging wave]
2. *Yoko-shibuki* 横撃吹 or 横沫 [sideways splash]
3. *Uchi-age* 打上 [up-shooting wave]
4. *Oinami* 追い波 [overtaking wave]
5. *Tatsumaki* 竜巻き [waterspout]
6. *Nami-no-hana* 波の花 or *Saka-maki* 坂巻き [clapotis]
7. *Uzumaki* 渦巻き [whirlpool]



Figure 4: A white foaming clapotis, i.e. a non-breaking large standing wave, caused by the reflection of a succession of traveling surface waves from a near vertical shoreline like a breakwater, seawall or steep cliff.

Two interacting *jūdōka* are isolated from external forces, and when their random push-pull forces are subtracted, move following a *Langevin-type Equation*, as demonstrated by Sacripanti [2010]:

$$F = -\mu v + m v \sum (\pm 1) \delta(t - t_j) = F_j + F_s$$

However, assuming the water is of uniform density, flowing over a horizontal surface with limited slope and independent of depth, friction with the underlying surface being ignored, and being in hydrostatic balance with the pressure at the upper surface equal to zero, then the water waves' behavior has to be expressed by a classic Boussinesq [1872] differential equation as:

$$\frac{Du}{Dt} - fv = -g \frac{\partial \eta}{\partial x} - bu$$

$$\frac{Dv}{Dt} + fu = -g \frac{\partial \eta}{\partial y} - bv$$

$$\frac{\partial \eta}{\partial t} = -\frac{\partial}{\partial x} (u(H + \eta)) - \frac{\partial}{\partial y} (v(H + \eta))$$

Conclusion

Ultimately, Hirano's wave-based *kuzushi/tsukuri* does not alter the biomechanical analysis proposed by Sacripanti [2010], as it still involves general action invariants aimed to close the distance between the opposing *jūdōka*, to break the opponent's symmetry, and to apply one of the infinite options to achieve this. The metaphorical use of Hirano's didactic waves-model may, however, contribute to acquiring diversified and effective three-dimensional *kuzushi* strategies.

References

1. Boussinesq J.V. Théorie des ondes et des déformations qui se propagent le long d'un canal rectangulaire horizontal, en communiquant au liquide contenu dans ce canal des vitesses sensiblement parallèles de la surface au fond. *Journal de Mathématiques Pures et Appliquées* Deuxième Série 17: 55-108, 1872 [In French]
2. Hirano T. *Honō no jūdō: kyōsha e no michi* (炎の柔道強者への道) [Jūdō of fire: the way of an exceptional man]. Tōkyō: Tōkyō Masahiro Insatsu Kabushiki Kaisha; 1985, p.p. 1-70.
3. Hirano T. Hirano jūdō no "jizen tsukuri" to kata: Hirano shiki "kata" no irōiro. *In: Jūdō sekai nage aru ki* (柔道世界投げ歩る記). Tōkyō: Tōbū shobō; 1972; p.p. 219-230 [In Japanese]
4. Imamura RT, Iteya M, Ishii T. *Kuzushi and tsukuri and the theory of reaction resistance. In: Bulletin of the Association for the Scientific Studies on Judo - Report XI*. Tōkyō: Kōdōkan; 2007.
5. Sacripanti A. Theory advanced judo principles: Rotational unbalance: static and dynamic (Tai Sabaki). *In: Advances in judo biomechanics research*. Saarbrücken, Germany: VDM Verlag Dr. Müller Aktiengesellschaft & Co. KG.; 2010; p. 63.
6. Sannohe N (三戸範之). *Jūdō ni okeru zen hōkō no kuzushi ni kansuru seitai rikkaku-teki kenkyū ichi kuzushi no ninchi ni tsuite* [Biomechanical study of forward kuzushi in judo - cognition of forward kuzushi]. Daigaku shūshi ronbun [MSc Thesis]. Tsukuba University, Japan: Tsukuba; 1986.
7. Trilles F, Blais L. Facteurs biomécaniques de performance. *In: Optimisation de la performance sportive en judo*. T. Paillard (Ed.). Brussels: Éditions De Boeck Université, Groupe De Boeck s.a.; 2010, p.p. 143-156 [In French].
8. Yokoyama S (横山作次郎), Ōshima E (大島英助). *Jūdō kyōhan* (柔道教範) [Learning text of jūdō]. Tōkyō: Nimsudō Shoten; 1915 [In Japanese].

Acknowledgements

I am indebted professor Attilio Sacripanti of the University of Rome "Tor Vergata" for his helpful with the biomechanics of *jūdō*.

Contact

E-mail: prof.cdecree@earthlink.net

Presentation Title:

Beta-alanine supplementation seems to increase physical performance and recovery in competitive judokas.

Keywords (max 7) **Beta-alanine, lactic acid metabolism, judo, performance, recovery**

Project manager*: **Dr. Carlos Montero Carretero**

Institution: **Sports Research Center, Miguel Hernández University of Elche (Spain)**

Mailing Address: **Centro de Investigación del Deporte, Universidad Miguel Hernández, Campus de Elche, 03202, Elche (Spain)**

Telephone: **34-678584721**

Email address: **cmontero@goumh.umh.es**

Co-author 1 Name: **López-Grueso, Raúl**

Institution: **Sports Research Center, Miguel Hernández University of Elche (Spain)**

Co-author 2 Name: **Aracil, Adolfo**

Institution: **Sports Research Center, Miguel Hernández University of Elche (Spain)**

Co-author 3 Name: **Sarabia, José Manuel**

Institution: **Sports Research Center, Miguel Hernández University of Elche (Spain)**

Co-author 4 Name: **Mateo Cubo, Félix**

Institution: **Sports Research Center, Miguel Hernández University of Elche (Spain)**

Co-author 5 Name: **Montero Carretero, Carlos**

Institution: **Sports Research Center, Miguel Hernández University of Elche (Spain)**

Abstract

Introduction: This poster aims to test whether supplementation with beta-alanine (BA) increases performance in judo.

Method: A simple-masked, quasi-experimental study was performed. Five judokas of the Spanish National Team were distributed into two groups: a) placebo (PLA, n= 3) and b) experimental (BA, n= 2). Participants performed the Special Judo Fitness Test (SJFT, Sterkowicz, 1995) before (PRE) or after (POST) a period of 35 days of supplementation with 6 g day⁻¹ of maltodextrins (PLA) or BA. During testing and recovery, the following variables were measured: a) heart rate; c) number of projections; d) blood lactate; e) rating of perceived effort and f) rating of recovery.

Results: At the evaluation POST, SJFT index improved by 10.1 ± 1.7% in the BA group, and by 3.9 ± 3.9% in the PLA group. This improvement was due to the increase in the number of projections, which was accompanied by higher values of blood lactate. Similarly, judokas at the BA group showed faster recovery.

Discussion: Beta-alanine supplementation for 35 days appears to improve performance in judo, possibly due to the greater involvement of lactic acid metabolism.

*The prize money will be given to the Project Manager

Beta-alanine supplementation seems to increase physical performance and recovery in competitive judokas

López-Grueso, R, Aracil, A, Sarabia, JM, Mateo, F, Montero, C

Introduction

- Beta-alanine (BA) is a precursor of carnosine, one of the major intracellular pH buffers (Dunnet & Harris, 1999)
- Dietary BA supplementation increases muscle concentration of carnosine (Harris et al, 2006), as well as performance in several sports (Baguet et al, 2010; Chung et al, 2010; Ducker et al, 2013; Tobias et al, 2013)
- The proposed mechanism of action involves an increased tolerance of muscle to intracellular acidosis, thus allowing a higher involvement of lactic acid metabolism
- This study aimed to test whether dietary supplementation with BA increases the performance in the Special Judo Fitness Test (SJFT; Sterkowicz, 1995) of elite competitive judokas.

Methods

- A simple-masked, quasi-experimental study was performed
- Five judokas of the Spanish National Team were included, after informed consent. Table 1 summarizes the sample characteristics.
- Participants were distributed into two groups: a) control, that received a placebo (PLA), or b) experimental, supplemented with BA (BA)
- Each group was supplemented during 35 days with 6 g·d⁻¹ of maltodextrins (PLA) or BA (BA)
- During the supplementation period training was comparable among both groups
- Before (PRE) and after (POST) the supplementation period, subjects performed the SJFT. Blood lactate, Rating of Perceived Exertion (Borg, 1998), and rating of perceived recovery (TQR scale, Kenttä et al, 1998) were obtained as well.
- Data are presented as mean ± standard. Statistical differences were accepted when p<0,05

Variable	PLA	BA
Male (n)	1	1
Female (n)	2	1
Total (n)	3	2
Age (years)	25,0±1,0	23,5±0,7
Height (m)	1,70±0,04	1,6±0,04
Body mass (kg)	66,3±9,9	61,4±1,4

Table 1: Description of the participants. PLA: group that received the placebo; BA: group supplemented with beta-alanine

Results

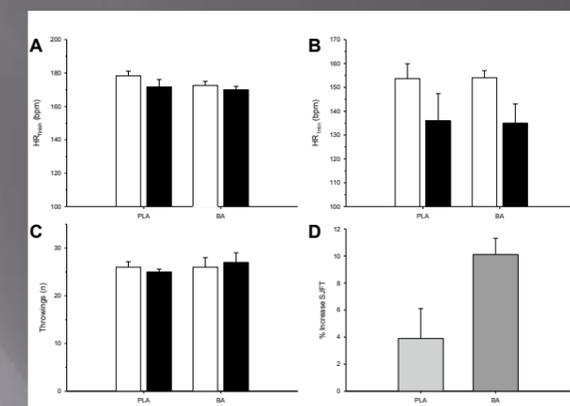


Figure 1: Results in the SJFT PRE (white columns A-C), and POST (black columns, A-C). Panels A-C shown each of the variables taken into account for calculating the SJFT index. Panel D shown the percentage of change of the SJFT on the POST evaluation, when compared with the PRE. Despite the higher increase in the supplemented group, no statistical differences were noted.

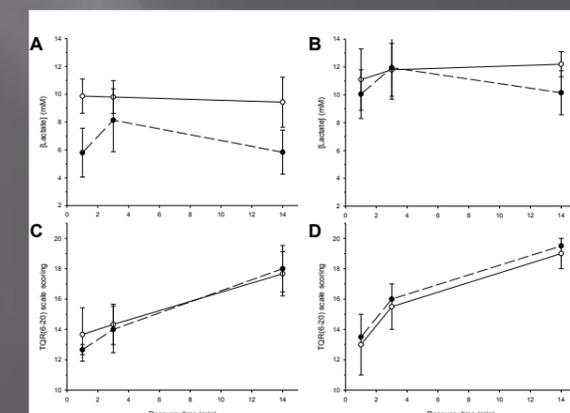


Figure 2: Blood lactate and subjective perception of recovery after the SJFT, PRE (open circles) and POST (black circles). Panels A and C correspond to the PLA group, whilst panels B and D correspond to the BA group.

Discussion and conclusions

- The BA group showed a higher increase in the SJFT after supplementation. This increase was mainly due to their increase in the number of throwings they were able to do during the SJFT
- The BA produced a higher concentration of lactate, thus indicating an increased participation of acid lactic metabolism. However, subjects of the BA group exhibited a faster sensation of recovery
- Due to the limited n, no statistical differences were found.

Presentation Title:

Weight loss in elite judoists: dietetic program

Keywords (max 7) **Judo, Nutrition, Fat mass, Muscle mass, Somatotype, Weight control.**

Project manager*: **Alejandro Martinez-Rodriguez**

Institution: **Biochemistry and Cell Therapy Unit. Institute of Bioengineering, University Miguel Hernandez, Elche (Alicante) SPAIN.**

Mailing Address: **Universidad Miguel Hernandez. Avda de la Universidad sn. 0320. Elche (Alicante). SPAIN.**

Telephone: **34965222029**

Fax: **34965222033**

Email address: **amr.cid@gmail.com**

Co-author 1 Name: **Nestor Vicente-Salar**

Institution: **Biochemistry and Cell Therapy Unit. Institute of Bioengineering, University Miguel Hernandez, Elche (Alicante) SPAIN.**

Co-author 2 Name: **Carlos Montero**

Institution: **Sport Research Center. University Miguel Hernandez, Elche (Alicante) SPAIN.**

Co-author 3 Name: **Félix Mateo**

Institution: **Sport Research Center. University Miguel Hernandez, Elche (Alicante) SPAIN.**

Co-author 4 Name: **Eduardo Cervello**

Institution: **Sport Research Center. University Miguel Hernandez, Elche (Alicante) SPAIN.**

Co-author 5 Name: **Enrique Roche**

Institution: **Biochemistry and Cell Therapy Unit. Institute of Bioengineering, University Miguel Hernandez, Elche (Alicante) SPAIN.**

Abstract

Background: Judo is an sport discipline in which individuals compete in weight categories. Usually, the athletes are at the maximum weight permitted in their category. This is ideally reached by increasing muscle mass. The objective of this work is to provide a nutritional strategy to help reach the adequate weight in the corresponding category.

Material and Methods: The study performed with judo competitors consisted in the follow up of the same group of individuals during 2 consecutive periods of time. For the first 4 months, the volunteers followed a free diet, while during the following 2-month period the same participants underwent a supervised diet program. Data obtained were analyzed according to a T-test for related samples, comparing the intra-group variation in the free diet period versus diet program period. Statistical significance was set at $p < 0.05$.

Results: Three important aspects of the dietary intervention were considered: meal distribution during the day, diet composition in macronutrients and moment for application of calorie restriction for weight loss. When diet was controlled, individuals significantly decreased their body weight. This decrease was mainly due to a decrease in body fat mass. On the other hand, body muscle mass and ectomorpha increased significantly.

Conclusion: Diet changes during the intervention period induce changes in body composition

*The prize money will be given to the Project Manager



WEIGHT LOSS IN ELITE JUDOISTS: DIETETIC PROGRAM

Martinez-Rodriguez A¹, Vicente-Salar N¹, Montero C², Mateo F², Cervello E² and Roche E¹

1. Biochemistry and Cell Therapy Unit. Institute of Bioengineering, University Miguel Hernandez, Elche (Alicante) SPAIN.
2. Sport Research Center. University Miguel Hernandez, Elche (Alicante) SPAIN.



Subjects

- 6 male
- 5 female
- Elite level
- Judo competitors
- Alicante (Spain)

Protocol

- Follow-up of the same group of individuals
- Consecutive periods of time :
 - 1) 4-month : followed free diet (JF-period).
 - 2) 2-months: followed supervised diet (JD-period).
- Judo training program followed 5 evenings/week.
- Additional general training session 2-3 alternative mornings/week .
- Anthropometry: every 15 days, as a ISAK recommendations [2].
- Changes in body composition:
 - Expressed in kg or %
 - Were calculated by the difference between the parameter (P) at the beginning and end of the study ($\Delta P = P_1 - P_0$).

Statistics

- T-test for related samples
- Comparing intra-group variation in the JF-period vs JD-period.
- Statistical significance was set at $p < 0.05$.

INTRODUCTION

Judo is an sport discipline in which individuals compete in weight categories. The usual strategy consists in competing within the maximal weight allowed in a specific category. Ideally this must be reached by increasing muscle mass which is the key component in the explosive actions performed during the competition. From a nutritional point of view, it is obvious to state that weight reduction must be performed from the body fat component. Several studies in judo positively correlate excess body fat content with low sport results, technical skills and yield in energy supply [1]. The objective of this work is to provide a nutritional strategy to help reach the adequate weight in the corresponding category.

METHODS

- **Supervised and individual dietetic program for/to:**
 - Strength exercises with explosive actions.
 - Daily energy intakes according to energy expenditure (EE).
 - Physical activity EE was estimated from published tables [3].
 - 10% Caloric restriction in the meals far from training sessions
 - Respecting the meals just after training sessions .

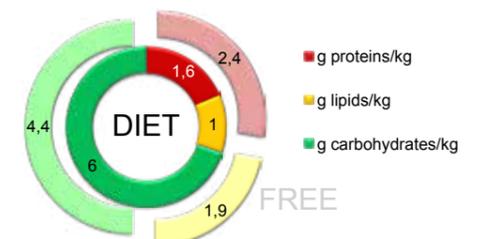
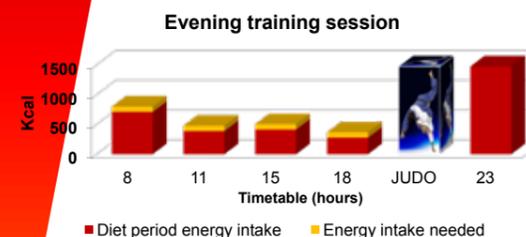
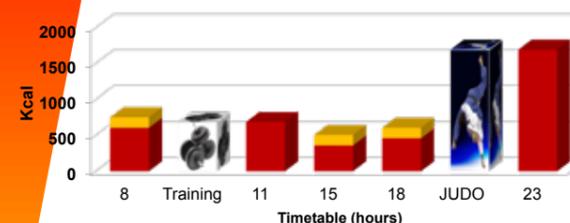


Figure 1. Macronutrient composition of free and designed diets.

Meal distribution during the JD-period



Morning and an evening training session



RESULTS

Weight and body composition changes

Parameters (Units)	Men		Women	
	JF-period	JD-period	JF-period	JD-period
Period of study	JF-period	JD-period	JF-period	JD-period
Δ Weight (kg)= $W_t - W_0$	0.23±1.43	-3.98±2.89*	0.70±1.20	-1.60±0.05*
Δ Muscle mass (%) = $\%MM_t - \%MM_0$	-0.52±1.29	2.18±2.02*	1.36±1.13	2.82±2.00*
Δ Fat mass (%)= $\%F_t - \%F_0$	-0.37±1.16	-3.93±3.94*	-2.04±1.98	-3.86±0.81*
Δ Ectomorpha= t-t0	-0.07±0.20	0.50±0.32*	-0.14±0.23	0.28±0.13*
Δ Mesomorpha= t-t0	0.02±0.31	0.05±0.27	-0.08±0.16	0.22±0.39
Δ Endomorpha= t-t0	-0.10±0.34	-0.90±0.88*	0.42±0.64	-0.76±0.24*

Table 1. Weight and body composition changes obtained during the different periods in judo practitioners following a free diet (JF) and those following the designed diet (JD). (*) Statistical significance between groups $p < 0.05$

Figure 2. Meal distribution during the JD-period during a day with an evening training session

Figure 3. Meal distribution during the JD-period during a day with a morning and an evening training session

CONCLUSION

The diet intervention performed in judo practitioners allow a weight reduction by decreasing the fat component and increasing muscle mass.

REFERENCES

1. Kubo J, Chishaki T, Nakamura N et al: Differences in fat-free mass and muscle thicknesses at various sites according to performance level among judo athletes. J Strength Cond Res 2006;20(3):654-7.
2. Marfell-Jones M, Stewart A, Carter L: Internacional standards for anthropometric assessment. Potchefstroom, South Africa: ISAK; 2006.
3. Ainsworth BE, Haskell WL, Whitt MC et al: Compendium of physical activities: an update of activity codes and MET intensities. Med Sci Sports Exerc 2000;32(9):498-504.



Presentation Title:

The correlation between oxygen uptake and the special judo fitness test in female judokas

Keywords (max 7) **Ergometry, judo, upper and lower body performance, maximal heart rate.**

Project manager*: **Cristina Casals**

Institution: **Biomedical Research Centre, Faculty of Sport Sciences, University of Granada, Spain.**

Mailing Address: **Avenida del Conocimiento s/n, Granada**

Telephone: **+34 677 18 05 97**

Fax: **+381 21 450 199**

Email address: **casals@ugr.es**

Co-author 1 Name: **Tatjana Trivic**

Institution: **Faculty of Sport and Physical Education, University of Novi Sad, Serbia**

Co-author 2 Name: **Nenad Mihailovic**

Institution: **Judo Federation of Serbia**

Co-author 3 Name: **Patrik Drid**

Institution: **Faculty of Sport and Physical Education, University of Novi Sad, Serbia**

Abstract

Aims:The first aim of the study was to establish correlations between a judo-specific test and the aerobic capacity of elite female judokas. The second aim was to compare physiological responses during arm and leg aerobic power tests.

Methods: Ten elite female judokas of the Serbian National Team participated in the study. In addition to the Special Judo Fitness Test (SJFT), maximal oxygen uptake (VO₂max) and anaerobic threshold(AT) were determined using an arm crank ergometer and a treadmill. Body fat percentage was estimated by bioimpedance (MaltronBioScan 920-2). Normality of distribution was checked with Shapiro-Wilk statistic. The Pearson or Spearman correlation tests were applied where appropriate. Comparisons between treadmill and arm ergometry were performed using the Wilcoxon test.

Results:The VO₂max was only 3 ml·kg⁻¹·min⁻¹ higher on the treadmill than in the arm crank (p<0.03), the AT was also higher on the treadmill test (8.6 l·min⁻¹, p=0.005). Nevertheless, the SJFT results were significantly correlated only with the maximal heart rate during the treadmill test (r=0.77, p<0.01 for index; r=-0.73, p<0.02 for total throws). Body fat percentage was correlated with VO₂max (r=-0.67, p<0.05) and AT in the arm crank test (r=-0.88, p=0.001).

Conclusions:The maximal oxygen uptake was not statistically correlated with the SJFT results in elite female judokas. However, judokas who had higher maximal heart rate during the treadmill test, showed a worse judo-specific capacity on the SJFT. Female judokas with higher body fat seem to have lower VO₂max and AT, with statistically significant correlations in the arm crank, and close to significance on the treadmill. On the other hand, arm crank and treadmill tests presented different results concerning aerobic capacity. However, our female judokas interestingly presented similar VO₂max results during both aerobic tests, which highlights some judo-specific demands on the upper-body aerobic fitness.

*The prize money will be given to the Project Manager

THE CORRELATION BETWEEN OXYGEN UPTAKE AND THE SPECIAL JUDO FITNESS TEST IN FEMALE JUDOKAS

Cristina Casals¹, Tatjana Trivic², Nenad Mihailovic³, Patrik Drid²

¹ Biomedical Research Centre, Faculty of Sport Sciences, University of Granada, Spain

² Faculty of Sport and Physical Education, University of Novi Sad, Serbia

³ Judo Federation of Serbia

Study's aims

The first aim of the study was to establish correlations between a judo-specific test and the aerobic capacity of elite female judokas. The second aim was to compare physiological responses during arm and leg aerobic power tests.

Methods

Ten elite female judokas of the Serbian National Team participated in the study. Maximal oxygen uptake (VO₂max) and anaerobic threshold (AT) were determined using an arm crank ergometer and a treadmill. All judokas performed the Special Judo Fitness Test (SJFT) (Sterkowicz, 1995), in which the judoka must throw, by *ippon seoi nage*, 2 opponents separated 6 m, during 3 parts of 15, 30, and 30 sec with 10 sec recovery between each part. The SJFT index equation is: (final heart rate (HR) + HR after 1 min)/total number of throws. The body fat percentage was calculated by manual bioimpedance (Maltron Bio-Scan 920-2). Data are expressed as mean ± standard deviation. The Shapiro-Wilk statistic was used for checking the normality of distribution. The Pearson or Spearman correlation tests were applied where appropriate. Comparisons between treadmill and arm ergometry were performed using the Wilcoxon test.

Results

Physical characteristics and the Special Judo fitness test results are presented in table 1. Table 2 shows the comparison between arm crank and treadmill tests. The SJFT results were significantly correlated only with the maximal HR on the treadmill (Fig 1-2). Body fat percentage was correlated with VO₂max and AT in the arm crank test (Fig 3-4).

Discussion and conclusions

The maximal oxygen uptake and AT, on both arm crank ergometer and treadmill, were not statistically correlated with the SJFT results in elite female judokas. However, previous research did show these correlations of the aerobic fitness and the SJFT in male judokas (Franchini, Takito, Kiss & Sterkowicz, 2005; Franchini, Nunes, Moraes & Del Vecchio, 2007)

According to the results of the present study, VO₂max and AT results are not useful assessment tools for determining the specific performance of female judokas. Almansba et al (2010) obtained similar results in male judokas, but their research suggested that VO₂ maximum is very sensitive to changes in training loads.

Female judokas who had higher maximal HR during the treadmill test showed a worse judo-specific capacity on the SJFT. In addition, judokas with higher body fat had lower VO₂max and AT, statistically significant in the arm crank, and close to significance on the treadmill (p=0.06, p=0.08 respectively). This results are then in accordance with others studies in male judokas (Franchini et al, 2007)

On the other hand, arm crank and treadmill tests presented different results regarding aerobic capacity. However, our female judokas interestingly presented similar VO₂max results during both aerobic tests, which highlights some judo-specific demands on the upper-body aerobic fitness.

References

Almansba, R., Sterkowicz, S., Sterkowicz-Przybycien, K., & Belkacem, R. (2010). Maximal oxygen uptake changes during judoist's periodization training. *Archives of Budo*, 6(2), 117-122.

Franchini, E., Nunes, A. V., Moraes, J. M., & Del Vecchio, F. B. (2007). Physical fitness and anthropometrical profile of the Brazilian male judo team. *Journal of physiological anthropology*, 26(2), 59.

Franchini, E., Takito, M. Y., Kiss, M., & Sterkowicz, S. (2005). Physical fitness and anthropometrical differences between elite and non-elite judo players. *Biology of Sport*, 22(4), 315.

Sterkowicz S (1995). Test specjalnej sprawności ruchowej w judo. *Antropomotoryka*, 12, 29-44.



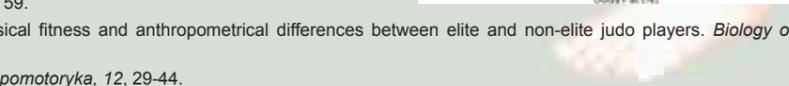
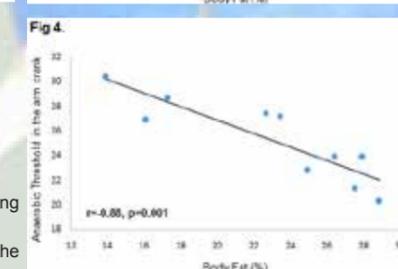
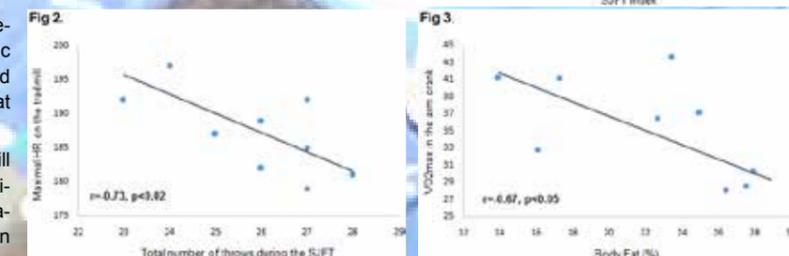
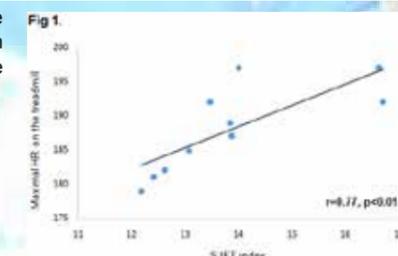
Table 1. Physical characteristics and Special Judo Fitness Test results in elite female judokas (n=10)

Weight (kg)	64.89±11.19
Height (cm)	166.50±7.15
Body Fat (%)	22.92±5.34
Index	13.89±1.59
Total number of throws	25.70±1.63
Final HR (bpm)	188.00±9.08
HR 1 min after (bpm)	166.80±15.31
Lactate 3 min (mmol/L)	7.87±3.26
Lactate 5 min (mmol/L)	9.72±2.32

Table 2. Maximal heart rate (HR), oxygen uptake (VO₂max) and anaerobic threshold (AT) in the ergometry tests

	Arm crank	Treadmill
HR max (bpm)*	183.00±8.79	188.10±6.42
VO ₂ max (ml/kg/min)*	34.29±6.71	37.66±4.29
AT (l/min)*	25.30±3.35	33.88±4.17

* means p<0.05





Presentation Title:

Judo as a technology of health's formation

Keywords (max 7) **Judo, health, aptitude, orientalization, zen, bushido.**

Project manager*: **Mikhaylova Dar'ya Alexandrovna.**

Institution: **The Federal State Budget Educational Institution of the Higher Professional Education «The National State University of Physical Culture, Sport and Health named after P. F. Lesgaft, Saint-Petersburg».**

Mailing Address: **194156, Saint-Petersburg, the Nezginskaya street, 4, 244.**

Telephone: **7-921-904-21-93.**

Fax **7-812-714-10-84.**

Email address: **d-samuray@ya.ru; Mikhaylova Dar'ya Alexandrovna.**

Co-author 1 Name: **Levitskiy Alexey Grigor'evich.**

Institution: **The Federal State Budget Educational Institution of the Higher Professional Education «The National State University of Physical Culture, Sport and Health named after P. F. Lesgaft, Saint-Petersburg».**

Abstract

From our point of view, there are four dimensions of interpretation of judo's phenomenon: social, spiritual, emotional, physical (look in the table below).

The social dimension of judo includes the social aptitude as a natural health's component, the social health as an adaptive health's component and a social maturity as a buffer health's component. If we apprehend judo as an oriental system of formation of physical culture's personality, so ikoe, tsukuri, kake, kuzushi and kimi are that judo's components, which form the social maturity.

The spiritual dimension of judo includes the spiritual (leading) aptitude as a natural health's component, the spiritual health as an adaptive health's component and a spiritual maturity as a buffer health's component. If we apprehend judo as an oriental system of formation of physical culture's personality, so bushido and etiquette are that judo's components, which form the spiritual maturity.

The emotional dimension of judo includes the integral psychical and motor aptitude as a natural health's component, the integral psychical and corporal health as an adaptive health's component and a psychical readiness as a buffer health's component. If we apprehend judo as an oriental system of formation of physical culture's personality, so the extrasensory abilities' development's practice is that judo's component, which forms the psychical readiness.

The physical dimension of judo includes the integral psychical and motor aptitude as a natural health's component, the integral psychical and corporal health as an adaptive health's component and a physical readiness as a buffer health's component. If we apprehend judo as an oriental system of formation of physical culture's personality, so a-un, taysie, ukemi andshintai-tai-sabaki are that judo's components, which form physical readiness.

In conclusion, judo is so unique, that gives a chance to form all main components of health by its systematic practice.

*The prize money will be given to the Project Manager



JUDO AS A TECHNOLOGY OF HEALTH'S FORMATION



The candidate of pedagogical sciences
Mikhaylova Dar'ya Alexandrovna,
The doctor of pedagogical sciences, the professor
Levitskiy Alexey Grigor'evich

The Federal State Budget Educational Institution of the higher Professional Education "The National State University of Physical Culture, Sport and Health named after P. F. Lesgaft, Saint-Petersburg"



From our point of view, there are four dimensions of interpretation of judo's phenomenon: social, spiritual, emotional, physical (look in the table below).

The social dimension of judo includes the social aptitude as a natural health's component, the social health as an adaptive health's component and a social maturity as a buffer health's component. This dimension interprets judo on the communication's level and is an example of "person - person" cooperation's system. If we comprehend judo as a principle of life, so praxiologically oriented communication is that judo's component, which forms the social health. If we apprehend judo as an oriental system of formation of physical culture's personality, so ikoe, tsukuri, kake, kuzushi and kimi are that judo's components, which form the social maturity.

The spiritual dimension of judo includes the spiritual (leading) aptitude as a natural health's component, the spiritual health as an adaptive health's component and a spiritual maturity as a buffer health's component. This dimension interprets judo on the consciousness's level and is an example of "person - self-analysis" cooperation's system. If we comprehend judo as a principle of life, so orientalization is that judo's component, which forms the spiritual health. If we apprehend judo as an oriental system of formation of physical culture's personality, so bushido and etiquette are that judo's components, which form the spiritual maturity.

The emotional dimension of judo includes the integral psychical and motor aptitude as a natural health's component, the integral psychical and corporal health as an adaptive health's component and a psychical readiness as a buffer health's component. This dimension interprets judo on the subconsciousness's and unconsciousness's level and is an example of "person - self-analysis" cooperation's system. If we comprehend judo as a principle of life, so zen is that judo's component, which forms the emotional health. If we apprehend judo as an oriental system of formation of physical culture's personality, so the extrasensory abilities' development's practice is that judo's component, which forms the psychical readiness.

The physical dimension of judo includes the integral psychical and motor aptitude as a natural health's component, the integral psychical and corporal health as an adaptive health's component and a physical readiness as a buffer health's component. This dimension interprets judo on the corporal level and is an example of "person - self-analysis" cooperation's system. If we comprehend judo as a principle of life, so stamina is that judo's component, which forms physical health. If we apprehend judo as an oriental system of formation of physical culture's personality, so a-un, taysie, ukemi andshintai-tai-sabaki are that judo's components, which form physical readiness.

In conclusion, judo is so unique, that gives a chance to form all main components of health by its systematic practice.

From dimensions and components of judo to forms and components of health

The table

DIMENSIONS OF JUDO	COOPERATION'S SYSTEMS	INTERPRETATION'S LEVELS	REALIZATION'S MEANS				
			POTENTIALITIES	ABILITIES FOR OPTIMAL ADAPTATION TO MODIFIED NONEXTREME HABITAT'S CONDITIONS	ABILITIES FOR OPTIMAL LIVING OF MODIFIED EXTREME HABITAT'S CONDITIONS		
			NATURAL HEALTH HEREDITY AS A REVEALING AND FORMING SPHERE	ADAPTIVE HEALTH LIFE ACTIVITY AS A REVEALING AND FORMING SPHERE	JUDO AS A PRINCIPLE OF LIFE	BUFFER HEALTH TRAINING AS A REVEALING AND FORMING SPHERE	JUDO AS AN ORIENTAL SYSTEM OF FORMATION OF PHYSICAL CULTURE'S PERSONALITY
SOCIAL (SOCIAL AND PSYCHOLOGICAL)	PERSON-PERSON	COMMUNICATION'S LEVEL	SOCIAL APITUDE	SOCIAL HEALTH	PRAXIOLOGICALLY ORIENTED COMMUNICATION	SOCIAL MATURITY	IKOE, TSUKURI, KAKE, KUZUSHI, KIMI
SPIRITUAL (WELTANSCHAULUNG'S / MENTAL - CULTURAL AND EPISTEMOLOGICAL)	PERSON-SELF-ANALYSIS	CONSCIOUSNESS'S LEVEL	SPIRITUAL (LEADING) APITUDE	SPIRITUAL HEALTH	ORIENTALIZATION	SPIRITUAL MATURITY	BUSHIDO, ETIQUETTE
EMOTIONAL (TOUGH / INTUITIVE / PROPERLY CREATIVE)		SUBCONSCIOUSNESS'S AND UNCONSCIOUSNESS'S LEVEL	INTEGRAL PSYCHICAL AND MOTOR APITUDE	INTEGRAL PSYCHICAL AND CORPORAL HEALTH	ZEN	PSYCHICAL READINESS	EXTRASENSORY ABILITIES
PHYSICAL (CORPORAL)		CORPORAL LEVEL			STAMINA	PHYSICAL READINESS	A-UN, TAYSIE, UKEMI, SHINTAI-TAI-SABAKI
BASIS			ADAPTIVE HEALTH		BUFFER HEALTH		SPORTING APITUDE



Presentation Title:

Injuries in judo: a systematic literature review including suggestions for prevention

Keywords (max 7) **martial art, combat sport, Olympic sport, athlete's health, sports injury**

Project manager*: **Elena Pocecco**

Institution: **Department of Sport Science, Medical Section, University of Innsbruck**

Mailing Address: **Fürstenweg 185, 6020 Innsbruck, Austria**

Telephone: **+43 512 507 45864**

Fax **+43 512 507 45999**

E-mail **elenapocecco@yahoo.it; elena.pocecco@uibk.ac.at**

Co-author 1 Name: **Gerhard Ruedl**

Institution: **Department of Sport Science, University of Innsbruck**

Co-author 2 Name: **Nemanja Stankovic**

Institution: **Faculty of Sport and Physical Education, University of Nis, Serbia**

Co-author 3 Name: **Martin Burtscher**

Institution: **Department of Sport Science, Medical Section, University of Innsbruck**

Abstract

Background: There is limited knowledge on epidemiological injury data in judo.

Objective: To systematically review scientific literature on the frequency and characteristics of injuries in judo.

Methods: The available literature up to June 2013 was searched for prospective as well as retrospective studies on injuries in judo. Data extraction and presentation focussed on the incidence rate, the injury risk, types, location, and causes of injuries.

Results: During the Olympic Games in 2008 and 2012 an average injury risk of about 11-12% has been observed. Sprains, strains, and contusions, usually of the knee, shoulder, and fingers were most frequently reported injuries, whereas being thrown was the most common injury mechanism. Severe injuries were quite rare and usually affected the brain and spine, whereas chronic injuries typically affected finger joints, the lower back and ears. The most common types of injuries in young judo athletes were contusions/abrasions, fractures and sprains/strains. Sex-differences data on judo injuries were mostly inconsistent. Some studies suggested the relationship between nutrition, hydration and/or weight cycling and judo injuries. Also psychological factors may increase the risk of judo injuries.

Conclusions: The present review provides the latest knowledge on the frequency and characteristics of injuries in judo. Comprehensive knowledge about the risk of injury during sport activity and related risk factors represents an essential basis to develop effective strategies for injury prevention. Thus, the introduction of an on-going injury surveillance system in judo is of utmost importance.

*The prize money will be given to the Project Manager

**Injuries in judo: a systematic literature review including suggestions for prevention**

Elena Pocecco,¹ Gerhard Ruedl,¹ Nemanja Stankovic,² Martin Burtscher¹

¹Institute of Sport Science, University of Innsbruck, Austria

²Faculty of Sport and Physical Education, University of Nis, Serbia

elena.pocecco@uibk.ac.at



Background: Nowadays, judo ranks among the most popular Asian martial arts in the world. The International Judo Federation (IJF) comprises more than 200 affiliated countries, counting an estimated 20 million individuals.¹ Considering such a high participation rate in a combat sport, and the suggested relatively high injury risk,² safety of practitioners is of highest priority. Therefore, research on judo injuries would be essential in identifying risk factors and suggesting potentially preventive strategies.

In literature a few studies dealing with judo injuries are available. However, no systematic overview about this topic could be found. Therefore, the aim of this research is to perform a systematic review of injuries sustained by judo athletes.



Methods: A comprehensive search of the literature was performed electronically in different databases (PubMed / Medline, ISI Web of Knowledge, Scopus, The Cochrane Library) from their inception up to June 2013 using the MeSH terms 'martial arts' and 'judo' and 'injuries'. Moreover, injury reports from recent Olympic Games, two book chapters on judo including injury data, and selected references were considered.

According to the Medical Subject Headings (MeSH), injuries are primarily defined as damage inflicted on the body as the direct or indirect result of an external force, with or without disruption of structural continuity. However, as a result of different designs of the reviewed literature, including prospective as well as retrospective studies, a standardized definition neither of injury nor of its severity grade could be adopted.

Data extraction and presentation focussed on the frequency, types, location, and causes of injuries. Judo injuries were expressed as absolute as well as relative frequencies.

Results: During the Olympic Games in 2008 and 2012 an average injury risk of about 11-12% has been observed.³⁻⁴ Sprains, strains, and contusions, usually of the knee, shoulder, and fingers were most frequently reported injuries, whereas being thrown was the most common injury mechanism⁵⁻¹⁰. Severe injuries were quite rare and usually affected the brain and spine¹¹ whereas chronic injuries typically affected finger joints, the lower back and ears.¹²⁻¹⁴ The most common types of injuries in young judo athletes were contusions / abrasions, fractures and sprains / strains.^{10,15} Sex-differences data on judo injuries were mostly inconsistent.⁵⁻¹⁰ Some studies suggested the relationship between nutrition, hydration and/or weight cycling and judo injuries.¹⁶ Also psychological factors may increase the risk of judo injuries.¹⁷

Conclusions: The present review provides the latest knowledge on the frequency and characteristics of injuries in judo.¹⁸ Comprehensive knowledge about the risk of injury during sport activity and related risk factors represents an essential basis to develop effective strategies for injury prevention. Thus, the introduction of an on-going injury surveillance system in judo is of utmost importance.

References

1. IJF. <http://www.ijf.org/> (accessed 30 June 2013)
2. Kobayashi et al. J Sports Sci Med 2010;9:669-75
3. Junge et al. Am J Sports Med 2009;37:2165-72
4. Engebretsen et al. Br J Sports Med 2013;47:407-14
5. Souza et al. Sci Sports 2006;21:280-4
6. Green et al. Scand J Med Sci Sports 2007;17:205-10
7. Pierantozzi and Muroi. Medit J Musc Surv 2009;17:26-9
8. Barsottini et al. Rev Bras Med Esporte 2006;12:56-60
9. Kujala et al. BMJ 1995;311:1456-8
10. Yard et al. J Sci Med Sport 2007;10:219-26
11. Kamitani et al. Am J Sports Med 2013;41:1915-21
12. Strasser et al. Z Rheumatol 1997;56:342-50
13. Okada et al. J Orthop Sports Phys Ther 2007;37:688-93
14. Catanese. Tucson, AZ: Wheatmark 2012:36-7
15. Salanne et al. Arch Pédiatrie 2010;17:211-8
16. Kordi et al. (eds) Combat Sports Medicine. London: Springer 2009:21-40
17. Deroche et al. Risk Analysis 2012;32:113-21
18. Pocecco et al. Br J Sports Med 2013;47:1139-43

Presentation Title:

Tendencies of efficacy of technical-tactical actions in judo

Keywords (max 7) **Judo, technique-tactic, throwing techniques, contest rules, competition analysis**

Project manager*: **Dr. Hans-Dieter Heinisch**

Institution: **Institute for Applied Training Science (Germany/Leipzig)**

Mailing Address: **heinisch@iat.uni-leipzig.de**

Telephone: **+49 3414945138**

Fax: **+49 3414945400**

Email address: **dbuesch@iat.uni-leipzig.de**

Co-author 1 Name: **Prof. Dr. Dirk Büsch**

Institution: **Institute for Applied Training Science (Germany/Leipzig)**

Abstract

Problem: The attraction of judo defines itself first of all by the efficacy of throwing or grappling techniques. The aim of the study is to investigate the influence of modifications of the rules a) on the efficacy of technical-tactical actions in general and b) on the profile of efficacy of throwing techniques in particular.

Procedure: The study is based on an analysis of video recordings of men's events at world championships (WC) and Olympic judo tournaments (OG) between 2004 and 2013. The relation between the gathered data and the de facto combat time allows for comparability of the results in longitudinal analyses. The applied statistical procedures refer to descriptive analyses. The testing of differences is performed by calculation of the effect size as well as of the 90 % confidence interval.

Results and discussion: As a result of modifications of the rules, judo performance is subject to continuous changes. During an average time of 3.43 ± 0.16 min, an average of 3.21 ± 0.33 score points per minute of bout is scored at WC. Regarding the analysed Olympic tournaments, a significant drift of both parameters arises, i. e. the matches last longer ($M = 4.16 \pm 0.4$ min) and the efficacy of attacks decreases ($M = 2.08 \pm 0.73$ score points/min). Comparing the number of the scored technical points and the given penalties per minute of bout, we found a distinctly greater amount of penalties since 2009. This being particularly striking in the years after OG. As regards throwing techniques, a permanently increasing dominance of inward turn techniques as well as foot and leg techniques can be observed. By contrast, there is a dramatic loss of importance in all Nage-waza with integrated leg grip. That means a decrease in the versatility of the solution opportunities for the decision of the match on a technical-tactical basis.

*The prize money will be given to the Project Manager

Tendencies of efficacy of technical-tactical actions in judo

Hans-Dieter Heinisch & Dirk Büsch



Problem

The attraction of judo defines itself first of all by the efficacy of technical-tactical actions. These are dynamic throwing actions (Nage-waza) by which the opponent is thrown with power and momentum (preferably) on his back. Also, the fight can be transferred from the standing (Tachi-waza) into the ground position (Ne-waza), and points can be scored by grappling techniques (Katame-waza). Parallel to the achieved technical advantages, the fighting behaviour and the match result are influenced by the officiating team assessing the bout by giving penalties for infraction of the rules. These rules are constantly being adjusted to the current demands of a modern Olympic sport by the IJF refereeing commission. The aim of this study is to examine the influence of the modifications of the rules a) on the efficacy of technical-tactical fighting actions in general and b) on the profile of efficacy of throwing techniques in particular in addition to international publications (Heinisch et al., 2012; Sterkowicz et al., 2012; Francini et al., 2012 and Ito et al., 2013).

Procedure

The study is based on an analysis of video recordings and a notational analysis of men's events at world championships (WC) and Olympic judo tournaments (OG) between 2004 and 2013. Data collection and analysis from a total of 2680 bouts were carried out by the judo-specific version of the video analysis system utilius® vs (Oswald et al., 2012) on the basis of data displayed in table 1. Their relation to the de facto combat time guarantees comparability of the results of longitudinal investigations. The applied statistical procedures refer to descriptive analyses giving averages and standard deviations ($M \pm SD$). The testing of differences in averages was performed by calculation of the effect size d as well as of the 90% confidence interval (CI).

Tab. 1. Quantitative data and parameter of performance

Year	Tournament	Investigation base	Technical scores	Penalties	PQ	SQ	TQ	SOT	Time
2004	OG	1111.5	1111.5	1111.5	1111.5	1111.5	1111.5	1111.5	1111.5
2008	OG	1111.5	1111.5	1111.5	1111.5	1111.5	1111.5	1111.5	1111.5
2009	WC	1111.5	1111.5	1111.5	1111.5	1111.5	1111.5	1111.5	1111.5
2010	WC	1111.5	1111.5	1111.5	1111.5	1111.5	1111.5	1111.5	1111.5
2011	WC	1111.5	1111.5	1111.5	1111.5	1111.5	1111.5	1111.5	1111.5
2012	OG	1111.5	1111.5	1111.5	1111.5	1111.5	1111.5	1111.5	1111.5
2013	WC	1111.5	1111.5	1111.5	1111.5	1111.5	1111.5	1111.5	1111.5

Results and discussion

During an average time of $M_{WC} = 3.43 \pm 0.16$ min, 3.21 ± 0.33 points (SP_T) per minute of bout were scored at the WC 2009-2013 (see table 1 and fig. 1). Regarding the Olympic tournaments in 2008 and 2012, a significant drift of both parameters arises, i. e. the matches last longer ($M_{OG} = 4.16 \pm 0.4$ min; $d = 2.40$; CI: 2.00 - 2.79) and the efficacy of attacks decreases ($M_{OG} = 2.08 \pm 0.73$ SP_T/min; $d = 1.99$; CI: 1.63 - 2.36). Possibly the matches last longer at the end of an energy-sapping qualification process— are of particular importance, being a unique chance for athletes to gain the highest esteem when they win, which reduces their readiness for risk in attack behaviour (Charlot, 2012). Also we found, that at the OG (2008/2012), the frequency of penalties is lower ($M = 0.28 \pm 0.16$) than at the WC ($M = 0.59 \pm 0.13$; $d = 1.90$; CI: 1.54 - 2.26). Comparing the average of the scored technical points per minute of bout ($TQ_S = 0.39 \pm 0.09$) and the number of given penalties ($SQ_T = 0.48 \pm 0.18$), the longitudinal analysis shows a greater amount of penalties ($d = 0.75$; CI: 0.44 - 1.07) since 2009. At the world championships in the years immediately after the OG (2009 and 2013 WC), i. e. in those years when there was a fundamental revision of the competition rules, this prevalence is particularly drastic. The gradual decrease of the values in the years thereafter may be explained both by an adjustment of the interpretation of the rules by the referees and an adjustment of the judo players' fighting behaviour.

Fig. 2 shows the efficacy of selected groups of throwing techniques that have been summarized on the basis of similar characteristics or principles of movement. Descriptively considered (with the exception of the OG 2012), an increasing dominance of inward turn techniques (ITT) as well as foot and leg techniques (ASW) can be stated since 2008. In most cases, these techniques are based on a classic arm and lapel grip with both hands. By contrast, there is a dramatic loss of importance in all throwing techniques with integrated leg grip (prohibited since 2009), such as Te-guruma, Kata-guruma and Ura-nage as well as all leg grabbing's (Ito et al., 2012), but also in the circle (Tomoe-nage) and corner reversal throws (Sumi-gaeshi). As a result, there is a decrease in the versatility of the solution opportunities for the decision of the match on a technical-tactical basis by throwing techniques. The trend of efficacy of the Katame-waza is steady ($M = 0.44 \pm 0.09$ SP_T/min).

Legend: ITT = Inward turn techniques (two or one legged)
 ASW = Ashi-waza according to the principles sweeping, tripping up, lifting, stopping, tearing away, reaping
 LLG = "Lifting throws" and "leg grabbing techniques"
 CCR = Circle and corner reversal throws
 KTW = Katame-waza

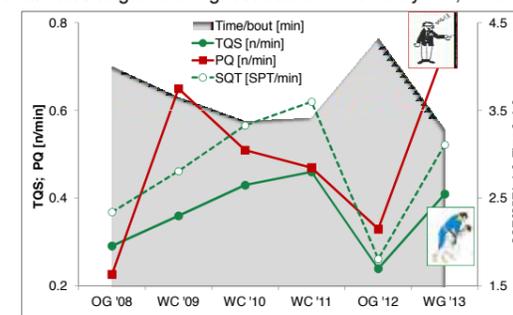


Fig. 1. Longitudinal course of average combat time, efficacy of technical-tactical actions and of frequency of penalties

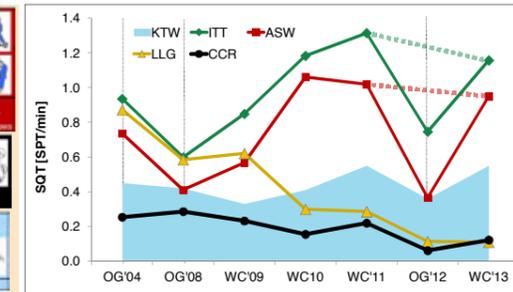


Fig. 2. Course of efficacy of selected groups of throws

Summary

As a result of modifications of the rules, judo performance is subject to continuous changes. Concerning combat behavior and interpretation of the rules, Olympic tournaments are of particular importance. Compared with the WC since 2008, they are characterized by longer lasting matches and lower technical efficacy. Immediately after the OG, an increased amount of penalties can be observed (see also Francini et al., 2013), however, it diminishes gradually during the cycle. The inward turn techniques prove to be the most effective Nage-waza, as well as the sum of all Ashi-waza, whereas, above all, groups of throws with integrated leg grip are subject to a extreme loss of importance.

Reference

Charlot, E. (2012). Comment le judo a raté ses Jeux (... et pourquoi c'est grave). *L'Esprit du Judo*. Octobre-Novembre 2012, 26-31.
 Francini, E., Takito, M. Y. & Clement, M. (2013). European Judo Championships: impact of the new rule changes on points and penalties. *International Journal of Performance Analysis in Sport*, 13, 474-479.
 Heinisch, H.-D., Oswald, R., Büsch, D., Bazyrak, M., Birc, M. & Büsch, D. (2012). Analyse der Olympischen Spiele 2012 im Judo. *Zeitschrift für Angewandte Trainingswissenschaft*, 19 (2), 121-150.
 Ito, K., Hirose, N., Nakamura, M., Masukawa, N., Tamura, M. & Hirose, N. (2013). The transformation of technical-tactical behaviors for hand techniques in attacking below the belt after the 2010 International Judo Federation rule revision. *Archives of Budo. Science of martial arts*, 1(9), 1-6.
 Oswald, R., Heinisch, H.-D., Büsch, D. & Heinrich, J. (2012). Weiterentwicklung des Videobearbeitungssystems utilius® vs zur Analyse technisch-taktischer Handlungen im Judo. *Zeitschrift für Angewandte Trainingswissenschaft*, 19 (1), 38-52.
 Sterkowicz, S., Sacripanti, A. & Sterkowicz-Przytycien, K. (2012). Techniques frequently used during London Olympic judo tournaments: A biomechanical approach. *Archives of Budo. Science of martial arts*, 1(9), 51-58.



Correspondence: Hans-Dieter Heinisch
 Institute for Applied Training Science
 An Institute of the association IAT/FES of the DOSB e. V.
 Department Technique-Tactic /Research Group Judo
 Marschnerstraße 29, 04109 Leipzig, Germany
 Phone: +49 341, 4945-138 Fax: +49 341 4945-400, E-Mail: heinisch@iat.uni-leipzig.de

Presentation Title:

Construction and validation of the tests for the assessment of specific coordination in judo

Keywords (max 7) **TRAINING EFFECTS CONTROL, MOTOR ABILITIES, SPEED OF REORGANISATION OF MOTION**

Project manager*: **IVAN SEGEDI, PH.D.**

Institution: **FACULTY OF KINESIOLOGY UNIVERSITY OF ZAGREB**

Mailing Address: **HORVAĆANSKI ZAVOJ 15, 10000 ZAGREB, CROATIA**

Telephone: **00385 1 3658 666**

Email address: **ivan.segedi@kif.hr**

Co-author 1 Name: **PROF. HRVOJE SERTIĆ, PH.D.**

Institution: **FACULTY OF KINESIOLOGY UNIVERSITY OF ZAGREB**

Co-author 2 Name: **LUKA LEŠKO**

Institution: **FACULTY OF KINESIOLOGY UNIVERSITY OF ZAGREB**

Abstract

One of the features of a quality training process is the assessment of the ability level of the athletes as well as the control of training effects. These procedures enable better conduct of training process. Because of structural complexity and variability of judo it is important to have a set of specific tests with which one can assess the level of specific abilities that are important for judo. Lack of quality tests for assessing specific motor skills in judo is a problem that is partially solved by the results of this research. The aim of this study is to construct, validate and assess the practical value of three judo specific tests. Metric characteristics of tests MSCO, MSCU and MSCN were determined on a sample of 16 national level judokas aged 13-16 years, involved in judo training no less than 3 years. KS test indicate a normal distribution of results for all analyzed tests. The validity of the tests was determined by factor analysis which confirmed the existence of a single factor which explains the high 77.17 % of the total variance. It can be said that all tests assess one aspect of coordination – speed of reorganization of movement. Reliability is tested by the model of internal consistency and expressed through cronbach's alpha coefficient (MSCO -0.928; MSCU -0.945; MSCN - .951) which indicates a high level of reliability of all tests. Significant correlation between the results of the tests and competition results (MSCO -0.62; MSCN -0.61; MSCU -0.55) indicates that the tests relatively well discriminate more and less quality judokas. It can be concluded that the new specific tests have good metric properties and a clearly defined practical value. But the coaches are the ones who must integrate these specific tests into practice.

*The prize money will be given to the Project Manager



5th Poster Exhibition of Research, 23. April 2014., Montpellier CONSTRUCTION AND VALIDATION OF THE TESTS FOR THE ASSESSMENT OF SPECIFIC COORDINATION IN JUDO

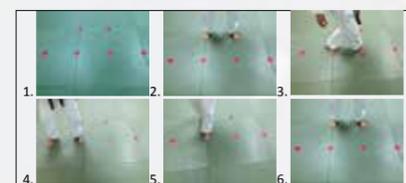
Ivan Segedi, PhD, Prof. Hrvoje Sertić, PhD, Luka Leško
Faculty of Kinesiology University of Zagreb, Croatia

INTRODUCTION

One of the features of a quality training process is the assessment of the ability level of the athletes as well as the control of training effects. These procedures enable better conduct of training process. Because of structural complexity and variability of judo it is important to have a set of specific tests with which one can assess the level of specific abilities that are important for judo. Lack of quality tests for assessing specific motor skills in judo is a problem that is partially solved by the results of this research. The aim of this study is to construct, validate and assess the practical value of three judo specific tests.

METHODS OF WORK A set of specific judo tests consisted of :

OUCHI TEST (MSCO)



The goal of **OUCHI** test is to do predetermine structure of motion (similar to ouchi gari). Judoka is asked to do this structure six times alternating right and left side as fast as possible. Results are recorded in a hundredth of a second.

NAGE KOMI TEST (MSCN)



In **NAGE KOMI** test judoka is asked to do, as fast as possible, two predetermined cycles of motion. Every cycle consisted of one throw (ippon seoi nage) after which follows two push ups. Test is finished when judoka stand up completely after finishing secon cycle of motion. Results are recorded in a hundredth of a second.

UKEMI TEST (MSCU)



The goal of **UKEMI** test is to do, as fast as possible, five ukemi waza techniques in predetermined order (zempo kaiten ukemi, ushiro ukemi, left yoko ukemi, right yoko ukemi, mae ukemi). After each ukemi judoka must stand up completely and then continue to the following ukemi. Results are measured in a hundredth of a second.

Metric characteristics of three specific judo tests were determined on a sample of 16 national level judokas aged 13-16 years, involved in judo training no less than 3 years.

Validation of each test consisted of:

Determination of descriptive statistic parameters - Assessment of normality of distribution using KS test; Testing the reliability using model of internal consistency; Determination of validity using the Factor analysis.

By the differences between judokas of different quality level (tested by t-test) and correlation between the results in the test and the results on the competition practical value of three judo specific tests was defined.

RESULTS

Table 1. Descriptive parameters of specific judo tests

	Valid N	Mean	Min	Max	Std.Dev.	Skew.	Kurt.	Max D	KS
OUCHI 1	16	8.52312	6.88000	10.0600	1.04513	-0.2424	-1.135	0.14	p > .20*
OUCHI 2	16	8.04312	6.55000	9.62000	0.94985	0.10615	-0.957	0.115	p > .20*
OUCHI 3	16	7.78125	6.12000	9.88000	1.17653	0.18176	-0.562	0.12	p > .20*

	Valid N	Mean	Min	Max	Std.Dev.	Skew.	Kurt.	Max D	KS
UKEMI 1	15	8.632	7.130	10.160	0.930	-0.256	-1.015	0.160	p > .20*
UKEMI 2	15	8.531	7.560	10.060	0.795	0.775	-0.615	0.224	p < .05*
UKEMI 3	15	8.417	7.140	9.570	0.843	-0.074	-1.493	0.157	p > .20*

	Valid N	Mean	Min	Max	Std.Dev.	Skew.	Kurt.	Max D	KS
NAGE KOMI 1	15	6.188	4.920	7.170	0.745	-0.32	-1.26	0.145	p > .20*
NAGE KOMI 2	15	6.143	5.060	7.270	0.734	-0.13	-1.27	0.154	p > .20*
NAGE KOMI 3	15	6.191	5.180	7.120	0.585	0.14	-0.75	0.115	p > .20*
NAGE KOMI 4	15	6.131	5.210	7.050	0.580	-0.32	-1.04	0.167	p > .20*
NAGE KOMI 5	15	6.051	5.120	7.020	0.583	-0.03	-0.93	0.188	p < .20*

*variables with normal distribution

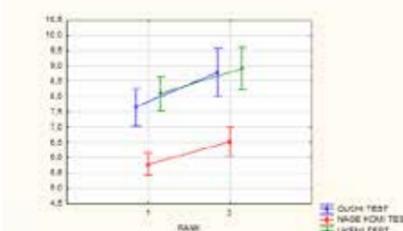
The validity of the three specific judo tests was determined by factor analysis (table 4.). To confirm that all test measure coordination two basic test were included in factor analysis. Motor tests MPN and ONT are basic tests with good metric characteristics that assess coordination (Metikoš et al., 1989.). Factor analysis confirmed the existence of a single factor which explains the high 77.17 % of the total variance. It can be said that **all tests assess one aspect of coordination – speed of reorganization of movement.**

Table 4. Validity of the three specific judo tests.

	Eigenvalue	% Total - variance	Cumulative - Eigenvalue	Cumulative - %
1	3.984830	79.69661	3.984830	79.69661
Factor - 1				
OUCHI	-0.858537			
NAGE KOMI	-0.868311			
UKEMI	-0.969118			
MPN	-0.861518			
ONT	-0.901321			

Table 6. Differences in test results between judokas of different quality level

	Mean - 1	Mean - 2	-t-value	df	p
OUCHI	7.658333	8.431667	-1.51683	12	0.154703
BAC2SKL2	6.776290	6.521200	-2.73358	11	0.019453
PADOVI	8.090417	8.913333	-2.05789	11	0.064098



1 – more quality judokas; 2 - less quality judokas

Table 2. Reliability of specific judo tests

	Cronbach alpha	Standardize d alpha	Average inter-Item corr
OUCHI	0.928	0.932	0.834
UKEMI			
	Cronbach alpha	Standardize d alpha	Average inter-Item corr
UKEMI 1	0.945	0.947	0.863
NAGE KOMI			
	Cronbach alpha	Standardize d alpha	Average inter-Item corr
NAGE KOMI	0.951	0.954	0.820

KS test indicate a normal distribution of results for all analyzed tests. Reliability is tested by the model of internal consistency and expressed through cronbach's alpha coefficient which indicates a high level of reliability of all tests. Validity of the items of the tests is confirmed through the factor analysis. All three specific judo test showed good metric characteristics.

Table 3. Factor analysis of specific judo tests

	Eigenvalue	% Total - variance	Cumulative - Eigenvalue	Cumulative - %
1	2.845443	88.18144	2.845443	88.18144
Factor - 1				
OUCHI 1	-0.897932			
OUCHI 2	-0.95498			
OUCHI 3	-0.862385			

	Eigenvalue	% Total - variance	Cumulative - Eigenvalue	Cumulative - %
1	2.715470	90.51568	2.715470	90.51568
Factor - 1				
UKEMI 1	-0.833701			
UKEMI 2	-0.949786			
UKEMI 3	-0.970549			

Table 5. Correlation between competition results and the results of the three specific judo tests.

	COMPETITION RESULTS
OUCHI	-0.626693
NAGE KOMI	-0.614933
UKEMI	-0.546495

Significant correlation between the results of the tests and competition results (OUCHI -0.62; NAGE KOMI -0.61; UKEMI -0.55), as well as differences in test results between judokas of different quality level, indicates that the tests relatively well discriminate more and less quality judokas.

It can be concluded that the new specific tests have good metric properties and a clearly defined practical value. But the coaches are the ones who must integrate these specific tests into practice.

LITERATURE

Metikoš, D., Hofman, E., Prot, F., Pintar, Ž., Oreb, G. (1989). Mjerenje bazičnih motoričkih dimenzija sportaša [Basic motor abilities testing]. Fakultet za fizičku kulturu Sveučilišta u Zagrebu.

Presentation Title:

Athlete Development Pathways in Judo

Keywords (max 7) **Judo athlete pathway LTAD**
 Project manager*: **Jenny Gal**
 Institution: **Swiss Judo Federation, Federal Institute of Sport Magglingen**
 Mailing Address: **Badstrasse 3**
 Telephone: **+41 78 7967853**
 Email address: **Jenny.gal@sjv.ch**
 Co-author 1 Name: **Adrian Bürgi**
 Institution: **Federal Institute of Sport Magglingen**
 Co-author 2 Name: **Marcel Burkhard**
 Institution: **Swiss Judo Federation**

Abstract

Introduction:

Though many national judo federations currently work with athlete development models, almost no research has been done on the actual development pathways world-class judokas followed to reach their current level. The aim of this study was therefore to describe the development pathways of current world-class judo players and to see whether analogies between the subjects' pathways could be found.

Methods: Nine World-class judo players (3♀, 6♂) were interviewed about many different aspects of their career, answering open questions and recalling year-to-year data on training, competitions, support and psychological aspects. Basis for the interview was a questionnaire adapted from the one that Bürgi, Vandepierre and Jeanneret (2013) used to question triathletes. The results were compared both to existing theories on the acquisition of sports expertise and to general and judo-specific models for athlete development.

Results/ Conclusions: The findings show that athletes tend to have individual developmental pathways, though they do show common aspects concerning childhood activity, judo training, competition frequency and psychological factors. The 10- year rule was confirmed, but, if looking at judo training alone, the 10'000 hour rule was not, nor was Balyi's Long Term Athlete Development model. Though a complete comparison of the data with the athlete development models currently used by several national judo federation wasn't possible, the partial comparison shed doubts on the validity of these models. More research on athlete development pathways is necessary, with a preference for prospective studies that would allow for more details on exact training contents and especially enable comparison between the athletes that eventually make it to the top and those that don't.

Literature:

Balyi, I., & Hamilton, A. (2004). Long-Term Athlete Development
 Bürgi, A., Vandepierre, D., & Jeanneret, O. (2013). Training, Wettkampf und Coaching in der Karriereentwicklung von Weltklassetriathleten.

*The prize money will be given to the Project Manager



ATHLETE PATHWAYS IN JUDO

Jenny Gal, Adrian Bürgi and Marcel Burkhard



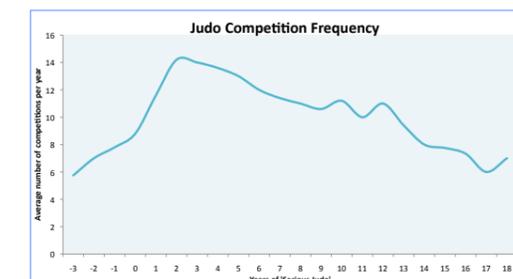
Active Childhood



From 16 years: 8-9 hrs of judo per week

Results

- All subjects described an extremely active childhood
- By age 16 they were all training 8 to 9 hrs of judo per week
- Determination and will to win developed very early.
- From the onset of serious judo competition frequency rapidly increased to over 15 per year.
- Athlete pathways differed greatly for the onset of judo, physical preparation and U17, U20 and U23 Performance



High competition frequency in youth

Discussion & Conclusions

Balyi's LTAD model doesn't seem to fit the athlete pathways described in this study. The findings seriously question the validity of the LTAD-based athlete development models currently used by various national judo federations.

More prospective studies are necessary for describing exact training content per year and for comparing athletes that eventually make it to the top with those that don't.

Introduction

Though many national federations currently work with long term athlete development models, almost no research has been done on the actual pathways world-class judokas followed on their way to the top. The goal of this study was to describe the athlete development pathways of current world-class judo players and to see whether analogies between the subject's pathways could be found. The results were then compared both to existing theories on the acquisition of sports expertise and to general and judo-specific models for athlete development.



Drive from early on

Methods

9 world-class judokas from Russia, Holland and Slovenia, multiple medal winners at European Championships, World Championships and Olympic Games, and participants in the 2012 London Olympics were interviewed about their athlete development pathways from childhood to present. Year to year data were obtained on training, competition, environmental factors and aspects regarding drive and discipline.



Olympic Medal



Presentation Title:

Educational Judo benefits on the preschool children's behaviour

Keywords (max 7) **Child, preschool, educational judo, motor abilities, social behaviour, questionnaire.**

Project manager*: **Katarzyna STERKOWICZ-PRZYBYCIEN**

Institution: **Faculty of Physical Education and Sport, University School of Physical Education in Cracow, Poland**

Mailing Address: **Al. Jana Pawla II 78, 31-578 Cracow, Poland**

Telephone: **+48 12 6831133**

Fax: **+48 12 6831133**

Email address: **hapki79@poczta.onet.pl or wtsterko@cyf-kr.edu.pl**

Co-author 1 Name: **Artur KLYS**

Institution: **Faculty of Physical Education and Sport, University School of Physical Education in Cracow, Poland**

Co-author 2 Name: **Ramdane ALMANSBA**

Institution: **Kinesiology and biology department, Faculty of Sciences, University of Quebec at Montreal Quebec, Canada**

Abstract

This study aims to examine behaviour changes of pre-school children (4-6 years) who participate in judo classes as reported by their parents. The survey was carried out among 46 parents of children (10 girls and 36 boys). The training experience of children ranged from 5 to 24 months. Teaching programme lasted 16 months in average and involved basic agility drills, gymnastic, ball games and specific judo exercises. A survey questionnaire including one open question and 13 closed-ended questions was used to record the behaviour changes of the children (Sterkowicz & Madejski, 1999). The parents answered using a nominal scale (yes/no/I don't know). The positive score ("yes" percentage responses) signify a beneficial effect of practising judo on the behaviour of children. Judo training showed a very strong positive effect (>80%) on the children's behaviour which manifested by parent's satisfaction about judo skills developed by their children. Also, we observed a strong effect (60-80%) in solving problems by the children, beginning conversation about training, practising physical exercises at home, persuading others, helping weaker persons solve their problems, positive changes in attitudes toward physical activity and waiting for the training day. However, a medium effect (40-60%) was obtained in improved self-discipline. Children being more enthusiastic with judo trainings than other classes in the kindergarten which observed in changes of attitudes towards the nearest community and in personality changes such as being more kind-hearted, sensitive and courageous. The parents reported that the judo training influenced positively several factors of children's behaviour such as fitness, self-discipline, serenity, prudence, courage, efficiency problem-solving, persistence in striving for achievement the goals despite the obstacles, socio-moral sensitivity, helping others and responsibility. Our finding shows that educational judo training improves both psychosocial and motor skills of young children.

*The prize money will be given to the Project Manager

**Introduction**

Study concept. Physicians recommend to children aged from 6 to 10 years to develop the general motor abilities before to practise any competitive sport that require specifics and complex motor abilities (Kostka et al., 2012). Most parents have judo experience and convinced their children to practise judo because they know the educational (moral code) values of judo and his benefits about health. Therefore, the teaching programme oriented at comprehensive development which contains technical judo elements can contribute to stimulation of development traits useful in children's attending kindergartens. Despite judo is very educational sport and is accessible in anywhere for anyone and at all age, no study in the literature investigated the practising judo in the preschool children (4-6 years).

Objective

This study aims to evaluate changes of children's behaviour who participate in judo classes reported by their parents.

Material and Method

The survey was carried out among 46 parents of children (36 boys and 10 girls). The training experience of children ranged from 5 to 24 months. Teaching programme involved ability and acrobatic exercises, ball games and plays, basic elements of judo taught using the pedagogical principle of difficulties tasks "from easy to difficult". A survey questionnaire that included one open question and 13 closed-ended questions was used to evaluate the behaviour changes of the children (Sterkowicz & Madejski, 1999). The parents answered using a scale (yes/no/I don't know). The positive score percentage of "yes" was interpreted as positive effect of practising judo on behaviour of children:

More than 80% - very strong effect
60 - 80% - strong effect
40 - 60% - medium effect
20 - 40% - rather small effect
Under 20% - small, insignificant effect. One exception was that the answer to the question 7 (Is watching TV or playing more important than training?) was scaled based on the frequency of „no" answers.

Educational Judo benefits on the preschool children's behaviour

Sterkowicz-Przybycien K¹, Klys A¹, Almansba R²

¹Faculty of Physical Education and Sport, University of Physical Education in Cracow, Poland
²Kinesiology and Biology departments, Faculty of Sciences, UQAM, Canada

Results**a) Judo values and the parents' perception**

Parents emphasized a variety of values of practising judo, which concerned physical fitness and health (agility, coordination, strength, flexibility, form), and psychosocial traits (courage, respect, discipline, responsibility, regularity, persistence, prudence, diligence, concentration, sensitivity, independence, assertiveness, self-confidence, serenity). They also pointed to development of sports interest, cooperation in the peers' group, improvement in self-assessment, consistency, sense of duty and the need for competition.

b) effect of judo on children perceived by parents

Parents reported a very strong effect of practising judo on their children was manifested in being satisfied with the skills mastered through training (Question 8 → 97.8%) (Figure 1).

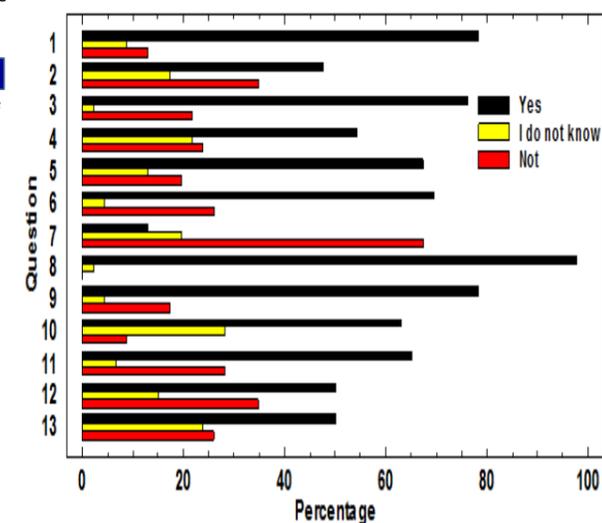


Fig. 1. Business barchart with size proportional to the frequency of parents' answers to questions 1 – 13.

They observed strong effect in terms of child's solving problems (Question 1 → 78.3%), starting conversations about training (Question 9 → 78.3%), starting physical exercises at home during leisure time (Question 3 → 76.1%), persuading others (Question 6 → 69.6%), helping weaker peoples solve their problems (Question 5 → 67.4%), prefer training to watching TV or playing (Question 7 → 67.4%), positive changes in the relation of the child to physical activity (Question 11 → 65.2%), waiting for the training day (Question 10 → 63.0%),

Medium effect was reported by parents in improved self-discipline (Question 4 → 54.3%), being more excited with judo trainings than with other classes in the kindergarten (Question 12 → 50.0%), changes in attitudes to the nearest community (Question 2 → 47.8%) and personality changes such as e.g. being more kind-hearted, sensitive and courageous (Question 13 → 50.0%).

Discussion

Few studies in the literature documented the impact of educational judo programme on the psycho-sociological behaviour of preschool children (4-6 years) attending daycare or kindergarten. In judo coaches opinion "Introducing pre-school children in the preparation of content specific and non specific signify judo aimed mainly the harmonious development of physical and psychological aspects, knowledge at a opportunities to move the body segments, relations established between them, of spatial-temporal orientation and balance, the acquisition of behavioral norms that encourage positive social attitudes, stimulate imagination and creativity, develop communication skills and moral values of character, will lead to transfer after successful practising any sport, including judo" (Neofit, 2010). In the preschool age, more than 60% of both boys and girls were able to perform at specific developmental levels for several motor skills as catching, running, jumping, throwing, kicking, striking and hopping (Malina et al., 2004). The following aspects of mastering judo throwing techniques by the youngest athletes should be emphasized:

1. Ease with which tori may achieve balance and uke imbalance
2. Ease with which tori may achieve posture control
3. Ease in adjusting to space-time (precision, timing or proprioception)
4. Ease in achieving intersegmentary coordination
5. Ease in achieving correct direction in pushing and pulling actions
6. Ease with which uke achieves ukemi (falling without the risk of an injury) (Garcia et al., 2009).

Conclusion

Our finding shows that educational judo training improves both psychosocial and motor skills of young children.



Presentation Title:

Nage waza system of attacks of high level judokas

Keywords (max 7) **system of attacks, nage waza, ICT**

Project manager*: **Michel CALMET**

Institution: **University of Montpellier 1**

Telephone: **00 33 6 88 47 54 82**

Email address: **Michel.calmet@univ-montp1.fr**

Co-author 1 Name: **Emanuela PIERANTOZI**

Institution: **University of Genova**

Co-author 2 Name: **Students from University of Montpellier 1**

Abstract

The aim of this work is to go beyond the simple system of attacks, using simple tools for trainers or students.

6 judokas (5M, 1F; World champion, Olympic champion or winner Gran Slam Paris between 2000 and 2011).

30 combats were analyzed; all the judokas did at least 4 combats (5 +- 0.9).

Data collected:

i) the score (1 for attack, 3 for yuko, 4 for waza ari, 5 for ippon; efficiency);

ii) directions of attacks (8 directions of kuzuchi rose; technical skills);

iii) the times when attacks started using the time ratio structure "effort-pause" (20 s : 10 s; number of attacks / 20 s for each combat).

Before comparing these data, ANOVA one way and Bonferroni test as a post hoc were conducted: no difference between the duration of the combats ($F_{1,69}=2.64$; $p=0.177$).

The average number of directions of attack was 6.3 ± 1.5 ; the average number of attack per period of 20s was 1.4 ± 0.2 . Six directions of attacks and more are necessary to reach the top high level. These results confirm the way to learn judo from a system of attack linked by the kumi kata .

These graphics could give furthermore information :

- risk-taking concerning the attacks (more/less attacks or more/less direction of attacks)
- what strategy are you following if you do more attacks in the first/second/third part of the combat ?
- what strategy are you following if you have to combat against a judoka who does more attacks in the first/second/third part of the combat ?

We have to improve : i) the use of kumi kata; ii) the way to count the number of attacks taking in account for example ne-waza or shorter combats won by ippon.

*The prize money will be given to the Project Manager

NAGE WAZA SYSTEM OF ATTACKS OF HIGH LEVEL JUDOKAS

Students works 2012-2013 University of Montpellier 1



Symposium EJU 23th April 2014 - Montpellier - France

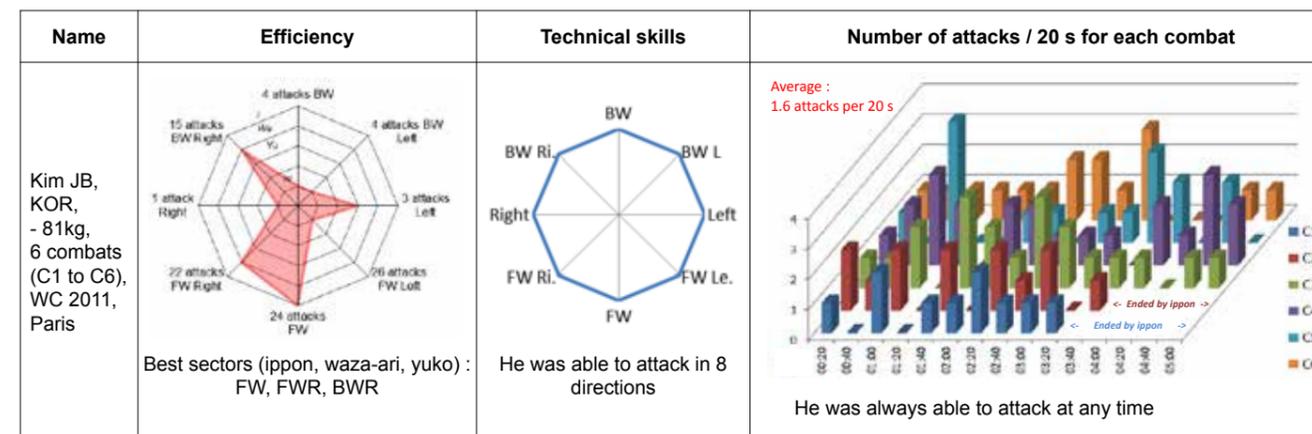
The aim of this work is to go beyond the simple system of attacks, using simple tools for trainers or students.

6 judokas (5M, 1F; World champion, Olympic champion or winner Gran Slam Paris between 2000 and 2011).

30 combats were analyzed, all the judokas did at least 4 combats (5 +- 0.9).

Data collected : i) the score (1 for attack, 3 for yuko, 4 for waza ari, 5 for ippon; **efficiency**); ii) directions of attacks (8 directions of kuzuchi rose; **technical skills**); iii) the times when attacks started using the time ratio structure "effort-pause" (20 s : 10 s; **number of attacks / 20 s for each combat**).

Before comparing these data, ANOVA one way and Bonferroni test as a post hoc were conducted: no difference between the duration of the combats ($F_{1,69}=2.64$; $p=0.177$). Below, one example



The average number of directions of attack was 6.3 ± 1.5 ; the average number of attack per period of 20s was 1.4 ± 0.2 . Six directions of attacks and more are necessary to reach the top high level. These results confirm the way to learn judo from a system of attack linked by the kumi kata .

These graphics could give furthermore information :

- risk-taking concerning the attacks (more/less attacks or more/less direction of attacks)
- what strategy are you following if you do more attacks in the first/second/third part of the combat ?
- what strategy are you following if you have to combat against a judoka who does more attacks in the first/second/third part of the combat ?

We have to improve : i) the use of kumi kata; ii) the way to count the number of attacks taking in account for example ne-waza or shorter combats won by ippon.

1984, FFJDA, Le judo des 13-15 ans.

2012, Miarka, B., Ferreira Julio, F., Mestranda, V., Boscolo del Vecchio, F., Calmet, M., Franchini, E., A comparison of time-motion performance between age groups in judo matches, Journal of Sports Sciences, 30 (9), 899-905

2010, Calmet, M., Miarka, B., Franchini, E., Modeling of grasps in judo competition contests, International Journal of Performance Analysis in Sports, 10, 229-240.

AGUIAR JIMMY; BERNARD REMI; BLIN SIEGFRID; BREDOIRE LEO; CHANUT MORGANE; LASCoux ADRIEN; MARINANGELLI AURELIEN; PESSEMIER CANELLE; BLANQUER LOIC; BUSCH ODDIN; DUBUS BENJAMIN; DUPUY TIFFANY; DUTERTRE ELISE; ESTEVE ANTONY; FILIPPIG PIERRE; HAMIDI LEILA; HEBERT JENNIFER; RAGO AURELIEN; RIOU CLEMENT; TOURETTE JULIA; ZURZOLO JULIEN; EMANUELA PIERANTOZI; CALMET MICHEL; michel.calmet@univ-montp1.fr

Presentation Title:

Training in judo with simulated impairments : a link between moral and industrial values ?

Keywords (max 7) **moral values, industrial values, impairments,**
 Project manager*: **Teresa ASSUDE**
 Institution: **University of Aix-Marseille**
 Mailing Address: **teresa.dos-reis-assude@univ-amu.fr**
 Telephone: **00 33 6 88 47 54 82**
 Email address: **Michel.calmet@univ-montp1.fr**
 Co-author 1 Name: **Michel CALMET**
 Institution: **University of Montpellier 1**
 Co-author 2 Name: **Jean SALLANTIN**
 Institution: **University of Montpellier 2**

Abstract

At the Faculty of Sport Sciences in Montpellier students following courses “Adapted Physical Activities and Health” are beginners in combat sports. They learn judo with five simulated impairments (blind, deaf and/or dumb, limited motor skills, dizziness). For example, with a blindfolded, during a combat in ground position, students adapt their behaviors and find operational responses.

At the end of training (20 hours) they understood that:

judo is primarily a relational activity,
 with simulated impairments they are able to combat in standing or ground positions and to present techniques,

a disability does not prevent a sport practice,
 teaching to disabled people is not reproducing a session with less intensity, less time, less space.

The aim of this work was to study student’s representations after this training

Data – methodology: At the end of training, each student’ writing assignments was analyzed on a lexical level to count the criteria and the themes most often mentioned. The data were processed by principal component analysis (PCA).

Results : Concerning 58 students’ work, the first criteria are: interest, confidence/trust, empathy, experience; education. Some examples:

•“It develops self-confidence and trust to others, this is necessary and indispensable for day life”

•“The key message is self-achievement and the achievement of the other in a mutual interaction/ cooperation for development and success of each partner”

Conclusion: Judo in its approaches, its kinesthetic sensations and its multiple solutions, is suitable for this type of training. Recent studies in industrial world shown that confidence, empathy and the ability of a “human-system” to cope with an impairment/disability by using other procedures to achieve the objective are evidence of productivity. We analyze our training system in the direction of these studies while continuing research in Educational Sciences on it.

*The prize money will be given to the Project Manager

Training in judo with simulated impairments : a link between moral and industrial values ?

Michel Calmet¹, Teresa Assude², Jean Sallantin³

1. University of Montpellier, France - 2, University of Aix-Marseille, France - 3. CNRS – LIRMM Montpellier, France



Symposium EJU 23th April 2014 - Montpellier - France

INTRODUCTION : At the Faculty of Sport Sciences in Montpellier students following courses “Adapted Physical Activities and Health” are beginners in combat sports. They learn judo with five simulated impairments (blind, deaf and/or dumb, limited motor skills, dizziness). For example, with a blindfolded, during a combat in ground position, students adapt their behaviors and find operational responses.



ACQUISITIONS, WHAT STUDENTS HAVE LEARNT : At the end of training (20 hours) they understood that:

- judo is primarily a relational activity,
- with simulated impairments they are able to combat in standing or ground positions and to present techniques,
- a disability does not prevent a sport practice,
- teaching to disabled people is not reproducing a session with less intensity, less time, less space.



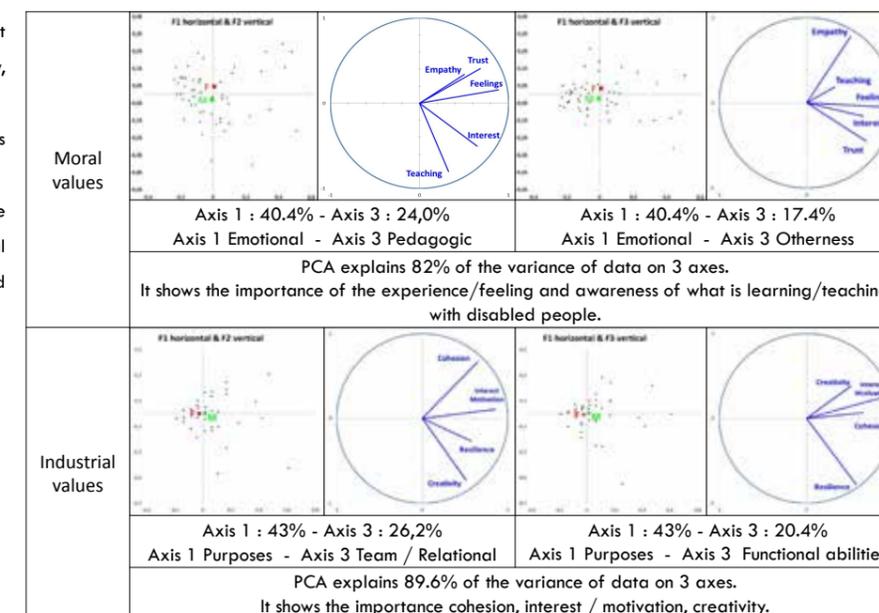
AIM : to study student’s representations after this training.

DATA – METHODOLOGY : At the end of training, each student’ writing assignments was analyzed on a lexical level to count the criteria and the themes most often mentioned. The data were processed by principal component analysis (PCA).

RESULTS : Concerning 58 students’ work, the first criteria are: interest, confidence/trust, empathy, experience; education. Some examples:

•“It develops self-confidence and trust to others, this is necessary and indispensable for day life”

•“The key message is self-achievement and the achievement of the other in a mutual interaction/cooperation for development and success of each partner”



CONCLUSION : Judo in its approaches, its kinesthetic sensations and its multiple solutions, is suitable for this type of training. Recent studies in industrial world shown that confidence, empathy and the ability of a “human-system” to cope with an impairment/disability by using other procedures to achieve the objective are evidence of productivity. We analyze our training system in the direction of these studies while continuing research in Educational Sciences on it.

michel.calmet@univ-montp1.fr



Presentation Title:

Energy Expenditure to the Uchi-komi Fitness Test

Keywords (max 7) **Judo high-level, energy system, blood lactate, heart rate, oxygen cost and rating of perceived exertion.**

Project manager*: **Ramdane ALMANSBA**

Institution: **Kinesiology and biology department, Faculty of Sciences, University of Quebec at Montreal Quebec, Canada**

Mailing Address: **8562A, rue Chanteny, H1P 2J2 Saint-Léonard, Québec (Canada)**

Telephone: **514 987 000 ext. 1083**

Fax: **514 987 000**

Email address: **almansba.ramdane@gmail.com**

Co-author 1 Name: **Katarzyna STERKOWICZ-PRZYBYCIEN**

Institution: **Faculty of Physical Education and Sport, University School of Physical Education in Cracow, Poland**

Co-author 2 Name: **Stanislaw STERKOWICZ**

Institution: **Faculty of Physical Education and Sport, University School of Physical Education in Cracow, Poland**

Abstract

This research aims to estimate the energy expenditure during the UFT (Almansba et al. 2012). Five Canadian Olympic judokas (22 ± 3 years and 77.3 ± 7.0 kg) realized the UFT before couple months of London 2012 Olympic Game. Cardioventilatory demands were monitored using the Cosmed K4b2 while [La-] measured at rest and post UFT. The anaerobic energy expenditure (AnaEE) was equal at the delta [La-] ([La-] post UFT minus [La-] at rest) and 1 mmol·L⁻¹[La-] corresponded to 3 mL O₂·kg⁻¹. Aerobic energy expenditure (AEE) was deducted by withdrawing the VO₂rest from the VO₂ area integrated over times during UFT and calculated using the formula: AEE = VO₂ (3.9+1.9 RQ) kcal. Metabolic and cardiorespiratory variables at rest were: tidal volume (TV) = 0.82 ± 0.05 l·br⁻¹ Oxygen pulse (OP) = 5.75 ± 0.5 ml.kg⁻¹.min⁻¹ breathing respiratory (BR)= 14.14 ± 2 br·min⁻¹, Ventilation (VE) = 11.65 ± 1.25 l·min⁻¹ [La-]rest = 2.15 ± 0.47, HRR = 57 ± 6 bpm, VO₂rest = 4.31±0.33 ml.kg⁻¹.min⁻¹ and [La-]_{3min} = 15 ± 0.1 mmol.L⁻¹ and to UFT were: VO₂peak = 45.72 ± 2.20 ml.kg⁻¹.min⁻¹ VO₂ = 3 8.9 ± 2.80 ml.kg⁻¹.min⁻¹, VEmax= 133.79 ± 8.35 l·min⁻¹, BR = 49 ± 6 br·min⁻¹ OP = 21.10 ± 3.97 ml·beat⁻¹, TV=2.5 ± 0.22 l·br⁻¹ and RQ = 1.26 ± 0.08, [La-]_{3min} = 15.13 ± 1.08 mmol·L⁻¹, AnaEE = 14.77± 0.42 kcal and AEE = 54.45 ± 3.92 kcal. The total number of Uchi-komi were 53 ± 3 where higher HR-peak (187 ± 6 bpm) and RPE (18 ± 2) values were observed. These signify that UFT is good physiological simulator of high-level judo combat. Otherwise, we note a dominance of aerobic energy versus anaerobic lactic energy in UFT.

*The prize money will be given to the Project Manager

**Introduction**

Uchi-komi (repeated technical) is a fundamental exercise in judo training. It used usually by coaches as warm-up specific exercise or as training session in order to develop simultaneously motor skills (strength, power, speed, balance etc.) and technical skills¹. Physiological exercise testing to use for assessment and monitoring the training load should reproduce the competition conditions as closely as possible². The Uchi-komi Fitness Test (UFT) reproduces the cardiovascular characteristics of judo fight and is considered as valid and reliable test for assessment of individual qualities that characterize judo performance³. However, no study investigated the energy cost

Objective

To estimate the energy expenditure provided during the simulated judo fight, the UFT created and validated by Almansba et al. (2007, 2012).

Assessment Protocol

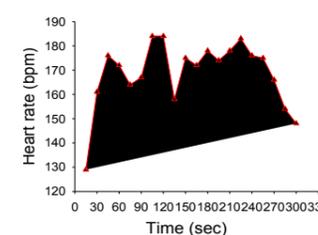
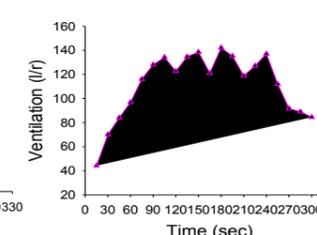
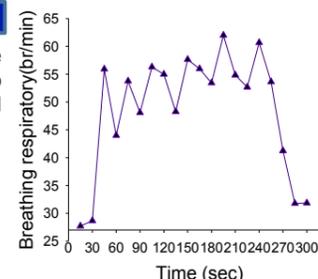
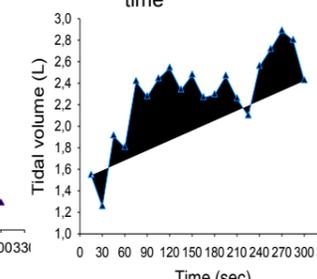
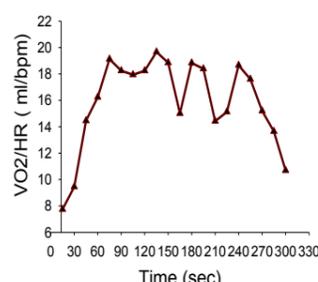
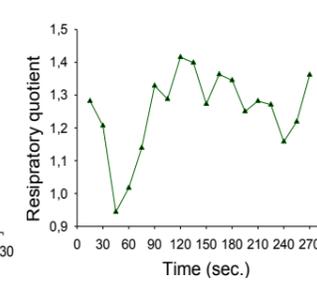
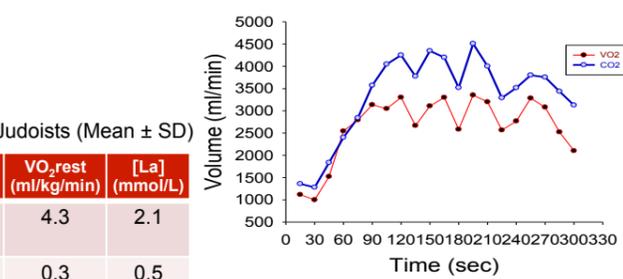
Five Canadian Olympic judoists aged of 22 ± 3 years completed the UFT before couple month of London Olympic Games (2012). The tutorial movie of UFT is freely accessible from the URL : <http://www.archbudo.com/text.php?ids=5327>. The VO₂ and cardiopulmonary responses were assessed at rest and during UFT using telemetry system (Cosmed K4b2). Aerobic energy (AE) was equal at the difference between the VO₂ area integrated during UFT and the VO₂ at rest while anaerobic energy (AnaE) was equal at the delta [La⁻] ([La⁻] post UFT minus [La⁻] at rest). One mmol·L⁻¹ [La⁻] corresponded to 3 mL O₂·kg⁻¹ was used for anaerobic energy estimation. The effort during UFT was quantified subjectively using Rating of Perceived Exertion (RPE)

Table 1. Resting metabolic profile of Judoists (Mean ± SD)

BM (kg)	Height (cm)	FM (%)	MM (kg)	HR-Rest (bpm)	VO ₂ rest (ml/kg/min)	[La ⁻] (mmol/L)
75.9	175.0	14.6	33.0	57.0	4.3	2.1
6.1	4.0	4.2	2.2	6.0	0.3	0.5

Energy expenditure to the Uchi-komi Fitness TestAlmansba R¹, Sterkowicz-Przybycien K²
S Sterkowicz²¹ Kinesiology and Biology departments, Faculty of Sciences, UQAM, Canada² Faculty of Physical Education and Sport, University of Physical Education in Cracow, Poland**Results****Table 2.** Metabolic and cardiorespiratory responses to UFT (Mean ± SD)

HR-peak (beat/min)	%HR-peak (beat/min)	VO ₂ peak (ml/kg/min)	VO ₂ (ml/kg)	VE _{max} (l/min)	BR (r/min)	TV (l/r)	OP (ml/beat)	[La ⁻] _{3min} (mmol/l)	RQ	Uchi Komi (n)
187.0	95.0	45.7	38.9	118.5	49.0	2.5	21.1	15.31	1.3	53.0
6.0	0.5	2.2	2.8	7.4	6.0	0.2	4.0	1.1	0.1	3.0

**Fig 1.** Heart rate /time**Fig 2.** Ventilation/time**Fig 3.** Breathing respiratory/time**Fig 4.** Tidal Volume /time**Fig 5.** Oxygen Pulse/time**Fig 6.** Respiratory quotient/time**Fig 7.** VO2 and CO2/time**Discussion**

The HR-peak and HR-mean (%HR-peak) recorded during UFT were similar to that reported by other studies during judo competition⁴. The [La⁻] post UFT indicates a significant contribution of anaerobic pathway (AnaE=14.77±0.42 kcal). On the one hand our values were comparable to those stated by Degoutte et al. during 5-min judo combat⁵ and the other hand the VO₂ values recorded during UFT indicate also a strong contribution of aerobic pathway (AE= 54.45 ± 3.92 kcal). The energy expenditure and cardiopulmonary responses to UFT expressed by the following variables: VO₂peak, VO₂mean, VE (ventilation), oxygen pulse (OP) and tidal volume (TV) were comparables to those reported by Ahmaidi et al⁶ in simulated 3-min judo combat. This indicate that UFT involves both aerobic and anaerobic pathway and in accordance with what happens during a judo combat. The higher RPE (18 ± 2), respiratory quotient (RQ) and HR-peak values comfort that the UFT reach the criteria of a maximal physiological testing. Our findings show that the UFT simulate the metabolic and cardiorespiratory requirements of high-level judo competition. Also, we conclude a dominance of the aerobic pathway compared to the anaerobic pathway in energy provision during the UFT.

Conclusion

Our findings show that the UFT simulate the metabolic and cardiorespiratory requirements of high-level judo competition. Also, we conclude a dominance of the aerobic pathway compared to the anaerobic pathway in energy provision during the UFT.

References

- Almansba et al. 2007 (Sport & Sci.)
- Almansba et al. 2010 (Arch Budo)
- Almansba et al. 2012 (Sport & Sci.)
- Hernández et al. 2009 (IJSM)
- Degoutte et al. 2003 (BJSM)
- Ahmaidi et al. 1997 (Revue STAPS)



Presentation Title:

Age Relation to Technique and Tactics in Judokas

Keywords (max 7) **Age categories, judo, male, performance analysis, combat sport, technique, tactic**

Project manager*: **Stanislaw STERKOWICZ**

Institution: **Faculty of Physical Education and Sport, University School of Physical Education in Cracow, Poland**

Mailing Address: **Al. Jana Pawla II 78, 31-578 Cracow, Poland**

Telephone: **+48 12 6831133**

Fax: **+48 12 6831133**

Email address: **stanislaw.sterkowicz@awf.krakow.pl or hapki77@poczta.onet.pl**

Co-author 1 Name: **Grzegorz LECH**

Institution: **Faculty of Physical Education and Sport, University School of Physical Education in Cracow, Poland**

Co-author 2 Name: **Katarzyna STERKOWICZ-PRZYBYCIEN**

Institution: **Faculty of Physical Education and Sport, University School of Physical Education in Cracow, Poland**

Abstract

This study aims at analysis of technical and tactical excellence of judo contestants from different age groups. The cross-sectional study covered 25 judo competitors of following age groups: 7 seniors (51 matches), 10 juniors (58 matches) and 8 cadet (66 matches). Each of the studied subjects ranked at least fifth in the Polish national competitions. A computer-aided analysis was employed for the 373 recorded technical actions of individual competitors. In the senior group, the first part of the fight was represented by the first three minutes whereas the second part was represented by the fourth and fifth minutes. For juniors and cadets, the first part of the fight was represented by the first two minutes whereas the second part was represented by the third and fourth minute. Based on the collected data, indexes that determine the activity and effectiveness of actions among the study participants were calculated (Lech et al., 2011). Statistical difference between age groups was set at $p < 0.05$. The results showed the hand throws dominated in the senior group and in the junior group. The highest values of activity index in first part of fight (WA1) occurred in the senior group and the lowest in the junior group. In RWA which is difference in the activity index range, i.e. WA1-WA2 (where 2 is the second part of fight), the lowest values were in junior, and higher values in senior and the cadet groups. The highest mean value of the effectiveness index WS1, i.e. an arithmetic mean of the notes for attacks occurred in the cadet group (4.51) and the lowest one in the senior group (2.84). It is essential for the development of technical and tactical excellence of judo contestants that specific individual body characteristics should also be taken into consideration. These results can be useful for better planning of training session.

*The prize money will be given to the Project Manager

**Introduction**

The general opinion of judo coaches is that it is technical excellence that primarily contributes to sport results (23.4%). Other factors are psychological and tactical preparation (contributing to 20.1% and 18.0%, respectively). The contribution of physical preparation, which accounts for 29%, includes body build and motor fitness preparation factors, with contribution of 14.8% and 14.2%, respectively (Sterkowicz et al., 2007). The investigation discussed in this study concern the technical and tactical excellence. Typical judo throws are performed using hand techniques (te waza) or foot and leg techniques (ashi waza) (Sterkowicz & Franchini, 2000). The most preferred techniques used during judo competitions are those focused on (1) balance breaking (kuzushi) (2) positioning set-up (tsukuri) or (3) execution (kake). The most frequently used hand technique (te waza) is one shoulder throw (seoi nage), whereas the most popular foot and leg technique (ashi waza) is inner thigh reaping throw (uchi mata). In individual phases (1-3) of performing a throw, the same muscles perform different work in dynamic-concentric, dynamic-excentric, static, and passive-stretched modes (Jarmoluk, 1989). Some studies have analyzed the time-motion performance indexes in judo matches (Miarka et al., 2012). In another study the effectiveness of technique, the relationships between individual techniques with respect to the direction of throws and the number of scored points was presented (Calmet & Ahmaidi, 2004). We have not a contemporary comparison of technical-tactical excellence in the best judokas from different age groups in

Objective

This study aims at analysis of technical and tactical excellence of judo contestants from different age groups.

Material and Method

The cross-sectional study covered 25 judo competitors of different ages. Each of the studied subjects ranked at least fifth in the national competitions (Table 1).

Age Relation to Technique and Tactics in Judoists

Sterkowicz S, Lech G, & Sterkowicz-Przybycien K.

Faculty of Physical Education and Sport, University School of Physical Education in Cracow, Poland

Table 1. Characterization of the calendar age, training experience and the basic body build parameters of the study participants (mean±SD)

Traits	Senior (n=7)	Junior (n=10)	Cadet (n=8)
Age (years)	21.6±0.98	17.5±0.71	15.5±0.54
Experience (years)	12.4±1.7	8.4±1.2	6.1±0.8
Body height (cm)	180.4±5.4	180.4±3.6	177.4±6.2
Body mass (kg)	82.2±7.6	85.8±10.5	71.7±7.5
Lean BM (kg)	74.2±6.2	72.1±5.5	65.2±6.3

175 fights in total were recorded for the analysis (51 senior fights, 58 junior fights and 66 cadet fights). A computer-aided analysis was employed for the recorded technical actions of individual competitors. The fight was divided into two parts. In the senior group, the first part of the fight was represented by the first three minutes whereas the second part was represented by the fourth and fifth minutes (the effective time of the fight being 5 minutes). For juniors and cadets, the first part of the fight was represented by the first two minutes whereas the second part was represented by the third and fourth minute (the effective time of the fight being 4 minutes). If extra time was used, it was included in the second part of the fight. Based on the collected data, indexes that determine the activity and effectiveness of actions among the study participants were calculated in the same way as for the EJU 2nd Poster Exhibition, 2011, Istanbul, (Lech et al., 2011, p.12). Basic statistics were used for the data description.

Results**a) Techniques group used during tournaments**

A moderate dependence was found (Ckor=0.261) during the analysis of the techniques between the contestants' age and the frequency of techniques in individual groups of the Kodokan classification (Pearson's Chi-squared for table 2 amounts to 19.63; $p=0.012$). It manifested itself in that the hand throws dominated in the senior group (66%) and in the junior group (55.5%). On the other hand, hand techniques and sacrifice throws dominated the cadet group (39.7% and 29.8%, respectively).

Table 2. Techniques frequently used (Kodokan classification)

Techniques	Hand	Grappling	Hip	Sacrifice	Foot and leg	Total
Senior	76	5	6	17	11	115
Junior	76	14	6	25	16	137
Cadet	48	12	8	36	17	121
Overall	200	31	20	78	44	373

b) Indices of technical and tactical excellence

The multiple comparisons for the activity index in first part of fight index (WA1) showed that the highest values of this index occurred in the senior group (1.80), and the lowest in the junior group (1.03). Both senior and cadet juniors, junior and cadet formed homogeneous groups. In RWA which is difference in the activity index range, i.e. WA1-WA2 (where 2 is the second part of fight), the homogeneous groups were created by seniors and cadets. Therefore, one can conclude that the lowest values of this index occurred in the junior group (-0.53), and higher values in the seniors group (0.43) and the cadet group (0.57). The negative value of RWA indicates that the junior group was more active during the second part of the fight. Comparison of the consecutive average pairs of the mean value of the effectiveness index WS1 i.e. mean notes (for the U significance test: $p=0.016$) showed that the highest mean value of this index occurred in the cadet group (4.51) and the lowest one in the senior group (2.84). The homogeneous groups were seniors and juniors, and juniors and cadets.

Conclusion

- Seniors and juniors used hand throws most frequently, while cadets preferred hand techniques and sacrifice throws.
- Seniors were characterized by the highest activity in the first part of the match, with the lowest effectiveness of the actions in the whole judo match.
- It is essential for the development of technical and tactical excellence of judo contestants that specific individual body characteristics should also be taken into consideration.
- These results can be useful for better planning of training sessions. Saripanti's (2010) biomechanical judo techniques classification can be used for further explanation differences between age groups, also.

Presentation Title:

Judo lessons for children in Kôdôkan (Tokyo)

Keywords (max 7) **Teaching method, children, kôdôkan, statistics**

Project manager*: **Professeur Luc COLLARD**

Institution: **Laboratoire technique et enjeux du corps – Université Paris Descartes – UFRSTAPS Paris lacretelle**

Telephone: **06 07 34 50 09**

Email address: **luc.collard@parisdescartes.fr**

Co-author 1 Name: **Professeur Misaki ITEYA**

Institution: **Université de TOKYO GAKUGEI**

Abstract

Judo lessons for children in Kôdôkan (Tokyo)

This poster presents statistics of a methodical observation of the contents of judo lessons for children at kôdôkan (Tokyo) during a study stay from September 2008 to the middle of July 2009. In this period we observed 49 lessons (196 hours of observation). Through various diagrams, we present the proposed activities for children in the judo lesson in Kôdôkan. The aim of this study is to know the proportion of opposition activities, cooperation activities and individual activities and also the proportion of general motor skill and judo motor skill in judo sessions in Kôdôkan. For each of these activities we also want to know their frequency of occurrence throughout the year. Education through judo for children varies according to the cultures. To study judo abroad is to enrich one's knowledge of all educational possibilities offered by judo.

*The prize money will be given to the Project Manager

Judo lessons for children in KÔDÔKAN (Tokyo)



T. COLIN, Phd of the University of Paris rené Descartes-La Sorbonne
M. ITEYA, Professor at the University of Tokyo Gakugei

This poster presents statistics of a methodical observation of the contents of judo lessons for children at Kôdôkan (Tokyo) during a study period from September 2008 to the middle of July 2009. In this period we observed 49 lessons (196 hours of observation).

This study is a chapter of a cultural research for a doctoral degree in social sciences defended December 8, 2010 in Paris René Descartes - la Sorbonne, and entitled: "A comparative sociological analysis of judo for children from seven to twelve years in Japan and France.»



Photo 1: Mukai Mikihiro is the teacher responsible for children judo lessons at the Kôdôkan since 1998. Seen here with some students at tsukinami shiai : A tournament for children at Kôdôkan every first Thursday of month.



Photo 2: The judo classes for children take place every day from Monday to Saturday. All children from 7 to 12 years are participating at the lesson of base level from 16:30 to 18:00. Only selected students can extend their training in the lesson of higher level from 18:00 to 19:30.

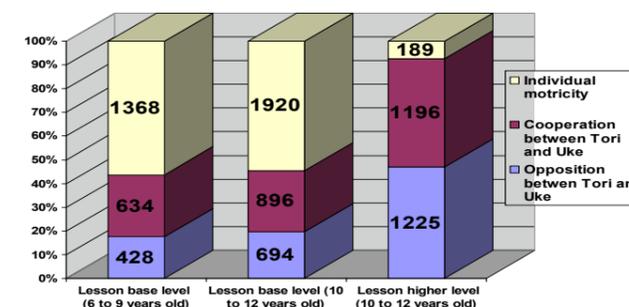


Diagram 1. The proportion of opposition activities, cooperation activities and individual activities observed in children judo lessons in Kôdôkan. The values shown in the diagram are in minutes.

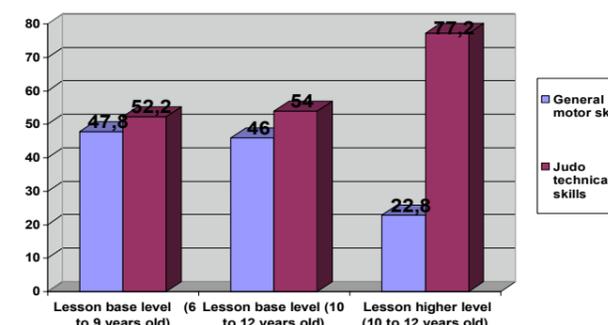


Diagram 2. Proportion of the Judo technical skills and general motor skills in the judo lessons for children at the Kôdôkan

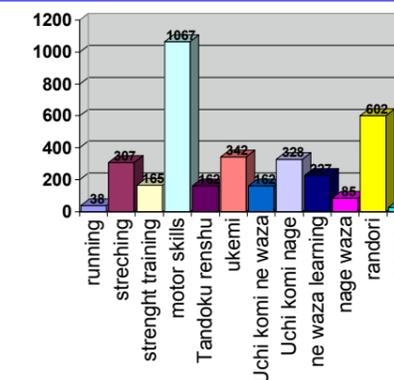


Diagram 3. Details of activities proposed in the lesson of base level for children aged 10 to 12. The values shown in the diagram are in minutes.

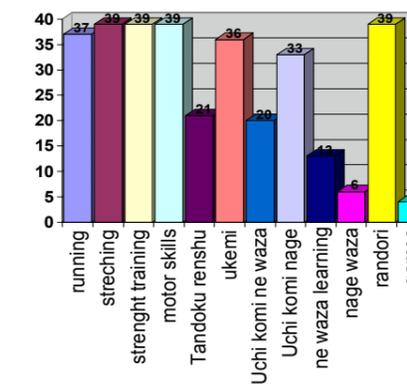


Diagram 4. Frequency of the activities proposed during 39 lessons. Example: strength training was observed at each of 39 sessions.

Comments and research perspectives

- Judo is more than a sport it's an education. In Kôdôkan, judo education is taught with great respect for the child. The teaching method of Kôdôkan judo promotes for children courage and perseverance, solidarity between generations, respect for others.
- In Japan as in France, judo teachers attach a great importance to the general motor skills (running, jumping, rolling, falling). These skills contribute to the overall physical development of children. MUKAI M. said: "Before at the Kodokan, we only taught judo, I introduced general motor skills according to animal movements (1998). This activity is necessary today because urban children are more sedentary than before.
- Education through judo for children varies according to the cultures. To study judo abroad is to enrich one's knowledge of all educational possibilities offered by judo. Don't hesitate to contact us for any proposal for inter cultural research on judo children.
- For more information : thierrycolin1@yahoo.fr



Presentation Title:

Judo: A Strategy For Intervention In Children At Risk Of Social ExclusionKeywords (max 7) **Judo, Social Exclusion, Integration, Socialization.**Project manager*: **Carlos Pablos Abella**Institution: **Universidad Católica de Valencia**Telephone: **+34 625 027 867**Email address: **carlos.pablos@ucv.es**Co-author 1 Name: **Vicente Carratalá Deval**Institution: **Universidad de Valencia**Co-author 2 Name: **Jose Luis Bermejo**Institution: **Universidad Católica de Valencia**Co-author 3 Name: **Valeska Alejandra Palma Silva**Institution: **Universidad Católica de Valencia****Abstract**

Introduction: Sport in general and in particular Judo influences society lifestyle, therefore, the practice of sport in the school context strengthens the ability to accept moral and ethical values through behavior learned as an athlete, and sets verbal and nonverbal communication by developing a specific language and gestures. In this sense, Carratalá (2000) refers to socialization through sport Judo as a process by which people acquire knowledge, skills and disposition to allow them to participate as full members of groups and society. Our main objective was to analyze the incidence of the sport in changing attitudes, values, norms and capabilities.

Methods: 11 girls and 8 boys (11.0 ± 0.5 years, 1.58 ± 0.04 m, 51.6 ± 0.3 kg) were recruited from of a poor neighborhood.

A program (1 hour of class, twice a week during 6 months) was designed aiming to develop different dimensions (sports rule, social relations, skills, cognition, emotion, morality and hygiene specifications) through the practice of judo. The analysis was conducted through structured observations, through forms of direct observation and analysis of videotaped sessions. The analysis of the films was performed with an observational methodology (Anguera et al, 2001; Matsushigue et al, 2009) of two observers. A numerical value to each category for further analysis with SPSS version 20 (IBM, Somers, NY, USA) was assigned, he accepting a significance level of $p < 0.05$.

Results: Setting a repeated measures ANOVA model are we found significant differences in the monthly value of the variable "Sporting Rule" (p -value < 0.001). When applying multiple comparisons using the Bonferroni correction, similar values were observed in the first three months, which is significantly lower than the values of the fourth month, which in turn are significantly lower than those of the fifth month, which ultimately are significantly lower to the sixth month.

Conclusions: Judo as an educational tool has proven useful to reinforce values and norms inherent in the internal structure of the sport (nesting, respect, courtesy...) and necessary for social coexistence resource.

References: Anguera, M., Blanco-Villaseñor, A. & Losada, J. (2001) "Diseños Observacionales, cuestión clave en el proceso de la metodología observacional". *Metodología de las Ciencias del Comportamiento*, 3, 135-161.

Carratalá, V. & Carratalá, E. (2000) "Judo. La Actividad Física y Deportiva Extraescolar en los Centros Educativos". Ministerio de Educación Cultura y Deporte. Consejo Superior de Deportes.

Matsushigue, K., Hartmann, K. & Franchini, E. (2009) "Taekwondo: Physiological responses and match analysis". *Journal of Science and Medicine in Sport*, 12 (6), 614-621.

*The prize money will be given to the Project Manager

**JUDO: A STRATEGY FOR INTERVENTION IN CHILDREN AT RISK OF SOCIAL EXCLUSION****Authors: Bermejo J.L.**, Palma V.*, Carratalá V.*, Pablos C.**,**

* Universidad de Valencia. Facultad de Ciencias de la Actividad Física y el Deporte

** Universidad Católica de Valencia "San Vicente Mártir". Facultad de Ciencias de la Actividad Física y el Deporte

Contact: j.l.bermejo@ucv.es

I. Introduction

Sport in general and in particular Judo influences society lifestyle, therefore, the practice of sport in the school context strengthens the ability to accept moral and ethical values through behavior learned as an athlete, and sets verbal and nonverbal communication by developing a specific language and gestures. In this sense, Carratalá (2000) refers to socialization through sport Judo as a process by which people acquire knowledge, skills and disposition to allow them to participate as full members of groups and society.

Our main objective was to analyze the incidence of the sport in changing attitudes, values, norms and capabilities.

II. Methods

11 girls and 8 boys (11.0 ± 0.5 years, 1.58 ± 0.04 m, 51.6 ± 0.3 kg) were recruited from of a poor neighborhood.

A program (1 hour of class, twice a week during 6 months) was designed aiming to develop different dimensions (sports rule, social relations, skills, cognition, emotion, morality and hygiene specifications) through the practice of judo.

The analysis was conducted through structured observations, through forms of direct observation and analysis of videotaped sessions. The analysis of the films was performed with an observational methodology (Anguera et al, 2001; Matsushigue et al, 2009) of two observers. A numerical value to each category for further analysis with SPSS version 20 (IBM, Somers, NY, USA) was assigned, he accepting a significance level of $p < 0.05$.

**III. Results**

The 1 (Sport Rules) \times 6 (Month: January to June) mixed model ANOVA showed a significant betweensubjects main effect of Month, Wilks's $\lambda = 0.20$, $F(5,14) = 139.57$, $p < .001$, partial $\eta^2 = .98$. Pair-wise comparisons of Sport Rules levels, using the Bonferroni correction, were observed similar values in the first three months, which is significantly lower than the values of the fourth month, which in turn are significantly lower than those of the fifth month, which ultimately are significantly lower to the sixth month.

IV. Conclusions

Judo can be a reinforcement on different personal aspects of these children's. The success of psychoeducational interventions through judo, is at least not worse in their condition, to get a steady job with benefits over a long period of time. Judo as an educational tool has proven useful to reinforce values and norms inherent in the internal structure of the sport (discipline, respect, courtesy...) and necessary for social coexistence resource.

References

Anguera, M., Blanco-Villaseñor, A. & Losada, J. (2001) "Diseños Observacionales, cuestión clave en el proceso de la metodología observacional". *Metodología de las Ciencias del Comportamiento*, 3, 135-161.

Carratalá, V. & Carratalá, E. (2000) "Judo. La Actividad Física y Deportiva Extraescolar en los Centros Educativos". Ministerio de Educación Cultura y Deporte. Consejo Superior de Deportes.

Matsushigue, K., Hartmann, K. & Franchini, E. (2009) "Taekwondo: Physiological responses and match analysis". *Journal of Science and Medicine in Sport*, 12 (6), 614-621.

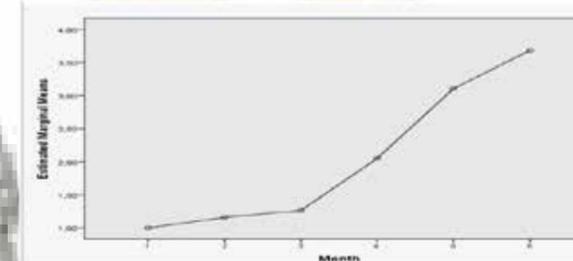


FIGURE 1. EVOLUTION OF VARIABLE "SPORT RULES" DURING PRACTICE.



Contacts

Mr. Sergey Soloveychik, EJU President

president@eju.net

yana.dmitrieva@eju.net

Mr. Franco Capelletti, EJU Vice President

capellettifranco@eju.net

carmen.calvo@eju.net

Mrs. Benedicte Rouby, EJU Education Director

roubybenedicte@eju.net

Sponsors





5th European Science of Judo Poster Exhibition

