4th European Science of Judo Poster Exhibition

April 25th 2013
BUDAPEST, HUNGARY
Welcome Note

Dear Friends, Dear Colleagues,

Since 4 years the EJU organizes the European Science of Judo Poster Exhibition. This year the presentation of the researchers’ works was held in BUDAPEST (Hungary) within the Seniors European Championships.

On this occasion, 17 posters were realized by 39 authors and co-authors. This year, the winner of the Poster Exhibition is Mr. Fabio Capelletti (ITALIA) with his work “Thermoelastic effect on different mats after body impact in judo throws”.

The second place (tie) was awarded to Mr. Luis Monteiro (PORTUGAL) for his work “Effect of fatigue on strength performance” and Mr. Carlos Pablos Abella (SPAIN) for the research “Hormones demands of judo training test”.

On the occasion of this year’s edition Mr. Ivan Segedi, Ms. Tatjana Trivic, Dr. Hrvoje Sertic, Dr. Hans Dieter Heinisch, Mr. Vicente Carratala and Mr. Luis Monteiro represented their researches on the spot.

We also note the presence of the Portuguese champion Ms. Telma Monteiro and the Ukrainian champion Ms. Maryna Pryshchepa at the Judo Poster Exhibition.

The European Judo Union sincerely thanks all the members of the Evaluation commission for their contribution.

We thank all the researchers for their participation and the quality of their work.

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**Evaluation Commission**

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- **Dr. José Manuel García García**
  Universidad de Castilla-la Mancha
Summary

Poster Presentations

Laureates

1st place
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Fabio Capelletti, Italy

2nd place (tie)
Effect of fatigue on strength performance
Luís Monteiro, Portugal

2nd place (tie)
Hormones Demand of Judo Training Test
Carlos Pabllos Abella, Spain

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The Origin, Essence, and Biomechanical Foundations, of Itsutsunokata [The Forms of Five] – Kodokan Judo’s Esoteric Sixth Kata
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Prof. Hrvoje Sertić, Ph.D., Croatia

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Ivan Segedi, Ph.D., Croatia

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Milos Stefanovsky, PhD, Slovakia

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Dr. José Manuel García García, Spain

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Previous years laureates

Notes

EJU Contacts / Sponsors
Thermo-elastic effect on different mats after body impact in Judo throws

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Abstract

In Judo the relationship between tatami and judoka is extremely important, but often overlooked. The aim of this study is to analyze the different thermo-elastic responses of different tatami under impact load obtained by different Judo throws. The work was carried out taking infrared thermal images and by analysis of temperature profiles of the impact areas produced by Uke after the fall onto tatami. The thermo-elastic effect is due to the conversion between the mechanical forms of energy and heat. It occurs when changes of stresses within a material element alter its volume. Density of energy created in material element is transformed into local change of temperature due to both the thermo-elastic (reversible) effect and to (irreversible) dissipative phenomena. An infrared imaging system offer the opportunity to study the thermo-elastic effect related to the variation of the volume experienced by the polymer material (mat) under impact load (throws). Because it is impracticable to reduce the magnitude of the impact during training and competitions, the correct throw execution and the use of proper mat (flexible structure under the mat) may reduce the magnitudes of impacts and vibrations, mitigating the adverse effects on the body of judoka.

Keywords: thermo-elastic effect, mat, judo throw
Thermo-elastic effect on different mats after body impact in Jūdō throws
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Abstract

In Jūdō the relationship between tatami and jūdōka is extremely important, but often overlooked. The aim of this study is to analyze the different thermo-elastic responses of different tatami under impact load obtained by different Jūdō throws. The work was carried out taking infrared thermal images and by analysis of temperature profiles of the impact areas produced by Uke after the fall onto tatami.

Introduction

It is well known that infrared thermography is a powerful non contact tool to measure surface temperature. In the recent years many applications are known in several fields, for example as an industrial application for assessing the thermo-elastic behaviour of polymer based materials (Meola et al., 2009).

The thermo-elastic effect is due to the conversion between the mechanical forms of energy and heat. It occurs when changes of stresses within a material element alter its volume. Density of energy created in material element is transformed into local change of temperature due to both the thermo-elastic (reversible) effect and to (irreversible) dissipative phenomena. The pioneering Lord Kelvin studies show that the temperature change is proportional to the change of stresses (Thomson, 1853).

Jūdōka are often exposed to impact of high magnitude and in a very short time. These impacts, mainly along the vertical axis, represent a severe injury risk to the jūdōka wrist and ankle, and moderate injury risk in the hip. As reported recently the most common mechanism of injury in Jūdō performance is during the standing fight when a competitor is being thrown (37%) and secondly during the grip fight (29.7%) (Pierantozzi et al., 2009).

The presence of many internal organs in the hip, moreover, increases the risk of damage to this site and the impacts of the body of jūdōka over years of practice can cause some damage to the body. Beyond the biomechanical aspect of throws, the percentage of the body area involved in the fall appears to be a significant parameter in the risk assessment.

Experimental design

Subjects

One Caucasian male jūdōka (age 41 years, weight 79.5 kg, height 174 cm, Jūdō experience: 35 years) and one Caucasian male veteran jūdōka (age 54 years, weight 120 kg, height 184 cm, Jūdō experience: 40 years) volunteered to participate in this study. The nature and intent of the experiment were carefully explained and the subjects provided their informed consent.

Technical characteristics of tatami mats

The polyurethane agglomerate samples are obtained from hot-pressed particles (granules) mixed with substances as glue media. The upper side is covered with sanitized polyvinylchloride and the inferior one with special antislip.

Dimensions: 2 x 1 x 0.04 m

tatami 1: p 250 kg/m³; \( \frac{\alpha}{c_p} = 5.32 \times 10^{-2} \text{kg}^{-1} \cdot \text{K}^{-1} \)

tatami 2: p 220 kg/m³; \( \frac{\alpha}{c_p} = 5.38 \times 10^{-2} \text{kg}^{-1} \cdot \text{K}^{-1} \)

Instrumentation

A NEC InFrec R300 (Avio Infrared Technologies Co., Ltd.,Tokyo) high-performance infrared thermal imaging camera with uncooled focal plane array (microbolometer) detector was used, operating at a resolution of 0.03° at 30°C an accuracy of ±3°C, 1.21 mrad spatial resolution, a spectral range of 8-13 μm 640x480 thermal image pixels, recording at 30 frames/sec-1, equipped with NS550PRO software for Windows XP.

Jūdō throws test:

The subjects completed two series of three repetitive Jūdō throws on the two different tatami mats. By the biomechanical point of view, the first throw was the lever-based throw Seoi-nage while the second one the couple-type throw Harai goshi. Between successive throws a resting interval needed to cool down the mat was adopted.

Results and Discussion

Impact surface areas on different density mats were obtained from captured infrared thermal images as shown in the following figures.

Impact surface area on high and low density tatami

Thermo-elastic responses. The results in Tab. 2 show that Harai goshi throws revealed higher thermo-elastic effects for both the mats with areas which are about two time of those found for Seoi nage throw.

As expected, passing from high to low density mat, the thermo-elastic effect for both the throws reduced to half and such a remarkable decrease is observed even for small variations of the mat density.

By using the Dubois equation the Uke body surface area was calculated as

\[ BSA = \left( \frac{W^{0.425}}{H^{1.725}} \right) \times 0.071841 = 1.943 \text{m}^2 \]

where W is the body weight (kg) and H is the height (m). By dividing impact surface areas obtained in the IR images by the BSA value, the percentage of body surface impacting on the mat may be evaluated. These findings are very important in the assessment of injuries. There is a close relationship of injury effect with the involved body surface area (impact surface), since, given the same force, the more limited the impact area, the higher the pressure and, therefore, the stronger the harmful effect produced (major body penetration).

Conclusion

An infrared imaging system offers the opportunity to study the thermo-elastic effect related to the variation of the volume experienced by the polymer material [mat] under impact load (throws). Several basic informations could be obtained from such a methodology. Because it is impracticable to reduce the magnitude of the impact during training and competitions, the correct throw execution and the use of proper mat [flexible structure under the mat] may reduce the magnitudes of injuries and vibrations, mitigating the adverse effects on the body of jūdōka. From literature data, moreover, taking into account the variability among several throws and among forces involved in throws, the impact surface of 3.5% of the total body surface seems to be an acceptable risk for Jūdō athletes.

Acknowledgments

We thank dr. Nabil Druweel student of the Master in Teaching and Coaching Jūdō for his precious contribution to this work. We are also indebted to Prof. A. Sacripanti, for his suggestions and tutoring during the operation with the infrared thermal camera.

References


The NEC R300 infrared thermal imaging camera, equipped with a color LCD display.

The THEC R300 infrared thermal imaging camera, equipped with a color LCD display.

Impact surface areas on different density mats were obtained from captured infrared thermal images as shown in the following figures.

Impact surface area on high and low density tatami

Tab. 1

<table>
<thead>
<tr>
<th>tatami structure</th>
<th>mat density [kg/m³]</th>
<th>Tc [°C]</th>
<th>Troom [°C]</th>
<th>sld [mm]</th>
<th>( \Delta T ) [°C]</th>
<th>sld [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>tatami 1</td>
<td>250</td>
<td>22.10</td>
<td>30.35</td>
<td>3.25</td>
<td>4.14E+07</td>
<td>2.72E+07</td>
</tr>
<tr>
<td></td>
<td>220</td>
<td>22.10</td>
<td>29.35</td>
<td>3.05</td>
<td>4.86E+07</td>
<td>3.38E+06</td>
</tr>
<tr>
<td>tatami 2</td>
<td>250</td>
<td>20.70</td>
<td>28.40</td>
<td>4.07</td>
<td>7.52E+07</td>
<td>2.40E+06</td>
</tr>
<tr>
<td></td>
<td>220</td>
<td>20.70</td>
<td>28.37</td>
<td>4.57</td>
<td>7.30E+07</td>
<td>7.89E+06</td>
</tr>
</tbody>
</table>

Tab. 2

<table>
<thead>
<tr>
<th>mat density [kg/m³]</th>
<th>area [mm²]</th>
<th>area/BSA [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>tatami 1</td>
<td>0.0733</td>
<td>0.0050</td>
</tr>
<tr>
<td>tatami 2</td>
<td>0.0388</td>
<td>0.0015</td>
</tr>
<tr>
<td>Harai goshi</td>
<td>0.1235</td>
<td>0.0071</td>
</tr>
<tr>
<td>Seoi nage</td>
<td>0.0591</td>
<td>0.0021</td>
</tr>
</tbody>
</table>

The overall thermal effect was estimated by measuring the area on infrared thermal images and the average data are reported in Tab. 2. In this work we assumed as constant the contribution of both the thermal effect due to the diffusive heat from the body on the impact and the (irreversible) thermelastic effect. Thus, the material temperature variations observed in terms of area changes are mainly due to different thermo-elastic responses.
Effect of fatigue on strength performance

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Abstract

Judo is a sport characterized by brief bouts of high-intensity, intermittent exercise that requires neuromuscular performance. This study aims to determine the effect of fatigue on arm extensor muscles upon power, velocity, strength and rate of force development (RFD) output levels, throughout a simulate contest in judo athletes. Sixty-three male judo athletes of five national teams participated in this study, and were classified in two performance groups (elite, n=30; sub-elite, n=33). 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 the power-load in each minute, i.e., T1 to T5). BP load was the previous calculated power-loadings of the arm extensor muscles, and 3 measures were collected: (1) power, (2) velocity, and (3) RFD. Power-load (~50%1RM) was tested on a free-weights BP exercise, and an Isocontrol – Dynamic 5.1 Software was used to collect data. Standard statistical methods, one-way analyses of variance (ANOVA), and the repeated measures analysis of variance (between T1-T2 till T5) were used. The level of significance was set at 0.05. Significant differences were observed between: (1) performance groups in power, strength and RFD; (2) evaluations (T1 to T5) in power, velocity, and RFD. Moreover, the effect of fatigue on power, strength, velocity, and RFD (all, p=NS) is independent of performance group.

Results showed that elite athletes were powerfull (+69 W to 200 W), stronger (+69 N to 184 N) and have superior explosive muscle strength (+15778 Ns-1 to 32648 Ns-1). In accordance, the maximization of the power development capacity must be a key component of judo training programs. Nevertheless, during the contest, the observed slight reduction in power and velocity (in both, elite and sub-elite groups) must be investigated (i.e., changes in the contractile apparatus vs reduced muscle activation).

Keywords: power, explosive strength, explosive strength resistance, fatigue
Effect of fatigue on strength performance

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Introduction

This study aim to determine the effect of fatigue on arm extensor muscles upon power, velocity, strength and rate of force development (RFD) output levels, throughout a simulate contest in judo athletes.

Methods

Sixty-three male judo athletes of five national teams participated in this study, and were classified in two performance groups (elite, n=30; sub-elite, n=33). 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 the 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 3 measures were collected: (1) power, (2) velocity, and (3) RFD. Power-load was tested on a free-weights BP exercise, and an Isocontrol – Dynamic 5.1 Software was used to collect data. Standard statistical methods, one-way analyses of variance (ANOVA), and the repeated measures analysis of variance (between T1-T2 till T5) were used. The level of significance was set at 0.05.

Results

Significant differences were observed between:

(1) performance groups in power, strength and RFD (Table 1);

Table 1.

<table>
<thead>
<tr>
<th></th>
<th>Power (W)</th>
<th>Velocity (m/s)</th>
<th>Strength (N)</th>
<th>RFD (N·s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elite</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub-elite</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(2) Evaluations in power, velocity, and RFD (Fig. 1)

Figure 1.

The effect of fatigue on power, strength, velocity, and RFD (all, p=NS) is independent of performance group.

Conclusion

Elite athletes were powerfull, stronger and have superior explosive muscle strength. In accordance, the maximisation of the power development capacity must be a key component of judo training programs.
Hormones Demands of Judo Training Test

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Abstract

Using a biochemical analysis in saliva, to identify the response of testosterone (T) and cortisol (C) on the application of a specific test for Judo. For this we used a sample of 9 judoka, male, 24.1 ± 3.1 years of age, 180 ± 8.4 cm in height and 73.3 ± 8.3 Kg in weight that participated in this study. It examined the concentration hormonal (cortisol and testosterone) me four times, M1 (rest 24 hours before the test), M2 (pre-test), M3 (post-test) y M4 (24 hours after the test). Were produced significant increases in M1 M2 and M3. A significance level of p<0.05 was applied. In relation to the concentration of testosterone, there is a significant increase in the following moments of evaluation: M1-M3 (p=0.001), M2-M3 (p=0.001) and a significant decrease in M3-M4 (p=0.005). The level of concentration of cortisol presents an increase at the same moments M1-M3 (p=0.015), M2-M3 (p=0.047) and a decrease in M3-M4 (p=0.004). It can be concluded that the specific Test, stimulates a great hormonal response to the level of cortisol levels of testosterone. The test can be characterized as an activity short and intense, and yet a good meter of the state of force resistant specifies in Judo.

Keywords: testosterone, cortisol, hormones, salivary, judo, acute stress response
Hormones Demands of Judo Training Test

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1. Introduction
Judo is Olympic sport, in which movements are technical and powerful and different tactical strategies. The conditions physical and physiological are indispensable for success in training, and more important in competition. The hormonal mechanisms are of great importance to maintain the homeostatic balance of different human body systems and activation of adaptive mechanisms. Depending on their metabolic role, testosterone (T) is used as a marker in many studies of anabolic physiological analysis of exercise. Not least, cortisol (C), considered as the stress hormone, that its constant elevation could be associated with muscle atrophy, lack of strength and energy deficit, as well as to assess the level of recovery of the metabolic system, then the exercise. This study analyzes variation in hormone levels (T) and (C) for conducting an assessment test specific to Judo (ECJ).

2. Method
This was a longitudinal study of character with the assessment of hormone levels in 4 different times.

The anthropometric data collection was made early in the first day of passing the tests.
The sample comprised a total of 9 subjects all male, mean age 24 (± 3.1) years. Level have an average weight of 77.3 (± 8.8) kg.

The anthropometric data analysis of participants was made through descriptive analysis of cortisol and testosterone at four different times. To relate the values of testosterone and cortisol in different measurements is use not Student t test for dependent samples. It was taken the value of p ≤ 0.05 to identify statistically significant concentrations in the four stages of assessment.

3. Results

3.1. Cortisol Concentration
The ECJ has been constructed from an evaluation system that allows mixed and inclusive specific abilities. This test focuses on the fatigue Resistance to the Explosive Force (RFE) for the flexor muscles of the upper limbs, with quick thrusts repeated until exhaustion. Its application in Judo, we will:

1. 2- partial assessments against a global assessment, and finally, ensures an assessment of the characteristics in relation to exercise duration and intensity.
2. 3. Conclusions
The first change identified with an increased concentration of C is between M1C and M2C, the interval of 24 hours is sufficient for the recovery of muscle, therefore does not constitute an objection to the significance of the results to be presented. In addition, the test is a good gauge specific Judo specific conditional.

3.2. Testosterone Concentration

Testosterone Depending on the variation of T, we can identify the specific physiological characteristics in relation to exercise duration and intensity.

After performing resistance exercises, are significant increases were obtained with a significance level of p ≤ 0.005, a subject trained, as is the case in our study.

When performing an analysis of the variation of T between M1 and M2, we can see there is a decrease of T, but not significant p = 0.059, contrary to previous studies where there is a state after lifting of the respective hormone, in response to a mental preparation for the physiological demands of exercise and found no increase in T before the competition. This difference may be explained by differences interpersonal sample under study.

Between M2 and M3, there has been a very significant increase, p = 0.001 which corresponds to the range of the exercise. Has also verified a significant increase in the concentration of T, when athletes undertake large sprits intensity. Also the realization of large-force training intensity caused a significant increase in the concentration of T.
**Presentation Title:**

The Origin, Essence, and Biomechanical Foundations, of Itsutsu-no-kata [The Forms of Five] – Kodokan Judo’s Esoteric Sixth Kata

**Abstract**

Our purpose is to provide a comprehensive study of Kodokan’s sixth and most esoteric kata, the itsutsu-no-kata, which recently became part of the European Judo Union (EJU) Kata Championships. Our threefold research hypothesis is that itsutsu-no-kata is: (1) not an original creation by Kano Jigoro; (2) an abstract non-self-defense oriented exercise of which common explanations are historically flawed; (3) impossible to properly teach or evaluate by current EJU scoring criteria. We address these questions through a critical analysis based on rare original historic source materials and biomechanical evaluation. Our results show that itsutsu-no-kata pre-existed in Tenjin Shin’yo-ryu jujutsu under the name Goku’i kuden gohon [5 orally transmitted essentials] hence predating Kano’s creation of the Kodokan in 1882. The kata was taught to Kano by his second jujutsu teacher, Iso Masatomo, the School’s Third Headmaster and by Inoue Keitaro. The kata initially intended by Kano to be expanded to ten techniques has remained a miseihin-no-kata [unfinished kata] with a temporary project name. The techniques’ original names reflected the movements’ meaning. Kano imported this exercise to symbolically depict sei-ryoku zen’yo through cosmic movements expressed by the human body. The changes he implemented unintentionally altered the underlying biomechanical principles. After 1927 Kano revised judo’s original threefold purpose expanding it with a fourth, namely ishinho [mental satisfaction] achieved through biteki kansei no kanyo [cultivation of aesthetic sensitivity], one of the objectives this kata sought to realize. The kata’s highest aesthetic ideal is nyushin shimyo [extraordinary unworldly skill], a quality comparable to yugen in No theater. Present day Kodokan explanations are flawed and not supported by either the underlying biomechanics or its historic foundations. Preventing further decay of this kata among instructors and kata judges requires intellectually comprehending it as an ikimono [living thing] of which the essentials are far beyond merely copying its mechanical patterns.

**Keywords:** history, jujutsu, kata, philosophy, Tenjin Shin’yo-ryu
The Origin, Essence, and Biomechanical Foundations of Itsutsu-no-kata
[The Forms of Five] — Kōdōkan Jūdō’s Esoteric Sixth Kata

Carl De Crée

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Abstract

Our purpose is to provide a comprehensive study of Kōdōkan’s sixth and most esoteric kata, Itsutsu-no-kata, through a critical analysis based on original historic sources, motion analysis, and biomechanical foundations. Our results show the original kata (Itsutsu-no-kata) and the modern Kōdōkan kata are not the same name. Given the kata’s originality and the limited transmission of Kōdōkan kata, the School’s third headmaster and by Inoue Katō. The kata initially transmits Nikkyō (progressive movements) through the original Itsutsu-no-kata (unlimited kata). The technical origins of the kata’s movements and metaphors, katas adopted this training system to convey the essences of Prince Kinpin’s Kōdōkan kata.

Methods

• Critical literature & heuristic analysis of original historic primary sources
• Critical analysis of historic film footage
• Personal interviews with senior Japanese Kōdōkan judoka and Teacher Jūdō Shin’iiryo-no-jūdōsokeigata, Fa. Fukuda Hisatsuna (1588–1879)
• Observation, conceptual and statistical analysis of kata contexts
• Biomechanical analysis of movements
• Experimental composition & restoration of movements

Results

Psychological occurrence of Itsutsu-no-kata in Kōdōkan

• May 11th, 1889: Lecture for the Zai Nippō Kyōkakai, “Theory behind the Kata of Tenjin’ shin’iiryo-no-kata,” Kōdōkan is extremely complex (3)
• May 20th, 1884: Demo opening new ItsuWan at Shimotomisaka-chō

Introduction

Instead of the current 10, there were 7 original kata of Kōdōkan jūdō[1,2]:

1. Nage-no-kata [Forms of Throwing]: 10 techniques (1885), lost.
2. Katame-no-kata [Forms of Control]: 10 techniques (1885), lost.
3. Shōtō-no-kata [.checkbox]: 10 techniques (1887), renamed Jūno-kata (Forms of Non-resistance) in 1888.
4. Taiuki-no-kata [checkbox]: 10 techniques (1887), renamed Jūno-kata (Forms of Non-resistance) in 1888.
5. Gōki-no-kata [checkbox]: 10 techniques (1887), renamed Jūno-kata (Forms of Resistance & Non-resistance) in 1888.
7. Jūno-kata [checkbox]: 5 techniques (1887), renamed Jūno-kata (Forms of Proper Use of Force) (10 techniques) in 1887.

The purpose of this study was to provide a comprehensive analysis of Kōdōkan’s sixth and most esoteric kata, the Itsutsu-no-kata, through original kata, reconstructed kata, historical kata, and orthodox kata.

Acknowledgments

We are indebted to Dr. Sc. A. Saccopietra for his expertise and kind assistance with the biomechanical analysis of itsu techniques.
Presentation Title:

Anthropological status of judokas of different skill level

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Abstract

INTRODUCTION: Determination of anthropological status of judokas is crucial step in creating a specific training program for each sportman. The level of abilities and knowledge's is determination factor between judokas.

MAIN GOAL of this research is to determine differences in anthropological status between judokas of different skill level. SAMPLE OF SUBJECTS included 43 judokas (U17), 23 judokas that compete on international level and 20 judokas that compete only on national level (in categories up to 55kg, up to 60kg and up to 66kg).

SAMPLE OF VARIABLES: Forward bend (flexibility), Side steps (agility), Hand tap (hand speed endurance), Standing long jump (horizontal leg power), Static endurance in the position of “chin up” on judogi (arm and back static strength /endurance), Sit ups in 60 seconds (strength endurance of abdomen), Throw + 2 push-ups in 90 seconds (specific anaerobic endurance), Special judo fitness test (SJFT) (specific anaerobic endurance) – includes the number of throws for each series, heart rate immediately and one minute after the test and the overall test score.

METHODS OF PROCESSING DATA: One way ANOVA was used to determine the difference between two groups of judokas. RESULTS showed generally statistically significant difference between the international and national level judokas (p = 0.0042). Univariate results for each variable showed that there were no differences in flexibility, agility, horizontal leg power, arm and back static strength /endurance and in heart rate immediately after the SJFT. Variables that differentiate judokas were hand speed endurance, strength endurance of abdomen, specific anaerobic endurance in both tests and the indicator of speed of recovery (heart rate one minute after the SJFT).

One can CONCLUDE that the most reliable tests for differentiate judokas of are specific tests, and the ability that discriminate them the most is endurance.

Keywords: flexibility, agility, leg power, strength, endurance
ANTHROPOLOGICAL STATUS OF JUDOKAS OF DIFFERENT SKILL LEVEL

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Faculty of Kinesiology, University of Zagreb, Croatia

INTRODUCTION
Testing anthropological status of judokas is crucial in creating a specific training program for each sportsman. The level of abilities and knowledge is a determination factor between judokas. Diagnostic procedures in the sport offer the use of basic and specific battery of tests. Each of these procedures has its advantages and disadvantages. Benefits of basic tests are a large database and the possibility of comparison with a large number of athletes. Specific tests, however, provide insight into exactly those manifestations of abilities which are characteristic for a particular sport. The lack of specific tests in judo, especially in testing motor skills, continues to be a problem in the training procedure of judokas.

MAIN GOAL of this research is to determine differences in anthropological status between judokas of different skill level.

METHODS OF WORK
Sample of objects included 43 judokas (U17). 23 judokas that compete on international level and 20 judokas that compete only on national level (in categories up to 55kg, up to 60kg and up to 66kg).

SAMPLE OF VARIABLES: Forward bend (MPR)(flexibility), Side steps (KUS)(agility), Hand tap (TAP)(hand speed endurance), Standing long jump (MSD)(horizontal leg power), Static endurance in the position of “chin up” on judogi (IUV)(arm and back static strength/endurance), Sit ups in 60 seconds (MPT)(strength endurance of abdomen), Throw + 2 push-ups in 90 seconds (BAC2SKL)(specific anaerobic endurance), Special judo fitness test (SJFT) (specific anaerobic endurance) - includes the number of throws for each series (NK1, NK2, NK3), heart rate immediately after the test (HR1) and one minute after the test (HR2) and the overall test score (SJFT).

METHODS OF PROCESSING DATA: One way ANOVA was used to determine the difference between two groups of judokas.

RESULTS AND DISCUSSION
Th results showed generally statistically significant difference between the international and national level judokas (p = 0.0042). Univariate results for each variable showed that there were no differences in flexibility, agility, horizontal leg power, arm and back static strength/endurance and in heart rate immediately after the SJFT.

Variables that differentiate judokas were hand speed endurance, strength endurance of abdomen, specific anaerobic endurance in both tests and the indicator of speed of recovery (heart rate one minute after the SJFT).

Analyzing these results it can be concluded that the application of specific tests better distinguishes judoka and also that the ability that differentiate judokas the most is endurance - the ability that have a major role in judo fight. Abolishing limit of golden score this ability comes more to the fore. Although the heart rate after the test SJFT similar in both groups of athletes, judoka of international level, because of their better endurance, have faster recovery and reduced heart rate after a minute of rest.

CONCLUSION
Awareness of the abilities that most differentiates judoka and insight into tests that assess this ability best, allows coaches to continuously monitor the progress of their athletes and that with great probability determine their current status in relation to judokas of higher qualitative rank.

<table>
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<th>RESULTS OF ANOVA between two groups of judokas</th>
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<th>TABLE 2. Results of difference between two groups of judokas in each variable</th>
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<td>SJFT</td>
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</table>
Presentation Title:

Movement of uke from the aspects of judo bout tactics

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Abstract

One of the basic principles of Judo (Seiryoku Zenyo) implies usage of minimum energy for achieving maximum efficiency. Crucial moment in this principle “lies” in the movement of uke. One can determine five basic directions of movement of uke - forward, diagonally forward, sideward, backward and diagonally backward. The main goal of this paper was to determine, from the aspects of tactics in judo bout, which movements are more suitable for attack and which for defense. For that reason international team of eight judo experts analyzed the characteristics of 60 throwing techniques. The results of factorial analysis showed the existence of two superior types of motion (factors), extracted from five basic movement directions. First factor comprised movements: forward, diagonally forward and, surprisingly, sideward. Second factor comprised movements backward and diagonally backward. Further analyses of characteristics of throws during these two types of motion showed that during first type tori has wider range of throws that are suitable for attack that also have higher level of applicability. One can say that whenever center of gravity of uke’s body doesn’t move away from tori he has better chance to attack uke. During the second type of movement tori is limited to a fewer number of efficient throws. That fact together with the fact that center of gravity of uke’s body is moving away from tori helps uke to defend him better. From the aspects of tactics of judo bout one can conclude that the movement of uke predominately forward is more suitable for attacking judo, movement predominately backward for more defensive judo. Simple acknowledgment of these judo principles can help coaches and sportsmen to create efficient judo bout tactics that is based on characteristics of ones tokui waza and also on concrete situation in judo bout.

Keywords: moving forward, moving backward, mowing sideward, offence, defence
MOVEMENT OF UKÉ FROM THE ASPECTS OF JUDO BOUT TACTICS

Ivan Segedi, PhD
Faculty of Kinesiology University of Zagreb, Croatia

INTRODUCTION

One of the basic principles of Judo (Seiryoku Zenyo) implies usage of minimum energy for achieving maximum efficiency. Crucial moment in this principle lies in the movement of uke. Correct application Nage waza imply usage of each technique in right moment from the right movement (Ishikawa and Draeger, 1964.; Reay and Hobbs, 1992.; Elie, 2004.). One can determine five basic directions of movement of uke - forward, diagonally forward, sideward, backward and diagonally backward, and for each of that movement exists the best solution for a throwing attack. Knowing the best solution for attack will enable one to be more efficient in offense and also in the defence situations. This fact allows the coaches to create tactics for their contestants in every moment of the fight. The main goal of this paper was to determine, from the aspects of tactics in judo bout, which movements are more suitable for attack and which for defense.

METHODS OF WORK

For the purpose of this research a new measurement instrument was designed. The measurement instrument was in the form of questionnaire in which eight judo experts noted the applicability of 60 throwing techniques (divided in four groups. TE WAZA, ASHI WAZA, KOSHI WAZA and SUTEMI WAZA) in five basic directions of movement of uke - forward, diagonally forward, sideward, backward and diagonally backward. Team of eight international judo experts was recruited specially for this research (one expert from Basil, Italy and Poland; three experts from Japan; two experts from Croatia). All experts were familiar with research methodology. The experts gave their opinion on the applicability of each throwing technique in a way that they graded them from 1 to 5 (the grade 1 meant very little applicability while the grade 5 meant very great applicability of a throwing technique in a particular direction of movement). The description of methodology and data collection process was explained to the experts in the language they understood well and the questionnaires were translated onto the languages they understood well.

RESULTS

Analyzing table 1 one can get an insight into the general characteristics of each group throwing technique. It can be seen that the movement of uke forward and obliquely forward is the most common for koshi waza, and at least for ashi waza. Movement backward and oblique backward is the most applicable for techniques from the group of ashi waza, and at least for the group of koshi waza. When movement is sideward one can notice a very uniform distribution of the applicability of the groups of throwing techniques. Only a slight, almost inconsequential, dominance have sute mi waza techniques.

Table 3. Factor structure matrix for the variables of movement, the variances of each factor (Expl.Var), shares of the variance of factors in total variance (Prp.Totl) and communality of the variables

The results of factorial analysis showed the existence of two superior types of motion (factors), extracted from five basic movement directions. First factor comprised movements: forward, diagonally forward and, surprisingly, sideward. Second factor comprised movements backward and diagonally backward. Table 1. as also the analyses of applicability grades of each throwing technique during these two types of motion showed that during first type tori has wider range of throws that are suitable for attack that also have higher level of applicability. One can say that whenever center of gravity of uke’s body doesn’t move away from tori he has better chance to attack uke. During the second type of movement tori is limited to a fewer number of efficient throws. That fact, together with the fact that center of gravity of uke’s body is moving away from tori helps uke to defend him better.

CONCLUSION

From the aspects of tactics of judo bout one can conclude that the movement of uke forward, diagonally forward and sideward are more suitable for attacking judo, and movement predominately backward for more defensive judo. Simple acknowledgment of these judo principles can help coaches and sportsmen to create efficient judo bout tactics that is based on characteristics of ones tokui waza and also on concrete situation in judo bout.

LITERATURE

Learning to face uncertainties through Judo: a study of competitions without weight categories for children in Japan

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Abstract

We present a cultural study conducted in Japan during a study period of one year at Tokyo Gakugei University. We observed at Kan nai (prefecture of Yokohama - Japan) a tournament without weight categories for children in an atmosphere of total security. We present the statistical result of all the fights according to the weight of each of the children. And we ask ourselves: What is the meaning of this educational event? How the organizers manage to create an environment perfectly secure in a confrontational situation so difficult for the child?

Throughout the first half of the twentieth century, the attractiveness of Judo was accentuated by the ideology it conveyed that the little man could, with work, defeat the big one. The pioneers of judo were motivated by the hope of endless progress and, with it, that of being able to face up to any situation, even the most uncertain – regardless of one’s social background. In 1960 however, with the development of this sport and the new organization of competitions now based on weight categories, such hope disappeared. A less idealized outlook on this activity replaced the philosophical dimension of judo. Today, categories is a given, and from our western point of view, competitions without weight categories, such as the Kan Nai competition for children, seem odd at all levels. Yet they are very meaningful in Japan and since 2012, the budō, including judō, are compulsory teachings in high schools. These teachings then lead to competitions without weight categories that are emblematical of the type of education Japan wishes to promote; an education meant to prepare youngsters to face the uncertainties of life.

It is the purpose of this paper to study such competitions in order to understand both their organization and their deep cultural relevance.

Keywords: judo, children, social sciences, education, uncertain
Nevertheless, in Japan for the adults and for the children this hope continues to exist today.

Most formative.

At Kanai, this day, the children are in confrontation without weight categories and continue to have this idea that it is allowed to hope to face any situation so uncertain it is. Anti-fight without weight classes, child safety seems always fully guaranteed. This organization without weight categories is clearly a cultural singularity, for us today, difficult to understand.

At the beginnings of the judo jutsu ju in France: the smallest which throws most biggest.

In the first half of the 20th century, the development of the judo in France is facilitated by the representation of the smallest which throws most biggest and the hope of invincibility.

With the development of the sport, and the creation of weight categories, the faith of the Japanese school of jujutsu that allow such a confrontation seems to lie mainly in the following characteristics:

- The principle of force is not the basis of the confrontation.
- Respect for the Japanese salutation, the polite consideration of the use of force.
- Fighting without weight categories is sometimes very intense. The Japanese salutation (ritsurei) of the opponent who controls more than it submits, the victory is approximately the same as that of his opponent (33.5%). (In this case, the difference in weight between the two fighters is between -10% and +10%)
- 268 fights are won by the heavier judoka (44.5%)

Results of the statistics

- 133 fights are won by the lightest judoka (22% of all fights).
- 202 fights are won by a judoka whose weight is approximately the same as that of his opponent (33.5%).

The advantage of the weight seems to be confirmed. However, lighter judokas are a significant proportion who win their fights. For the small children this is a significant enough result to continue to hope throwing the biggest and to maintain the enthusiasm of the children. The child learns in this kind of event it is allowed to hope resolve any situation so insurmountable as it may seem.

How possible is this organization in Japan without fear for the safety and the motivation of children?

We observe many intensity in the fights without weight categories but never aggression. The Japanese style that allow such a confrontation seems to lie mainly in the following characteristics:

- The Japanese judo lesson
- The reigi (politeness, etiquette)
- The tadashii judo (the right judo)

Conclusion

- The goal of the authors is not to judge whether the competitions without weight categories are good or bad, but simply to see a cultural reality and try to understand. The principles, values, customs, that the child learns to fight in a competition without weight categories are also those that will allow it to integrate into the Nippon society. Judo is an ethnomotricity, it conveys the dominant values of the culture in which it is practiced.
- Our collaboration with Japan is as a powerful inspiration and stimulation for educational innovation in teaching judo.
- Our project is to develop this study with teachers from other countries willing to cooperate in a cultural study.
- For more details you can read the article: COLIN T., JONCHERAY H., ITEYA M., Learning to face uncertainties through Judo: a study of competitions without weight categories for children in Japan, STAPS, No. 99, January 2013 (into French).
**Presentation Title:**

**Evaluation of a specific grip strength tests for judo players**

<table>
<thead>
<tr>
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<th>Co-author 1 Name:</th>
<th>PD Dr. Klaus Knoll</th>
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<tr>
<td>Co-author 2 Name:</td>
<td>Mathias Kindler</td>
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<td>Co-author 3 Name:</td>
<td>Henry Haupt</td>
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**Abstract**

**Problem:**

“The skills of gripping are the key to success”. These are the words in which Adams (1990) describes the outstanding function of the Kumi-kata in judo. In this sport, nearly every strength transfer on the opponent is regulated by the hands via the combat clothing. Therefore, the strength to grip or hold the sleeve or lapel is very important to successfully execute fighting actions with throwing techniques, and it has to be differentiated between Tsurite and Hikite (Weers, 1998; Morrell, 2004; 2006). As a consequence of a modified combat control not only coaching practice, but also sport science has been focusing on grip strength during the last few years (Crosby et al., 1994; Lee und Quan; 2004; Franchini et al., 2005; Bonitch-Gondora et al., 2011; Sánchez et al., 2011; Dias et al., 2012). However, most of the studies on combat sports are based on measuring the “hand squeezing strength”, e.g. by using the hydraulic hand dynamometer (Schmidt & Toews, 1970). By looking far ahead, Franchini et al. (2011) and da Silva et al. (2012) have decided to measure grip and hold strength on the sleeve of the kimono. Our measuring system is to measure the grip strength performance at the sleeve, too, and at the lapel of a judo jacket, without allowing the influence of other muscle groups. One of the first goals is to examine the reliability of the test.

**Procedure:**

The test person’s upper arm is fixed and he grabs a tightened judo sleeve or lapel by sleeve or lapel grip. The grip devices are pulled continuously in horizontal direction by a tension spindle, which is operated by an electric motor. A power sensor between the tension spindle and the sleeve/lapel measures the effective power. Via a measurement box with a registration frequency of 100 Hz (quasi static measurement procedure) the amplified measurement signal is transmitted to a PC. In April 2013, the first tests with 5 national men’s teams will be carried out. Then, test retest reliability studies are of immediate importance for maximum grip strength of the right and the left sleeve of lapel grip.

**Results:**

The results will be discussed according to dependence of grip/hold strength on body weight, grip position, type of grip (sleeve, lapel), and hand dominance.

**Keywords:** judo, grip strength, strength measurement, Kumi-kata
Problem

“The skills of gripping are the key to success”: These are the words in which Neil Adams (1990) describes the outstanding function of the Kumi-kata in judo. In this sport, nearly every strength transfer on the opponent is regulated by the hands via the combat clothing. Therefore, the strength to grip or hold the sleeve or lapel is very important to successfully execute fighting actions with throwing techniques, and it has to be differentiated between Tsurite and Hikite (Weers, 1998; Morrell, 2004; see Fig. 1). As a consequence of a modified combat control not only coaching practice, but also sport science has been focusing on grip strength during the last few years such as Crosby et al. (1994); Lee und Quan (2004), Franchini et al. (2005), Bonitch-Gondora et al. (2011), Sánchez et al. (2011) Dias et al. (2012) and Delatino et al. (2012). However, most of the studies on combat sports are based on measuring the “hand squeezing strength”, e.g., by using the hydraulic hand dynamometer (Schmidt & Toews, 1970). By looking far ahead, Franchini et al. (2011) and da Silva et al. (2012) have decided to measure grip and hold strength on the sleeve of the kimono. Our measuring system is to measure the grip strength performance at the sleeve too (fig. 2), and at the lapel of a judo jacket (fig. 3), without allowing the influence of other muscle groups. Thus a higher validity of our measuring methods is aimed at. The focus of our analyses with the new testing device is put on three questions: (1) Checking the reliability of the testing procedure. (2) Are there age and performance related differences in the level of grip strength? (3) Are there differences between the two basic grip positions (lapel and sleeve)?

Procedure

The test person’s upper arm is fixed by a cushioned vertical board and he grabs a tightened judo sleeve or lapel by sleeve (fig. 3) or lapel grip (fig. 4). The grip devices are pulled continuously in horizontal direction by a tension threaded spindle, which is operated by a gear box and an electric motor. Therefore the grip strength is measured eccentrically. A force sensor (KAZ of A.S.T. Dresden) between the threaded spindle and the sleeve/lapel measures the effective strength. The amplified measurement signal is transmitted to a PC via an USB data acquisition module of Data Translation with a sampling rate of 100 Hz (quasi static measurement procedure). The measurement was carried out for a period of 7 s using a pulling speed of 1.3 m/s. The signal was filtered by a low-pass 50 Hz filter. The maximum amount of the measured pulling force served as a characteristic quantity. The best value of two attempts right and left was recorded.

(1) Test retest reliability studies are of immediate importance for maximum grip strength of the right and the left sleeve grip. 15 elite judo players of the Germany’s male national team (age: 23.33 ± 1.59 years, body weight: 88.55 ± 15.24 kg, body height: 179.27 ± 7.35 cm, among them nine athletes have already been internationally successful at men respectively juniors ECh or WCh, additional three have already participated in these events (sleeve/lapel) with two days between the measurements).

(2) The grip strength (sleeve grip) of the senior male national team was compared with 14 elite junior judo players (age: 18.5 ± 1.09 years, body weight: 85.71 ± 25.19 kg, five of these athletes have already been internationally successful at ECCh or ECh, additional six have already participated in these tournaments).

(3) Within the junior group the comparison included the maximal grip strength at sleeve too (fig. 2), and at the lapel of a judo jacket (fig. 3), without allowing the influence of other muscle groups. Thus a higher validity of our measuring methods is aimed at. The focus of our analyses with the new testing device is put on three questions: (1) Checking the reliability of the testing procedure. (2) Are there age and performance related differences in the level of grip strength? (3) Are there differences between the two basic grip positions (lapel and sleeve)?

Results and discussion

(1) In the test-retest study for the sleeve grip a significant correlation on the level of p < 0.01 was found (r = 0.78). Thus the reliability of the test is confirmed. The analyses showed that a further improvement of the test quality is possible by the better description of the grip position (no multi-folding of the sleeve), by a high pretension of the sleeve before starting the threaded spindle and by the application of magnesia on the hands (to prevent wet hands).

(2) The comparison of the holding strength of the sleeve at the two national teams showed a significantly higher level of performance of the senior males compared to the junior males (M = 881.7 ± 154.9 N vs. 781.6 ± 102.6 N. Fig. 5). Taking the quality of the sample subjects into account (highly trained athletes, Rhea, 2004) the practical impact is found in the mean difference t(21) = 2.23, p = 0.03, d = 0.78, 1-tailed. International scientific studies indicate that judo players are not stronger than non-judo players in absolute terms (peak grip force), but the judo players had a higher resistance to fatigue (Dias et al., 2011). Franchini et al. (2011) also found that the dynamic grip strength endurance is a discriminate variable between judo athletes and non-judo subjects. In addition our study indicates a significantly higher maximum grip strength performance of highly qualified judo players depending on age. It also stresses its importance with regard to increasing competition needs.

(3) The grip strength performance in the sleeve grip is significantly higher than in the lapel grip (M_sleeve = 1502 ± 744.9 N vs. M_lapel = 178.1 ± 127 N; comp. fig. 6). The great practical impact of the differences t(13) = 12.3, p < 0.001, d = 3.29 (0 = 1.00) is based on the differing load of the hands. While in the sleeve grip the hand is kept closed and only has to act against the friction resistance (fig. 3) in the lapel grip the fingers are more or less “opened” (fig. 4).

Practical implications

The maximum grip strength is a performance determining element in judo when attacking. Its conscious development for Hikite and Tsurite should be focused with training practical interventions. The testing device offers opportunities for a differentiated control of the level of performance. The next steps in the further development of the testing procedure should include a validity check and its application in the diagnosis of grip strength endurance.
Presentation Title:

Special Judo Fitness Test Classificatory Table for Female Judo Athletes

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Abstract

Introduction. Conflicting results were documented in Special Judo Fitness Test (SJFT) for mean parameters of performance and gender of judo athletes matched by age and sports level. Therefore, it is disputable whether SJFT classificatory table, prepared for males, should be also used for females. The goal of the study was to prepare the original standards to allow coaches and researchers to control and evaluate training effects in female judokas.

Material and Methods. The scientific studies were used to collect the research material containing information on female judo athletes who were tested in SJFT. The results were derived from international databases which are available in the Internet. Statistical analysis included the results obtained from 11 relevant studies published between 1997 and 2012. Combined means and standard deviations were computed based on reports concerning 198 individual results in SJFT. A five-degree scale was adopted as follows: Excellent = highest 5%, Good = next highest 15%, Regular = middle 60%, Poor = next lowest 15%, Very poor = lowest 5%.

Results. The study presents the Special Judo Fitness Test Classification Table for female judokas. The normative data included Heart Rate registered immediately after the test, Heart Rate obtained 1 minute after test, Number of Throws completed during the test and Index in SJFT. As an example, the effect of the phases in the menstrual cycle on SJFT results was evaluated using the mean results obtained for female athletes. The evaluation was conducted according to the normative data.

Conclusion. Interactions between the results of testing judo-specific fitness and menstrual patterns response in athletes can be considered during their evaluation using a new classificatory table. With this careful diagnosis, training loads and fighting tactics during competition should be individually modeled.

Keywords: judo, fitness, test, sex factor
More than a decade has passed since the time of publishing the first study concerning the evaluation of the sport-specific fitness in men using Special Judo Fitness Test (SJFT) [1]. The references confirm that after confirmation of its reliability, the tool was used for both diagnosis and motor preparation of judokas at different competitive levels [1-4] and in scientific experiments [5-9]. In Poland, the Ministry of Sport and Tourism [10] recommended in 2010 the Special Judo Fitness Test. Regular participation in SJFT is obligatory since it ensures the control of training progress in athletes and competitors in the Polish Judo Association [10].

This test is also used in the Judo Federation in Australia [11] and other countries affiliated to the International Judo Federation. Individual results collected in SJFT test for athletes at different competitive level allowed for development of the classificatory table for male judokas [12]. The first studies that characterized fitness level measured in SJFT in women were published in Poland [13] and Brazil [14].

Few publications have analyzed the results obtained in SJFT in women and men at the same judo skill level [11,13,15]. The results of comparisons are not consistent. Some of them show significant relationships between SJFT results and gender [13] while other did not confirm this notion [11,15]. Therefore, the evaluation of special fitness in women using a classificatory table [12] created based on the results obtained by men does not seem to be fully justified.

Undoubtedly, the need arises for preparation of original standards to allow coaches and researchers to control and evaluate training effects in female judokas. Therefore, the principal goal of the present study is to develop SJFT standards for female athletes.

The research Keywords such as "judo", "special fitness" "SJFT", "SFJT", "female" were used in a web search query in the international databases of Medline, Scopus, Academic Search Premiere, Sport Discuss, International Judo Federation, International Martial Arts and Combat Sports Scientific Society, International Association of Judo Researchers and Google Scholar. A feedback was obtained concerning 15 documents containing information on the women studied and results of SJFT Index, with its lower values indicating better scores [12,16]:

\[
\text{Index} = \frac{\text{Final HR (bpm)}}{\text{Throws (N)}} + \frac{\text{HR 1 min (bpm)}}{\text{Index}}
\]

The author continuously updated means and standard deviations (SD) for Throws performed in SJFT, final HR (bpm), HR 1-min after the test (bpm) and Index in SJFT by deriving combined means and standard deviations from more than one group. As an example, the combined means and standard deviations for two only groups were calculated according to the equations recommended by Kirkendall et al. [17]:

\[
\text{Combined means} = \left( \frac{1 \times N1 + 2 \times N2}{N1 + N2} \right)
\]

\[
\text{Combined SD} = \sqrt{\left( \frac{N1 \times SD1^2 + N2 \times SD2^2}{N1 + N2} \right)}
\]

A five-degree scale was adopted as follows: A (Excellent) = highest 5%, B (Good) = next highest 15%, C (Regular) = middle 60%, D (Poor) = next lowest 15%, F (Very poor) = lowest 5% and used as a basis for preparation of the normative data for female judo athletes. The SJFT classificatory table for females was generated from the official data published. Hence, there was no need for obtaining the consent from subjects, coaches or ethical committee. Individual data were not presented.

198 results of performing SJFT by female athletes taking part in various competitive levels were analyzed for age categories of junior (N=51) and senior (N=147) and presented in the five-grades classificatory table.

**Special Judo Fitness Test Classificatory Table for Female Athletes**

<table>
<thead>
<tr>
<th>Classification</th>
<th>Variables</th>
<th>Number of Throws</th>
<th>HRafter (bpm)</th>
<th>HR1min (bpm)</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Excellent</td>
<td>≥ 30</td>
<td>≤ 166</td>
<td>≤ 126</td>
<td>≤ 10.69</td>
<td></td>
</tr>
<tr>
<td>B. Good</td>
<td>28-29</td>
<td>167-173</td>
<td>128-137</td>
<td>10.70-11.68</td>
<td></td>
</tr>
<tr>
<td>D. Poor</td>
<td>23-24</td>
<td>188-194</td>
<td>156-164</td>
<td>13.76-14.74</td>
<td></td>
</tr>
<tr>
<td>F. Very poor</td>
<td>≤ 22</td>
<td>≥ 195</td>
<td>≥ 165</td>
<td>≥ 14.75</td>
<td></td>
</tr>
</tbody>
</table>

**Results and Discussion**

There are views [19], that regularly menstruating female athletes in strength-specific sports do not need menstrual cycle adjustment to maximize their competitive abilities. But it is disputable in the light of the findings presented for such complex sports as judo. A recent study of Gordon et al. [20] demonstrated that ‘oestrogen receptors have been shown in skeletal muscle suggesting that oestrogen could have a direct effect on force production’. It can be also associated with the increased availability of ATP and PCr which are the substrates that generate the highest power. Torque production in knee extensors and flexors (measured on the isokinetic device) were lower during menstrual than pre-menstrual phase in judokas from the University of Cambridge team. Similar phenomenon was observed in the results obtained in the Female Ukrainian Team in SJFT by Shahlina and Czistiakova [18].

**In conclusion**, interactions between the results of testing judo-specific fitness and menstrual patterns response in athletes can be considered during their evaluation using a new SJFT classificatory table. With this careful diagnosis, training loads and fighting tactics during competition should be individually modeled.

Katarzyna Sterkowicz-Przybycián
Institute of Sport, University School of Physical Education in Cracow, Poland

Special Judo Fitness Test Classificatory Table for Female Judo Athletes

<table>
<thead>
<tr>
<th>Classification/Variables</th>
<th>Number of Throws</th>
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</tr>
</tbody>
</table>

**Case study of Female National Team in Ukraine (results adapted from [18])**

There are views [19], that regularly menstruating female athletes in strength-specific sports do not need menstrual cycle adjustment to maximize their competitive abilities. But it is disputable in the light of the findings presented for such complex sports as judo. A recent study of Gordon et al. [20] demonstrated that ‘oestrogen receptors have been shown in skeletal muscle suggesting that oestrogen could have a direct effect on force production’. It can be also associated with the increased availability of ATP and PCr which are the substrates that generate the highest power. Torque production in knee extensors and flexors (measured on the isokinetic device) were lower during menstrual than pre-menstrual phase in judokas from the University of Cambridge team. Similar phenomenon was observed in the results obtained in the Female Ukrainian Team in SJFT by Shahlina and Czistiakova [18].

**In conclusion**, interactions between the results of testing judo-specific fitness and menstrual patterns response in athletes can be considered during their evaluation using a new SJFT classificatory table. With this careful diagnosis, training loads and fighting tactics during competition should be individually modeled.

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Presentation Title:
The preparation’s technique of non-oriental made judo contestants’ of preschool age

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Abstract
Judo – not only an oriental sport, but also a way of formation of oriental made persons’ physical culture. So, it is necessary to consider features of the cultural distinctions between the oriental made and the non-oriental made countries and to spend the adequate correction at judo’s studying in the non-oriental made countries by development and realization of the judo’s techniques for adequate comprehension of the judo’s content.
In the present work the version of a training’s judo’s technique for the non-oriental made preschool kids is presented.
The adaptability of the preparation’s judo’s technique of the non-oriental made preschool kids (further – Technique), which is considered by us as its flexibility, is:
– firstly, the property, allowing preschool kids to master the judo’s technique conjugatedly with the orientalization’s stimulation of their attitude to judo’s employment and by a life as a whole;
– secondly, the function providing to the couch a possibility to apply Technique in the various circumstances, both for carrying out the educational and training, the educational and upbringing, as well as the developing studies.
According to the primary both the pedagogical goals and the theory and the technique of the physical culture, Technique includes three theoretically proved components: the educational (which is presented by the technology of judo’s teaching expedients), the upbringing and the developing. In view of the age features and an educational Technique’s orientation as a whole with a view of the time’s economization the educational and the developing problems are solved in this case conjugat-edly, that allows to allocate in Technique the fourth component – the integrated (both the upbringing and the developing) component and to receive the sufficient for a considered contingent training effect.
The three-year pedagogical experiment has confirmed expediency (efficiency) of Technique’s application.

Keywords: judo, technique, orientalization, preschool kids
THE PREPARATION’S TECHNIQUE OF NON-ORIENTAL MADE JUDO CONTESTANTS’ OF PRESCHOOL AGE

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The doctor of pedagogical sciences, the professor  Levitsky Alexey Grigoriyitch

THE NATIONAL STATE UNIVERSITY OF PHYSICAL CULTURE, SPORT AND HEALTH, SAINT-PETERSBURG

SUBJECT

The preparation’s judo’s technique of the non-oriental made preschool kids

OBJECT

The educational and training’s process of the non-oriental made preschool kids’ judo’s training

CHILDREN

The preschool kids’ judo’s technique of the non-oriental made

METHODOLOGY

The adaptability of the preparation’s technique of the non-oriental made preschool kids

QUALITY OF WORKS

The adaptability of the preparation’s technique of the non-oriental made preschool kids

LITERATURE

Lactate concentration after final team judo matches

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Abstract

Blood lactate has been usually examined during the training or in laboratory conditions. Purpose of this study was to investigate lactate concentration after warming up before competition, as well as after final matches on Serbian team championship for male judokas. Research was conducted on two groups of five judokas divided in five weight category. Blood samples were collected from the ear lobe in order to measure lactate concentration before and after two final matches. Based on the obtained results statistical significance differences were noted between first and second final matches in lactate concentration in both groups of male judokas. After second match both group of judokas had higher value of lactate concentration, which indicates a need for improvement of anaerobic capacity. High value of lactate concentration after second match increase muscle acidity, which causes an increase in fatigue. It can be concluded that Serbian male judokas need to improve anaerobic capacity in order to sustain more matches during the competition. This research points out the need to design strategies in training program that clears blood lactate after high intensity matches which enables a faster recovery during the competition.

Keywords: competition, male judokas, anaerobic capacity
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Key words: competition, male judokas, anaerobic capacity.

INTRODUCTION

Blood lactate is a metabolic by-product of anaerobic metabolism which is produced during intense muscular activities. Lactate is a metabolic by-product of anaerobic glycolysis and it is produced during cellular respiration as glucose is broken down, higher increase in blood lactate concentration in judokas indicates that they utilize more anaerobic glycolysis reserves in respect to the aerobic and PCr reserves (Wilmore et al., 2008). Up to date, level of lactate in athletes during intense training or competition has been used for assessing level of acidity and muscle fatigue. The primary source of energy during a judo match is the anaerobic lactate system. According to Wasserman et al., (1981), the anaerobic threshold is a term that refers to the O2 consumption during exercise, above which the rate of lactate production exceeds the rate at which it can be buffered, thus causing lactate increase.

In order to obtain an understanding of the physiological capacity that underpins judo performance, the analysis of blood lactate concentration in specific situations of judo has been reported (Franchini et al., 2011; Bonich-Dominguez et al., 2010). In addition, the lactate measurement allows for the clarification of important points. First, it allows for the analysis of the athlete’s aerobic capacity to determine the appropriate exercise intensity for training and scientific investigations (Faude et al., 2009). Second, information about the athlete’s lactate provides insight into the anaerobic demands of a judo match. The aim of this study was to investigate differences in blood lactate concentration between two final matches on two group of Serbian male judokas during team championship.

METHOD

Subjects

Study was conducted on two groups of five male judokas from Serbian national team divided in five weight category. Participants form each group were from same judo team, divided in five weight category. None of the subjects was taking drugs, medication, or illegal supplements. None had any endocrine or other medical problems that would confound the results. All were informed about the risks of the research before giving their written consent.

Measurements and tests

All measurements were taken before warming up and after final bouts during team championship of Serbia. Blood samples for lactate control were collected by experienced medical technicians at three intervals: before the first round (after warm-up) after the end of a first match, and after second final match. Samples were collected each time from a different ear. Lactate concentrations were determined using Lactate Pro Blood Test meter (Akrityc, Inc.).

Data analysis

All data are reported as descriptive statistics including mean values and standard deviation. T-test were used to determine differences between final matches. All data were analyzed using IBM SPSS Statistics (version 19.0) program for Windows.

RESULTS

Table 1. Physical characteristics of male judokas. Data are presented as mean ±(SD).

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>GROUP 1 (N=5)</th>
<th>GROUP 2 (N=5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>22.6±1.09</td>
<td>24.3±1.66</td>
</tr>
<tr>
<td>Body height (m)</td>
<td>183.6±0.05</td>
<td>181.0±0.12</td>
</tr>
<tr>
<td>Body mass (kg)</td>
<td>85.2±23.89</td>
<td>86.0±23.89</td>
</tr>
<tr>
<td>BMI (kg/m2)</td>
<td>24.9±0.75</td>
<td>25.7±0.64</td>
</tr>
<tr>
<td>Training experience (years)</td>
<td>13.6±0.51</td>
<td>13.7±0.72</td>
</tr>
</tbody>
</table>

The variables describing physical characteristic of two groups of Serbian male judokas are listed in Table 1. Based on the obtained results no statistical significance differences were found in analyzed parameters between groups.

Table 2. Lactate concentration of Serbian male judokas before and after two final matches.

<table>
<thead>
<tr>
<th>Lactate</th>
<th>GROUP 1 (N=5)</th>
<th>GROUP 2 (N=5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lactate before the fight (after warm-up)</td>
<td>2.5±0.35</td>
<td>2.4±0.20</td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>18.7±1.75 (14.2-21.7)</td>
<td>18.6±1.24 (15.5-21.5)</td>
</tr>
<tr>
<td>Lactate after the end of the first fight</td>
<td>15.5±0.45</td>
<td>15.5±0.40</td>
</tr>
<tr>
<td>Mean (SD-Min-Max)</td>
<td>18.8±2.50 (16.0-21.50)</td>
<td>18.5±2.95 (16.0-21.50)</td>
</tr>
</tbody>
</table>

Results of lactate concentrations obtained before fight suggest that both groups of judokas had almost equally effective warm-up routine (Table 2). After the first and second match in both groups of judokas statistically significance increase in lactate concentration were noted in compared with lactate value after warming up. The results showed somewhat higher value of lactate concentration in group 1 after first and second match in compared with group 2, but without statistically significance differences. In both groups fight induced statistically significance differences in higher value of lactate concentration after the second match in compared with first match.

CONCLUSION

High value of lactate concentration after second match increase muscle acidity, which causes an increase in fatigue. It can be concluded that Serbian male judokas need to improve anaerobic capacity in order to sustain more matches during the competition. In recognition of the fact that an athlete can perform more than 5 matches on the same day with an interval of 10 min between two consecutive matches, an adequate recovery is crucial to success in competition. Of course, it is important to state that additional studies are necessary to clarify the role of blood lactate and muscle recovery in Serbian male judokas.

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Faculty of Sport and Physical Education, University of Novi Sad, Serbia
Presentation Title:

The level of general motor performance of young judokas in Slovakia

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Abstract

The trend of lower physical performance, may however limit the performance of young judo competitors. Therefore in our studies, we tried to look into the general physical performance of young judo competitors, and compare it with data from before the year 1990.
The aim of our work was to diagnose the level of conditioning skills using four variables, in 88 selected judo competitors - boys aged 14 to 16 years who were members of the center for talented youth in Slovakia. The results we had obtained were compared with the standards valid in the same age group until 1990. The Slovak Republic was at the time still part of Czechoslovakia. We present the differences in motor performance in the transparent graphs. We came to the conclusion that: in the medicine ball throw test subjects achieved better results in an average of 81 cm than in the past, in the test under-grip pull-ups on bar they were worse on average of 6 reps, in the depth of forward bend test in a standing position we also recorded worse performance by an average of 4.5 cm, in the rope climbing test they achieved better results on average by 0.5 seconds.
In the two variables studied our group showed worse performances compared to the standards in the past. We see the cause especially in neglecting stretching exercises after the session, neglecting general physical training, as well as premature specialization in Judo. In contrast, in the two remaining variables they achieved better performance compared to the standards in the past. They show higher levels of speed and explosive strength of upper extremities and back muscles. The main reason for better performance of our group is that the training focused on the specific muscles as well as the specificity of judo training.

Keywords: motor performance, motor tests, judo, the norms
The Level of General Motor Performance of Young Judokas in Slovakia

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*Faculty of physical education and sport, Comenius University, Bratislava, Slovak Republic
**Faculty of humanities, Matej Bel University, Banská Bystrica, Slovak Republic

Abstract

Presently, we do not meet with serious health complications of people involved in sport, caused by hypokinesis, but we can observe relatively lower level of physical performance, in comparison with people involved in sports before the year 1990. The trend of lower physical performance, may however limit the performance of young judo competitors. Therefore in our studies, we tried to look into the general physical performance of young judo competitors, and compare it with data from before the year 1990.

The aim of our work was to diagnose the level of conditioning skills using four variables, in 88 selected judo competitors - boys aged 14 to 16 years who were members of the center for talented youth in Slovakia. The results we had obtained were compared with the standards valid in the same age group until 1990. The Slovak Republic was at the time still part of Czechoslovakia. To elaborate collected data, we used basic statistical methods such as arithmetic mean, standard deviation, minimum, maximum, variance, median and mode. We also determined the performance in the transport graphs. We came to the conclusion that in the medicine ball throw test, the subjects achieved better results in an average of 81 cm than in the past, in the test under-grasp pull-ups on the bar there was an average of 6 reps, in the depth of forword bend test in a standing position we also recorded worse performance by an average of 4.41 cm, in the rope climbing test they achieved better results on average by 0.52 seconds. In the two variables studied our group showed worse performance compared to the standards in the past. We see the cause especially in neglecting stretching exercises after the session, neglecting general physical training, as well as premature specialization in judo. In contrast, in the two remaining variables our judokas achieved better performance compared to the standards in the past. They show higher levels of speed and acceleration in their upper extremities and back muscles. The main reason for better performance of our group is that the training focused on the specific muscles as well as the specificity of judo training.

Introduction

Motor tests are tools for motor skills assessment. They are necessary for the examination of conditions and the control of dynamic changes in physical activities performed by people participated in sport and people not participate in sport. The basic objectives of sport diagnosis are focused on assessing the level of motor skills in sports, evaluation of training effect, objectification of training load, improve the training process, as well as the prevention of accidents and health problems (BELCI, JUNGER, 2006). General tests should affect the general level of the athlete’s readiness. The general tests in judo are held at the beginning and the end of the preparation period during the examination of changes in the level and the assessment of the training loads during this period. The battery of motor tests in judo for children and young judokas in Slovakia usually contains running at 50 m, 12 mins. run, shuttle run 10 x 5 m, the triple jump, medicine ball two-handed throw, depth forward bending, split, multiple pull-ups on the horizontal bar, sit-ups in 1 - 2 mins, raising legs to the bar, rope climbing, standing on one leg duration (ŠTEFÁNINKOVÁ, 2005).

The aim

The aim of this research was to diagnose the level of the conditioning skills over five years (2008 - 2012) using four observed variables. The results were evaluated and consequently compared with the standards valid prior to 1990 for the same age group.

Methods

The examined group included 88 male judokas, with an average age of 15,6 (± 1,96) years, average body weight of 64,6 (± 6,3) kg and height of 164,7 (± 9,7). The participants have been regular member of the Slovak Union of Judo with a valid license and also members of the center for talented youth in Bratislava. They were holders of the 4th, 3rd and 2nd degree of technical competence (Raja). All the participants confirmed by a written declaration that they agree with release of the test results.

Results and discussion

The table 1 shows the comparison of average measured data and the norms for 14 - 16 year old judokas.

Table 1: Comparison of average measured data and the norms for 14 - 16 year old judokas.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Average Measured Value</th>
<th>Norms before 1990</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine Ball Throw</td>
<td>648,66</td>
<td>597,5</td>
</tr>
<tr>
<td>Pull-ups on the bar</td>
<td>10,19</td>
<td>16,5</td>
</tr>
<tr>
<td>Average Values of Pull-ups</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standing Bend-over</td>
<td>7,09</td>
<td>11,5</td>
</tr>
<tr>
<td>Average Values of Standing Bend-over</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the medicine ball-throw test the subjects gained better results in an average of 81 cm in comparison with the standards of the 1990 (article 1). We assume that the effect of the contemporary and specialized judo training based on latest scientific research, which is focused on the strength of the upper body, flexibility and back muscles. Judokas with extremely developed upper extremities must have a high level of control, flexibility and coordination of their muscles along with the muscles of the upper extremities are the dominant for judo, which is why we put great attention on the development of these muscle groups in conditioning training.

The other tests showed more negative results. In the pull-ups on the horizontal bar compared to pre-1990 standards on an average of 24 cm (figure 4). Pull-ups on the bar are not very popular in the judokas' training because of their energy consumption and high level of requirements for endurance strength of the upper extremities. Inadequacy and uncoordinating intensity of the overweight might be the main cause of the lower level of our subjects compared to standards before 1990.

Our mentioned group achieved in the 5 m climbing rope test on average of 0.52 s better results than the standards before 1990 defined. In this test, the good fitness level of our group was evident. Judokas were able to reach all the levels climbing to the end of the rope, which is why we have put great emphasis on this subject. We can conclude that we have succeeded in our training and we can see the improvements in judokas included in the current training of judokas since the younger categories.

What we can notice with the subjects with the standards valid prior to 1990, we can conclude that with the two observed tests (medicine ball throw, climbing to 5 m rope) our group reached better results, as the standards in 1990 defined. In contrast, in the other two measured variables (pull-ups on horizontal bar, standing bend-over) we experienced worsening of 0.52 s.

References

3. ŠTEFÁNINKOVÁ, M. 2008. Územia technických a taktických, Mentálne a psychologické tendencie, Bratislava, Šport, s. 39.

Acknowledgements

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Presentation Title:

Actual status and proposed development of Global Judo

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Abstract

An analysis of the traditional judo training is made identifying some factors that we believe are not helping judo to thrive globally as it could. These comprise learning by the method of repetition and traditional strength training altogether based on the final aim of competition. This old focus when applied in a general way and taking into account that more than 90% of judo practitioners are non-competitors, produces a wide-spread un-motivation, increases the probability of injuries and as a result, a low economic return for Federations due to the loss of judo players.

Assuming that the competition is a basic pillar of judo, we propose two main ways of action to boost the quality of judo, therefore the number of judoka and finally the resources obtained.

First, Coach Training as the way to improve the effectiveness of the coach when teaching, motivating more efficiently using new proved training methodologies that will minimise injuries and will keep judoka longer. This is, making judo a healthier sport.

Second, Judo Promotion as the key area to ‘explain’ what is judo, that it is a sport for physical and psychological development and that it can be seen as a way of life. The potential for judo is overwhelming.

In our opinion, if resources are dedicated more equally to these three lines (competition, coach training and promotion) the return in form of more judoka practising judo, for longer (less injuries) and with more motivation will definitely pay off as federations will receive more resources to invest in more judo projects and activities and will depend less on public funding and support from third parties.

We have a great opportunity. Let’s make use of it!

Keywords: judo, promotion, coach training, values, traditional, modern
Abstract (I)
Based on more than 35 years of experience coaching judo to children and adults, we have put together some ideas about how judo has been performing so far, and analyzed the main policies followed by the main drivers of this evolution in the National Federation.

The common factor identified is a clear focus on competition, where most of the resources are being deployed, although declining training and efforts to competition result in worldwide public exhibition of judo (e.g. Olympics, World Championships, etc.). Roughly 90% of all judo practitioners are active in competitions.

We have also identified that in many cases, coaches practiced in clubs and schools are based on traditional methods. The repetition and cut-and-try style training programmes, although this is slowly changing, there is the need to make a decided step forward on updating these methods. A common factor in these training programmes is the lack of resources. Depressed and weak resources lead to a lack of motivation, and a lack of motivation leads to less resources.

This focus conveys, in our opinion, a series of disadvantages for judo players and for the sport in a more general point of view, creating an instillation (especially in young players) of a high percentage of injuries for missing key competitions and a lack of respect to other sports that compete with judo when deciding what sport to practice.

Moreover, the consequences of this focus do not help to increase or maintain the base of judo which, at the end of the day, is the scores of income for Federations to develop programmes, events, competitions, congresses, etc.

Traditional judo as described above has a Low Economic Performance,

Abstract (II)
New ideas and innovative views are arising all over the World recently to modernise judo and put it to the level it deserves taking into account its History and number of players in the different countries.

We propose two main lines of action where we believe resources should be put to assure a more effective use of those, not forgetting competition:

- Coach training is paramount to guarantee a greater success of practitioners in terms of motivation, health and integral development, both physical and mental, making the best use of the know values of judo as a sport.
- Judo promotion is another key area to explain judo and make it to be seen as a 'way of life' as well as a method of education and social integration. We know judo is a great sport for integrating people of different social layers and disabled people, but also can be successfully used as a method for motivation and to boost work performance in companies as it is increasingly seen by Human Resources departments. We have detected that parents of children who do judo are not completely aware of the values and benefits of judo. When they realise (i.e. through making parents participate in judo shows as 'Judolandia 2013' in Madrid) their response is overwhelming. A big effort has to be made to 'spread' judo values among parents in schools, clubs and large events. The final aim of this new focus is to get more children practising judo and in a healthier way which will keep these judoka more time in the sport. By getting more judoka on board, more resources will be available to Federations and thus, more projects and activities would be possible avoiding the perpetual need of external funding to keep it up. It is possible!
Presentation Title:
Fun, conflict and persistence in the practice of judo adolescents: Differences between sex and age

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Institution:
Universidad de Valencia
Universidad Católica de Valencia
Nuno Delgado Escuela de Judo

Abstract
Several studies have indicated that the interest, use of mastery goals and Intrinsic Motivation of students decline with age. In terms of gender mixed results have emerged; while some studies report higher levels of intrinsic motivation, perceived competence and enjoyment for boys, others suggest that females Perceived higher levels of more self-determined types of motivation. The objective of this study was to analyse the existence of significant sex and age differences in the fun, conflict perception and intention to continue practicing judo in the future. The sample included 444 judokas, 319 boys and 125 girls, aged between 9 and 15 in two age groups. We used the scale translated into Spanish SSI (Sport Interest and Satisfaction Scale). Results indicated that judokas from 9 to 12 years have more fun during judo classes and although rates of perception of conflict are higher than the 13 to 15 years, intention to continue practicing judo is also higher. Regarding gender differences, girls are more fun and are more motivated to practice judo that boys in the future.

Keywords: judo intentions, self-determination theory, age differences, sex differences, fun, conflict
“Fun, conflict and persistence in the practice of judo adolescents: Differences between sex and age”

Olmos, V. (1); Carratalá, V. (1); Guzmán, J(1); Bermejo, J.L. (2); Delgado, N. (3)
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Introduction
A further postulation of Self-determination Theory (SDT) is that the innate needs are universal to all cultures, across gender, and throughout all developmental periods (Ryan & Deci, 2002). Several studies have indicated that the interest, use of mastery goals and Intrinsic Motivation of students decline with age. In terms of gender mixed results have emerged; while some studies report higher levels of intrinsic motivation (Jaakkola & Sepponen, 1997), perceived competence and enjoyment (Carroll & Loudimis, 2001) for boys, others suggest that females Perceived higher levels of more self-determined types of motivation (Vallerand & Bissonette, 1992; Fortier, Vallerand, Briere, & Provencher, 1995). In the present study we analysed the fun, conflict and intention of practice as predictors of adherence to the practice of judo.

Objectives
The aim of this study was to analyse the existence of gender and age differences in the fun, conflict and persistence in the practice of judo adolescent athletes.

Materials & Methods
Participants.
The sample included 444 judokas, 319 boys and 125 girls, between 9 and 15. Specifically, two age-group (9-12 year old and 13-15 years old) and two sex-group (boys and girl group) were considered.

Instruments.
We used the scale translated SSI (Sport Interest and Satisfaction Scale) of Baena-Extremera et al., 2012.

Results
Descriptive analysis was performed by estimating the basic statistics, mean, standard deviation and number of subjects.

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Sex</th>
<th>Mean</th>
<th>SD</th>
<th>N</th>
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<tr>
<td>Fun</td>
<td>9 to 12</td>
<td>Woman</td>
<td>4.3811</td>
<td>0.5591</td>
</tr>
<tr>
<td></td>
<td>Man</td>
<td>4.0800</td>
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<td>Total</td>
<td>4.2066</td>
<td>0.7748</td>
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</tr>
<tr>
<td></td>
<td>13 to 15</td>
<td>Woman</td>
<td>4.3905</td>
<td>0.5989</td>
</tr>
<tr>
<td></td>
<td>Man</td>
<td>4.0490</td>
<td>0.7653</td>
<td>141</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>4.1157</td>
<td>0.7532</td>
<td>198</td>
</tr>
<tr>
<td></td>
<td>Woman</td>
<td>4.3552</td>
<td>0.5583</td>
<td>125</td>
</tr>
<tr>
<td></td>
<td>Man</td>
<td>4.1833</td>
<td>0.7947</td>
<td>319</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>4.2440</td>
<td>0.79745</td>
<td>444</td>
</tr>
<tr>
<td>Judo intention</td>
<td>9 to 12</td>
<td>Woman</td>
<td>4.2232</td>
<td>0.7034</td>
</tr>
<tr>
<td></td>
<td>Man</td>
<td>4.1381</td>
<td>1.1714</td>
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<td>1.0727</td>
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<tr>
<td></td>
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<tr>
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<td>0.70748</td>
<td>125</td>
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<tr>
<td></td>
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<td>4.0201</td>
<td>0.7177</td>
<td>319</td>
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<td></td>
<td>Total</td>
<td>4.1790</td>
<td>0.79915</td>
<td>444</td>
</tr>
</tbody>
</table>

A reading of mean scores of the descriptive table (table 1), we note that fun, women obtained an average score of 4’3552, and men a score of 4’1383. Regarding intentions to continue practicing judo in the future, women get a score of 4’2656 and 4’2081 men. In both variables the women obtain higher score than men. Women also had higher mean scores in all age groups in fun and intention of practice, less perceived conflict in the group of 13 to 15 years, where the average score was higher for men.

On the other hand, a reading of mean scores of the age group (table 1), we note that fun, conflict and intentions to continue practicing judo in the average score was higher in 9 to 12 years group than 13 to 15.

Conclusions
The results indicate that the judokas from 9 to 12 years have more fun during judo classes and although rates of perception of conflict are higher than the group of 13 to 15 years, the intention to continue practicing judo is also higher. Furthermore, the results indicate that gender girls have more fun, and the intention to continue practicing judo in the future is greater, with the perception of conflict practically the same in both groups.

According to this model, the fun and perception of conflict of individuals affect their levels of self-determination for the sport, and thus affects the intention of sport in the future. Therefore, an increasing satisfaction of psychological needs through judo, will cause greater self-determination and hence higher sports practice intentions.

References
Presentation Title:

Judo: a new alternative to the spinal injured psycho-physic rehabilitation

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Abstract

We started our work under an investigation-action structure with the objective of giving a group of patients with spinal cord injuries the opportunity to take part in a sporting activity involving physical contact. The patients had done Judo before their accidents and were in the hospital for spinal injuries in Toledo for rehabilitation. After a study of clinical viability done by the rehabilitation team at the hospital, we started to develop the project “Judo for people with spinal cord injuries”.

OBJECTIVES: Initially the prime objective of the investigation was to see if there was clinical evidence to support the suggestion of using Judo as an additional method for both the physical and social rehabilitation of people with spinal injuries rather than a scientific objective. Others objectives were as follows:

• The integration of the physically handicapped by participating and enjoying physical combat sports.
• Improve the self-esteem of the participant.
• Help in the process of physical and social rehabilitation of the patient.
• Satisfy the demand of the patients to take part in a contact sport.

These objectives were seen to be fulfilled from the first session as affirmed by the rehabilitation services at the hospital for spinal injuries in Toledo. Just under two months from the beginning of the project, Judo was introduced as an alternative activity in the leisure time set aside for the patients.

With the objective of collaborating the subjective results seen during the work sessions, an evaluative strength test was done using the Isocountrol system, evaluating aspects relating to strength resistance, maximum dynamic strength and the production of strength.

In conclusion, we will summaries the different aspects that made Judo part of the programme of alternative sports in the Hospital for spinal cord injuries in Toledo.

-Physical condition - There was a notable improvement in strength resistance, maximum dynamic strength and the production of strength in the Judo group in relation to a control group. (This evaluation was done with the Isocountrol system 6.0)

An improvement of aerobic resistance was also noted.

Fundamentally, a significant improvement was noted in general dynamic co-ordination, evaluated using actions in the wheelchair.

...SOME OF THEM COMMENTED THAT “DOING JUDO WAS THE BEST THING THAT HAD HAPPENED TO THEM SINCE THEIR ACCIDENT”

Keywords: judo, Spinal cord injury; rehabilitation
We started our work under an investigation-action structure with the objective of giving a group of patients with spinal injuries the opportunity to take part in a sporting activity involving physical contact. The patients had done Judo before their accidents and were in the hospital for spinal injuries in Toledo for rehabilitation. After a study of clinical viability done by the rehabilitation team at the hospital, we started to develop the project “Judo for people with spinal injuries”.

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Presentation Title:

Finite element analysis of the judo mat systems in terms of head injury safety

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Abstract

Ukemi is the main precaution of the uke against the body injury during a regular judo throw. Since there exists numbers of judo technique which finalizes in different throwing routes, there also exists a number corresponding ukemis almost for each tachiwaza technique. In all type of the ukemis, the common point is to keep the head closer to the chest as much as possible in order to protect it against an undesired shocking impact considering the flexible nature of human neck. It is scientifically reported that, there is a risk of concussion or minor head injury when the force on the head exceeds 10 kN which is equal to 1 tons. This force can easily be reached in a judo throw at the time of the head impact on the tatami resulting from an uncontrolled ukemi. In order to avoid head injuries which may end up with serious results, the material properties and supporting conditions of the judo mat becomes of greater importance. In this study the shock absorption characteristics of judo mats are investigated considering three different support conditions. Finite Element Analysis (FEA) is carried out on judo mat model by using computer software SAP2000. The results show that, providing a timber platform base under the judo mat improves shock absorption capacity of the mat system and therefore decreases the probability of head injury considerably when compared to that of rigid concrete base. The main precaution against the head injury can be stated either to realize a regular ukemi, or to place timber platform under the tatami. In this poster, theoretical background of the problem, details of the FEA modelling and evaluation of the analysis results are presented.

Keywords: head injury, ukemi, judo mat, shock absorption, finite element analysis (FEA)
Finite element analysis of the judo mat systems in terms of head impact safety

ENGINEERING MODELLING OF IMPACTS

The physical laws that govern the head impact are described by the following equations:

\[ \frac{d^2 x}{dt^2} = -g + \frac{F(t)}{m} \]

Where \( x \) is the acceleration of the head, \( g \) is the acceleration due to gravity, \( m \) is the mass of the head, and \( F(t) \) is the force acting on the head.

The problem is solved numerically using the finite element method (FEM) and a commercial software. The judo mat is modeled as a composite material with an absorbing layer and a supporting base. The contacting elements are modeled with a contact algorithm to simulate the frictionless contact between the head and the mat.

Life Safety and Health is the most important issue in human life. Judo is a dynamic sport and philosophy that requires a balance of body and mind. Therefore, the judo mat must be designed to ensure the safety and health of the athletes.

CONCLUDING REMARKS

Life safety and health is the most important issue in human life. Judo is a dynamic sport and philosophy that requires a balance of body and mind. Therefore, the judo mat must be designed to ensure the safety and health of the athletes.

ACKNOWLEDGEMENT

Special thanks to Mr. Hendrick KOCH for his efforts and contributions during heavy potable water treatment.
Common techniques of judo and wrestling

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Abstract

This study is aimed at doing a comparative technical research to present the very similar—even the same techniques of judo and wrestling. Judo is an important sport for Turkish Olympic Sport History such that the first Olympic medal won by the Turkish women athletes came from judo, the first Olympic gold medal other than wrestling and weightlifting is also from judo. On the other hand, wrestling is one of the most popular and favorite individual sports in Turkey. Turkey has remarkable success in Olympic wrestling. Both sports have philosophy which is very similar to each other. However, this is not the unique similarity of both sports. There exist a number of common techniques of judo and wrestling. These common points of both sports have been creating sympathy and attention in between the practitioners and spectators of both sports in Turkey. In a lot of Turkish families, it is common to observe competitive judoka and wrestler sisters/brothers who have been oriented to both sports; generally due to initial traditional wrestling interest of parents. This is a sociological sportive phenomenon to be further investigated. Brief information about the common techniques of judo and wrestling are given and some of these techniques are hereby presented.

Keywords: judo, wrestling, common techniques
Physiological and Metabolic Responses to Special Judo Fitness Test: A Case Study

Stanisław Sterkowicz, Urszula Szmatłan-Gabryś, Tomasz Gabryś, Katarzyna Sterkowicz-Przybycien
University School of Physical Education in Cracow, Poland

1. Introduction

Training principles can be tailored to the needs of verification of the effects of contemporary training that typically occurs in three blocks (accumulation, transmutation and realization) [1,2], in which competitive readiness might be signalled by the results recorded during fitness tests [3]. Temporal structure [4,5] and technical type used in judo-specific test reminds that of competitive fighting [6,7]. Therefore, the researchers considered Special Judo Fitness Test (SJFT) for their experiments as an evaluation instrument, without neglecting metabolic responses to judo-specific effort [8-15]. Sikorski [16] argued that „Because of intermittent effort of high intensity, anaerobic glycolysis is mostly observed in judo elite athletes engaged in a contest”.

2. Objective

An answer to the following question: How will modification of throwing method affect changes in SJFT results, heart rate and lactic metabolic response in athlete?

5. Results and Discussion

Testee judo athlete (66 kg, 180 cm, international competitive level) performed 6+12+10 versus 8+13+13 throws in consecutive periods of SJFT variants RT vs. TR, respectively. His Index in both SJFT variants was 12.5 vs. 10.2, respectively. A typical HR (bpm) response kinetics for both RT and TR SJFT variants performed by this judoka is represented by a multiple X-Y plots (Fig. 1). During an exercise performed by this person for both test variants in the segment A of SJFT (1-15 s) heart rate was 150 bpm, whereas in the first interval (15-25 s) HR rose to 184 bpm (in RT variant) and 162 bpm (in TR variant). In segment B (25-55 s), HR in RT variant was maintained at the level of 184 bpm and, in variant TR, it increased from 163 to 184 bpm. During the second interval (55-65 s) the HR in both test variants remained at the same level (184 bpm). In segment C, HR rose to 193 bpm for RT variant and to 184 bpm for TR variant.

In this case, HR measured directly after the exercise was higher after RT variant compared to TR (see vertical line on Fig. 1). After one minute of rest, HR value decreased to 158 and 144 bpm, respectively. The fast-phase of recovery was reached 148 bpm for TR variant and 140 bpm for RT variant. Furthermore, La levels measured in 1st, 4th and 8th minutes of the recovery was changed in RT variant vs. TR, reaching 11.11, 11.72, 14.01 mmol/l-1 vs. 12.15, 12.43, 11.63 mmol/l-1, respectively.

Conclusions: (1) Changes in the throwing method in Ippon Seoi-nage improved the performance in Tandoku-renchu method SJFT variant. The athlete performed the majority of work during this variant using their lower limbs, whereas the throws, although with higher number, were repeated without the resistance caused by Uke in RT SJFT; (2) Performing the throws with Uke from lower weight categories might promote development of the speed.

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Poster presentation rules
April 25th 2013
Budapest, Hungary

4th POSTER EXHIBITION OF RESEARCH

All sessions will consist of presentations of scholarly works related to any aspect of Judo. Such areas may include, but are not limited to, topics related to the sport aspect of Judo, including exercise physiology, strength and conditioning, sport psychology, injury rehabilitation, rest and recovery, nutrition, and the like. Topics may also include any area of Judo history, philosophy, culture, or values as well. The audience will be mixed and include, academics, coaches, officials and the wider Judo family. Presenters, please bear this in mind when communicating your research. Proposals for the Poster presentation will be considered for inclusion in the program if they are received by the date specified below. The final schedule shall include proposals accepted for presentation. The European Judo Union is pleased to announce that it will present awards to at least three outstanding posters based on originality, methodology, quality, clarity, and contribution to Judo.

Conditions of Participation

Any researcher involved in scientific studies of Judo may submit a proposed abstract of a poster for consideration. Posters will be selected for display in the competition venue at the European Championships on the following days, at the EJU Congress and during the Education Seminar. The participants also accept to give to the EJU the rights to publish their posters on the EJU web-site and in the poster book.

Rules for Participation

1. A scientific poster from a University can be presented at the EJU Poster Exhibition, covering any discipline connected to Judo teaching and coaching areas.
2. Only authors from EJU countries will be admitted to the prize competition.
3. Scientific Posters by groups (minimum three authors) with only one author outside EJU countries will be admitted to EJU Prize competition.
4. Only one poster per author or group will be admitted to the prize competition.
5. If more than one poster is presented by the same author or group, the extra posters will be exhibited outside prize competition. (In this case, the author should identify which poster will be exhibited for the prize competition).
6. Every author or Group must send to the EJU Commission an Abstract of 300 words, a PDF copy of the poster for the Presentation Journal.
7. All the participants from EJU countries will be awarded an EJU participation certificate.
8. If the work of a Group or researcher outside EJU, are worthy of attention, they could be awarded a special distinction diploma by the EJU Commission.
These Participation Rules will be published (for the authors’ information) on the EJU site before the exhibition.
The Prize money will be awarded to develop future research or to buy scientific instrumentations for future research in the Judo Knowledge fields.
The results of these researches will be published by the Didactic Commission on the EJU site.
The Awards for the three winners will be remitted to the manager of each project:

1st place: 1500€
2nd place: 1000€
3rd place: 500€

Instructions for Submitting a Proposal for Poster Presentation

The European Judo Union Education Commission informs you that in 2013 there will be no poster presentation by the researchers on the spot of the exhibition. To be considered, participating researchers have to submit for presentation, before the 16th of March 2013:
Poster Presentation Proposal Cover Sheet and Individual Presentation Abstract (300 words), using the attached form only. Poster in PDF in 60x80cm, High Definition format

Submission Instructions

Abstracts should be submitted in English. This will be the official language for all posters. Information must be input directly into the forms provided and sent, by the specified deadline, via email attachment to headoffice@eju.net and international@ffjudo.com or by post to the address of the EJU Head office.

Evaluation Criteria

Elements of Poster Composition - Assessment Continuum (high to low)

I Quality
Please score each item on a 1 - 3 scale, with 1 = marginally adequate, and 3 = excellent

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<th>Quality</th>
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<td>Overall visual appeal</td>
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II. Technical Content

Please score each item as indicated [1 - 5 scale, with 1 = marginally adequate, and 5 = excellent; or select Yes/No for items thusly rated].

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<td>Transferability</td>
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<td>Tables &amp; Figures</td>
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<td>Conclusions/Future Directions</td>
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These Evaluation Criteria would be published (for the authors knowledge) on the EJU site before the exhibition.
4th European Science of Judo Symposium
25 April 2013, Hungary, Budapest

Mr. Ivan Segedi, Croatia
Mr. Luis Monteiro, Portugal
Mr. Hrvoje Sertic, Croatia
Mr. Vicente Carratala Deval, Spain
Dr. Hans Dieter Heinisch, Germany
Previous years laureates

2012 Laureates

1st place
Infrared thermography-calorimetric quantitati on of energy expenditure in biomechanically different types of judo throwing techniques
Carl De Crée, Italy

2nd place
Analysis of the differences in explosive strength, power and resistance of explosive strength indicators, in senior and junior judokas
Luís Monteiro, Portugal

3rd place
Personality traits of coaches, referees and judokas vs. accuracy of evaluation of selected judo actions based on video analysis
Jan Supinski, Poland

2011 Laureates

1st place
Analysis of differences in tensiomyographic (TMG) indicator variation in high-performance judoists, as influenced by the presence or absence of pre-competition dehydration
Dr. Garcia Garcia, Jose M., Spain

2nd place
Development and implementation of new methods for the analysis of technical-tactical actions in judo
Roland Oswald, Hans-Dieter Heinisch, Jens Heinrich, Germany

3rd place
Effect of coordination motor abilities on fighting method and sport level in cadet judo contestants
Grzegorz Lech, Stanisław Sterkowicz, Janusz Jaworski, Robert Krawczyk, Poland

2010 Laureates

1st place
The acute effect of exercise on oxidative stress biomarkers
TRIVIC Tatjana, Serbia

2nd place
Causes and types of injuries during Ippon-Seoi-Nage throw
RUKASZ Wojciech, Poland

3rd place
Lateralization effect on technical and tactical behavior considering results of judo fights
STERKOWICZ Stanislaw, Poland
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