



FEDERATION INTERNATIONALE DE JUDO  
INTERNATIONAL JUDO FEDERATION

CAMPEONATO  
MUNDIAL DE JUDÔ

RIO 2007

25<sup>th</sup> WORLD JUDO CHAMPIONSHIP

September, 12<sup>th</sup>, 2007

RIO DE JANEIRO – BRAZIL

# Annals of the 5<sup>th</sup> International Judo Federation World Research Symposium





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# **Annals of the 5<sup>th</sup> International Judo Federation World Research Symposium**



**EDITORS:**  
**Fabricio Boscolo Del Vecchio**  
**Emerson Franchini**

# Welcome Note

31 August 2007

Dear Conference Participants, Guests, and Friends;

On behalf of the International Judo Federation, its member nations, delegates, directorates, officials, and all members of the "Olympic Family," it gives me great honor and privilege to welcome you to the 5<sup>th</sup> International Judo Federation World Judo Research Symposium.

During the symposium, researchers from around the world will make oral and poster presentations of their studies related to judo. The presentations display work related to various aspects of judo, including research on the techniques, history, philosophy, and sporting aspects of judo. All participants are also welcome and encouraged to visit the poster presentations immediately following the conclusion of the symposium, where presenters will be available to discuss their work in greater detail and answer any questions you may have. We are fortunate to have these fine researchers from around the world presenting their work at the 5<sup>th</sup> IJF World Judo Research Symposium. Please visit their displays.

To all of you, I wish a successful and meaningful conference, hoping that each and every one of you find something to take back with you to your home countries that will help judo to continue to grow as the world's premier sport – and way of life.

Sincerely,

A handwritten signature in black ink, appearing to read 'Y.S. Park', with a large, stylized initial 'Y'.

Y.S. Park  
President, International Judo Federation

David Matsumoto, Ph.D.  
OFFICIAL RESEARCHER

4 September 2007

Dear Friends;

It gives me great pleasure to welcome all of you to the 5<sup>th</sup> International Judo Federation World Judo Research Symposium. As in the past, researchers from around the world will present their studies on various aspects of judo. It is a great time of intellectual and cultural exchange of ideas, opinions, and feelings about judo from a scientific and academic standpoint.

This year is special, because we hope to formalize the creation of the International Association of Judo Researchers (IAJR). This association will help to legitimize the work of judo researchers throughout the world, and bring mutual peace and harmony through the scientific study of judo.

It has been my great pleasure to serve you and the IJF since 1998. I sincerely wish for the best for all of you in your scientific endeavors in judo, and for the success and prosperity of the IAJR in the future.

Sincerely,

A handwritten signature in black ink that reads "David Matsumoto". The signature is written in a cursive, flowing style.

David Matsumoto, Ph.D.  
Official Researcher

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Takashi Watanabe

## MEDIADORES PSICOLÓGICOS Y MOTIVACIÓN DEPORTIVA EN JUDOCAS ESPAÑOLES

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### RESUMEN

El presente trabajo pretendió analizar las diferencias de la motivación en situación precompetitiva de judocas en función de los mediadores psicológicos (percepciones de competencia, apoyo a la autonomía y relaciones sociales), tal y como postula el Modelo Jerárquico de la Motivación Intrínseca, Extrínseca y Amotivación (Vallerand, 1997, 2001; Vallerand y Losier, 1999). Se empleó una muestra de 181 judocas de edades comprendidas entre los 14 y 16 años. Utilizamos una metodología selectiva, con diseño prospectivo simple. Los datos se analizaron mediante un MANOVA, tomando como variables independientes los mediadores psicológicos y el sexo de los deportistas y como variables dependientes cada una de las subescalas de la motivación planteadas en la Sport Motivation Scale (Pelletier et al., 1995). Los resultados apoyaron parcialmente los postulados de la teoría. Se verificaron las diferencias en MI en función de la percepción de competencia, apoyo a la autonomía y relaciones sociales. También se verificaron parcialmente las diferencias en la ME autodeterminada y de la amotivación en función de estas percepciones. Sin embargo cabe destacar que las diferencias en ME de regulación externa encontradas en función de estas percepciones se dieron en dirección opuesta a los postulados de la teoría. Se explica este resultado a partir de la situación precompetitiva en la que se encontraban los deportistas.

### 1. INTRODUCCIÓN

Vallerand (Vallerand, 1997, 2001; Vallerand y Losier, 1999) propuso el Modelo Jerárquico de la Motivación Intrínseca, Extrínseca y Amotivación como un instrumento para organizar y comprender los mecanismos básicos que regulan la motivación en el ámbito del deporte y el ejercicio. Este modelo se plantea a partir de la teoría de la evaluación cognitiva (Deci, 1975; Deci y Ryan, 1985, 1991) y plantea la existencia de motivación intrínseca, extrínseca y amotivación. La motivación intrínseca se refiere a la búsqueda de placer y satisfacción en la práctica deportiva (Deci y Ryan, 1985), la motivación extrínseca se refiere a la participación en la actividad como medio para conseguir un objetivo externo a ella (Deci, 1975), por último, la amotivación se refiere a la falta de motivación o de intencionalidad de seguir practicando. Así mismo, dentro de la motivación intrínseca distinguió entre motivación intrínseca de conocimiento (interés por progresar en la comprensión de la actividad), motivación intrínseca de estimulación (interés en la actividad por las sensaciones experimentadas en su práctica) y motivación intrínseca de ejecución (interés por progresar en la adquisición de habilidades). Dentro de la motivación extrínseca también identificó tres tipos diferentes, progresivamente más exteriores a la persona. La motivación extrínseca identificada se refiere al interés por la práctica deportiva para conseguir metas consideradas como relevantes por el sujeto para su desarrollo personal. La motivación extrínseca introyectada hace referencia a la práctica deportiva por evitar el sentimiento de culpa por no practicarla. Por último, la motivación extrínseca de regulación externa considera el interés por participar en el deporte para conseguir premios o recompensas.

Siguiendo con el modelo, éste considera que los tipos de motivación se dan en la persona a tres niveles jerárquicos de generalidad, que desde el inferior al superior son el nivel situacional (o estado), el

contextual (o ámbito vivencial) y el global (o de personalidad), pudiendo la motivación de un nivel influir sobre la de los demás.

Por otro lado, entiende que la motivación resulta de factores sociales y está mediatizada por las percepciones que los sujetos tienen acerca de la autonomía, competencia y relaciones sociales que experimentan en la práctica deportiva. Este papel “mediador” lo atribuye al hecho de que las percepciones indicadas se relacionan con las necesidades fundamentales humanas. La necesidad de competencia implica que los individuos tienen un deseo de interactuar efectivamente con el medio, para experimentar un sentido de competencia al producir resultados deseados y prevenir eventos no deseados (Connell y Wellborn, 1991; Deci, 1975; Deci y Ryan, 1985; Harter, 1978; White, 1959). La necesidad de autonomía refleja un deseo de comprometerse en actividades por propia elección, siendo el origen de la propia conducta (de Charms, 1968; Deci, 1975, 1980; Deci y Ryan, 1985). Finalmente, la necesidad de relaciones sociales (Bowlby, 1988; Harlow, 1958; Richer y Vallerand, 1998; Ryan, 1993) se refiere a sentir que uno pertenece a un entorno social dado (Baumeister y Leary, 1995, realizan una revisión del tema). Plantea que cuando los factores sociales son percibidos como un soporte del sentimiento de autonomía, competencia y relaciones sociales, éstos tienen un impacto positivo sobre la motivación, siendo ésta alta e intrínseca, mientras que cuando los factores sociales son percibidos como promotores de baja autonomía, competencia y relaciones sociales, éstos probablemente llevarán la motivación hacia aspectos extrínsecos y en el caso de que no se consigan llevarán a la amotivación, que causará el descenso del rendimiento, emociones negativas y el abandono de la práctica. Resumiendo, esta teoría argumenta que la motivación produce importantes consecuencias cognitivas, conductuales y afectivas, y que mientras la motivación intrínseca se asocia con las consecuencias más positivas, la amotivación con las más negativas. La motivación extrínseca produce resultados negativos cuando los objetivos externos no se consiguen.

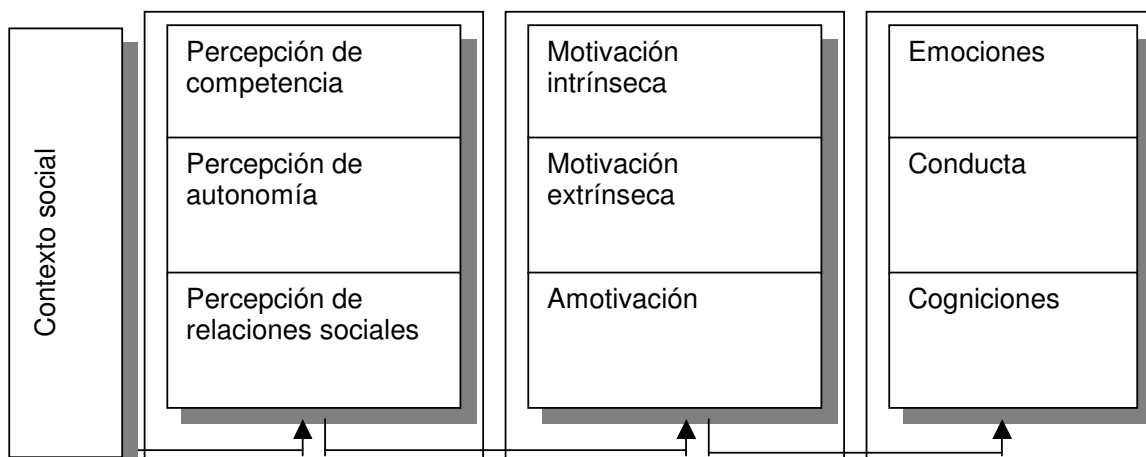


Figura 1. Relaciones causales, en un nivel jerárquico, propuestos por el Modelo Jerárquico de la Motivación.

En el contexto del deporte y de la actividad física diversos estudios han analizado el papel mediador de la percepción de competencia (Goudas y Biddle, 1994b; Vallerand y Reid, 1984; 1988; Whitehead y Corbin, 1991). Sin embargo, el impacto de la percepción de autonomía y de relaciones sociales ha sido menos estudiado, aunque diversos estudios (Blanchard y Vallerand, 1996a, 1996b; Cadorette et al., 1996) analizaron el papel de los tres mediadores psicológicos a nivel situacional y contextual obteniendo resultados consistentes con el modelo propuesto.

Tomando en consideración esta teoría el presente trabajo tuvo como objetivo replicar los estudios anteriores analizando las diferencias en la motivación en situación precompetitiva deportiva de judocas adolescentes en función de las percepciones de competencia, apoyo a la autonomía y relaciones sociales. La variable sexo se introdujo como variable independiente para eliminar la posibilidad de que actuara como una variable extraña, alterando los resultados del análisis.

## 2. METODOLOGÍA

### 2.1. MUESTRA.



En el presente estudio participaron un total de 181 judocas de edades comprendidas entre los 14 y 16 años, de los cuales 39 (19 varones y 20 mujeres) eran componentes del equipo nacional cadete y 142 (81 varones y 61 mujeres) no pertenecían al equipo nacional.

## 2.2. INSTRUMENTOS.

Para el estudio empleamos la traducción al castellano de los cuestionarios que aparecen en la tabla 1.

Tabla 1. Variables del estudio e instrumentos de medida utilizados.

Percepción de competencia en la práctica deportiva.	EPCDV. Echelle des Perceptions de Competence dans les domaines de vie. Losier, Vallerand y Blais (1993).
Percepción de autonomía en la práctica deportiva.	EPADV. Echelle des Perceptions d'Autonomie dans les domaines de vie. Blais y Vallerand (1992).
Percepción de relaciones sociales en la práctica deportiva.	ERIS. Échelle des Relations Interpersonelles dans le Sport. Losier y Vallerand (1995).
Motivación deportiva.	SMS. Sport Motivation Scale. Pelletier et al. (1995).

## 2.3. DISEÑO Y PROCEDIMIENTO.

El presente estudio utilizó una metodología selectiva, con un diseño Prospectivo simple, en el que se tomaron como variables de selección las variables Percepción de competencia, de autonomía y de relaciones sociales en la práctica deportiva, dicotomizadas en altas o bajas utilizando las medianas, asimismo también se consideró la variable sexo. Como variables dependientes se tomaron los tipos de motivación postulados en el Modelo Jerárquico de la Motivación.

Los cuestionarios fueron administrados con previo consentimiento de los entrenadores y de los deportistas. Los componentes de nivel internacional los cumplimentaron en una competición de la selección nacional, mientras que los deportistas de nivel nacional los rellenaron en el campeonato de España.

## 3. RESULTADOS

### 3.1. ANÁLISIS ESTRUCTURAL: PROPIEDADES PSICOMÉTRICAS DE LOS INSTRUMENTOS.

#### 3.1.1. Análisis de la Escala de percepción de competencia estado.

La escala de Percepción de Competencia Estado mide la percepción por parte del deportista de su propia competencia para la tarea. El análisis factorial confirmó la existencia de un factor, que explicó el 47,76% de la varianza. Las puntuaciones factoriales de los ítems de la escala obtuvieron valores comprendidos entre .82 y .43, aunque fue eliminado el ítem 3 por no alcanzar una puntuación factorial igual a .40. El coeficiente Alpha obtuvo un valor de .68.

#### 3.1.2. Análisis de la Escala de Percepción de apoyo a la autonomía estado.

La escala de Percepción de Apoyo a la Autonomía Estado mide la percepción por parte del deportista de su propia autonomía para ejecutar la tarea. El análisis factorial confirmó un factor, explicativo del 57,32% de la varianza. Las puntuaciones factoriales oscilaron entre .84 y .62, aunque tuvo que eliminarse el ítem 13 por no conseguir un valor igual a .40. El coeficiente Alpha mostró un valor de .94.

#### 3.1.3. Análisis de la Escala de percepción de relaciones sociales estado.

La escala de Percepción de Relaciones Sociales Estado mide las relaciones que mantiene el deportistas con el resto de deportistas. A pesar de que la escala está compuesta por cinco subescalas, referidas a las relaciones del deportista sus compañeros de equipo, entrenador, oponentes, árbitros/jueces y espectadores, en nuestro análisis, con el objetivo de simplificar el número de variables estudiadas,

consideramos un solo factor que integraría el conjunto de estas relaciones, el cual explicó el 42,51% de la varianza. Debido a la existencia de esas subescalas asumimos una menor consistencia interna del cuestionario y consideramos que para que cada ítem pudiese ser estimado obtuviera un peso mínimo de .35. Tres ítems (7, 14, 16) no alcanzaron ese valor por lo que fueron eliminados, el resto obtuvo puntuaciones factoriales entre .79 y .39 El coeficiente Alpha obtuvo un valor de .91.

### 3.1.4. Análisis de la Escala de Motivación Deportiva.

Según este cuestionario existen siete tipos de motivación, tres corresponden a la motivación intrínseca (MI): la MI de conocimiento, la MI de estimulación y la MI de ejecución. Otras tres corresponden a la motivación extrínseca (ME): ME de identificación, ME de introyección y ME de regulación externa. Por último identifica la amotivación como la falta de motivación hacia la actividad, considerándola predictora del abandono de ésta.

Para validar esta escala realizamos un análisis factorial con SEM (Structural Equation Modeling), utilizando los programas estadísticos SPSS y AMOS. Los resultados de este análisis mostraron un adecuado ajuste de conjunto, con unos coeficientes:  $\chi^2/g.l = 2,403$ ; TLI = 0,968; CFI = 0,960; ; RMSEA = 0,088. Carmines y McIver (1981) consideran que valores de  $\chi^2 /g.l$  inferiores a 3 indican un buen ajuste. Según Hu y Bentler (1999) consideran que el modelo se ajusta a los datos empíricos cuando el TLI es superior a .90, y defienden que este índice es muy recomendable cuando se trabaja con muestras pequeñas. Bentler (1995) consideran que valores superiores .90 del CFI indican un adecuado ajuste del modelo. Por último, Browne y Cudeck (1993) consideran como aceptables valor del RMSEA inferiores a .08. El único índice que no obtiene resultados satisfactorios es éste último, estando, no obstante, cerca de este valor.

### 3.2. ANÁLISIS DESCRIPTIVO

Calculamos la media de cada una de las subescalas de la motivación en función de cada una de las variables de selección, dicotomizadas en altas o bajas utilizando la mediana.

Los grupos de alta percepción de competencia, percepción de apoyo a la autonomía y percepción de relaciones sociales mostraron mayores puntuaciones en todas las subescalas de motivación, a excepción de la amotivación.

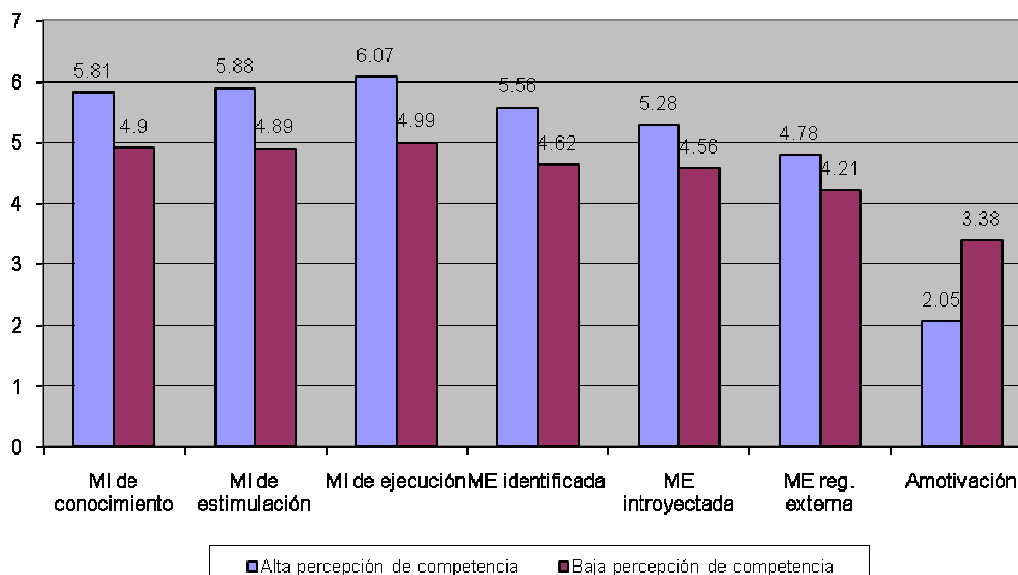


Figura 2. Puntuaciones en motivación en función de la percepción de competencia.

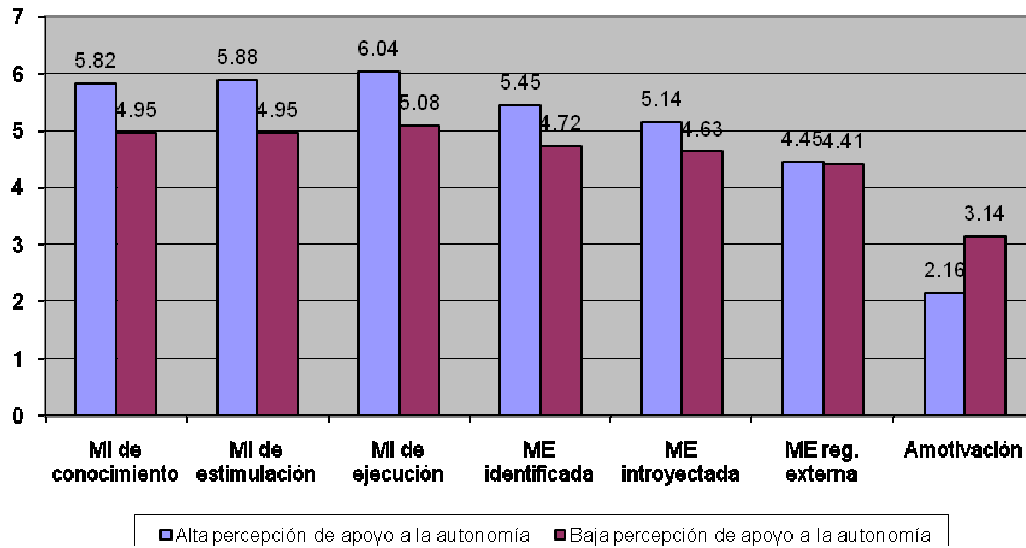


Figura 3. Puntuaciones en motivación en función de la percepción de apoyo a la autonomía.

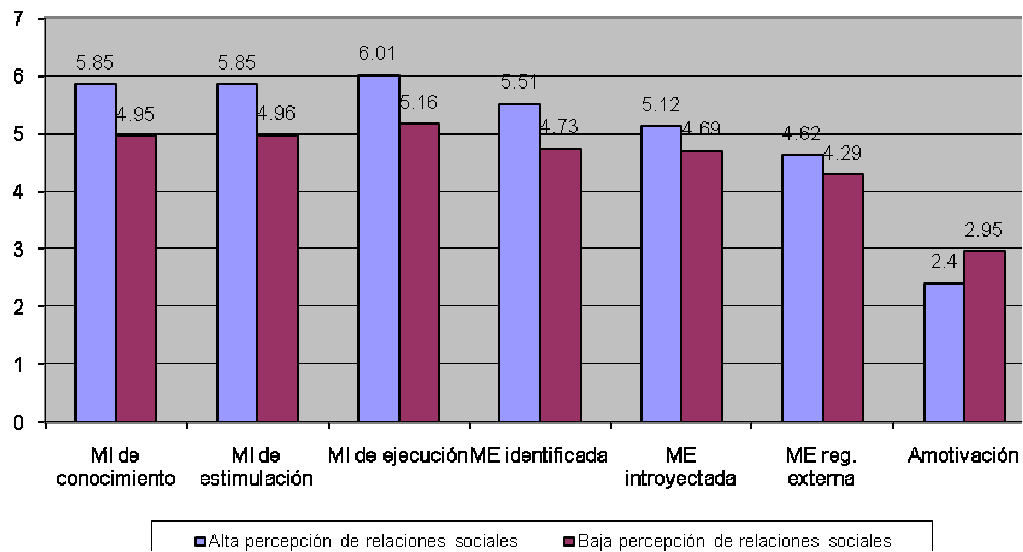


Figura 4. Puntuaciones en motivación en función de la percepción de relaciones sociales.

### 3.3. ANÁLISIS INFERENCIAL

Con el objetivo de analizar la significatividad de las diferencias observadas en el análisis descriptivo, realizamos un MANOVA tomando como variables independientes la percepción de competencia, la percepción de apoyo a la autonomía, la percepción de relaciones sociales (dicotomizadas en altas y bajas) y la variable sexo para controlarla como variable extraña. Por otro lado, las variables dependientes fueron las subescalas de la motivación deportiva.

La prueba de los contrastes multivariados mostró efectos significativos sobre el conjunto de subescalas de la motivación de la percepción de competencia ( $p < .001$ ), percepción de apoyo a la autonomía ( $p = .027$ ) y percepción de relaciones sociales ( $p = .026$ ). Ni el sexo ni ninguna interacción mostraron efectos significativos.

La prueba de los efectos inter-sujetos mostró efectos significativos de la percepción de competencia sobre la MI, la ME identificada e introyectada y la amotivación. La percepción de apoyo a la

autonomía produjo diferencias significativas en la MI y la percepción de relaciones sociales alcanzó efectos significativos sobre la MI, la ME identificada y de regulación externa, y la amotivación.

Tabla 2. Efectos obtenidos en las pruebas de los efectos inter-sujetos

Fuente	Variable dependiente	SC tipo III	gl	MC	F	Sig.
Factor	MI de conocimiento	2,704	1	2,704	4,052	,047
Percepción de competencia	MI de estimulación	7,939	1	7,939	12,300	,001
	MI de ejecución	9,213	1	9,213	15,470	,000
	ME identificada	10,967	1	10,967	11,990	,001
	ME introyectada	8,802	1	8,802	7,143	,009
	ME de regulación externa	5,006	1	5,006	3,719	,057
	Amotivación	22,502	1	22,502	13,264	,000
Factor	MI de conocimiento	3,265	1	3,265	4,892	,029
percepción de apoyo a la autonomía	MI de estimulación	3,994	1	3,994	6,188	,014
	MI de ejecución	3,569	1	3,569	5,994	,016
	ME identificada	,528	1	,528	,577	,449
	ME introyectada	,263	1	,263	,214	,645
	ME de regulación externa	4,543	1	4,543	3,375	,069
	Amotivación	5,567	1	5,567	3,281	,073
Factor	MI de conocimiento	9,825	1	9,825	14,722	,000
percepción de relaciones sociales	MI de estimulación	7,258	1	7,258	11,245	,001
	MI de ejecución	3,928	1	3,928	6,596	,012
	ME identificada	7,061	1	7,061	7,720	,006
	ME introyectada	2,872	1	2,872	2,331	,130
	ME de regulación externa	7,650	1	7,650	5,683	,019
	Amotivación	1,023	1	1,023	,603	,439

Nota: No aparecieron efectos significativos del sexo ni de las interacciones, por lo que no se indican

#### 4. DISCUSIÓN Y CONCLUSIONES

Los resultados obtenidos en el estudio dan soporte parcial al Modelo Jerárquico de la Motivación (Vallerand, 1997, 2001; Vallerand y Losier, 1999) según el cual las percepciones de competencia, autonomía y relaciones sociales actúan como variables que median la influencia de los factores sociales sobre la motivación. Según esta teoría altas percepciones llevarán a alta MI y ME autodeterminada (identificada e introyectada), mientras que bajas percepciones tendrán efectos negativos sobre la MI y la ME autodeterminada y elevarán la ME de regulación externa y la amotivación.

Los efectos de la percepción de competencia concuerdan en parte con la teoría, puesto que los mayores niveles de percepción de competencia se relacionaron con mayores puntuaciones en MI y ME autodeterminada (identificada e introyectada). Asimismo, la amotivación se relacionó negativamente con esta percepción. En cuanto a la ME de regulación externa, ésta estuvo cerca de relacionarse con la percepción de competencia ( $p=.057$ ), pero en sentido contrario a la propuesta de la teoría, puesto que los mayores niveles de ME de regulación externa se dieron en el grupo de alta percepción de competencia.

Los efectos de la percepción de apoyo a la autonomía sobre la motivación van en la línea propuesta por la teoría, puesto que se dieron mayores niveles de MI en los deportistas con altos niveles de percepción de autonomía. No obstante, no se dieron efectos significativos sobre la ME de regulación externa y amotivación.

Por último, los efectos de la percepción de relaciones sociales sobre la motivación fueron en la dirección prevista en lo relativo a la MI y ME identificada. No obstante, los efectos sobre la ME de regulación externa fueron en la dirección contraria a la hipotetizada por la teoría, puesto que los mayores niveles de ME de regulación externa se dieron en el grupo de alta percepción de relaciones sociales.

En conclusión, los resultados del estudio verifican las diferencias en MI en función de la percepción de competencia, apoyo a la autonomía y relaciones sociales. También se verifican parcialmente las diferencias en la ME autodeterminada en función de estas percepciones, habiendo encontrado diferencias significativas en función de la percepción de competencia y relaciones sociales. Por último, también se verifica parcialmente las diferencias en amotivación, siendo significativas en función de la percepción de competencia.

Conviene resaltar como conclusión que en nuestro estudio se produjo una tendencia no predicha por la teoría, encontrándose efectos de la percepción de relaciones sociales sobre la ME de regulación externa,

de forma que mayores niveles de percepción de competencia se correspondieron con mayores niveles de ME de regulación externa. Asimismo, los efectos de la percepción de competencia ( $p = .057$ ) y de percepción de apoyo a la autonomía ( $p = .069$ ) también estuvieron cerca de la significación estadística, con la misma tendencia que para la percepción de competencia. Parece ser que en situación precompetitiva, donde el hecho de ganar o perder, y de conseguir las recompensas asociadas a la victoria, adquiere mayor relevancia, los mediadores no se relacionan negativamente con la ME de regulación externa sino que lo hacen positivamente. Pensamos que en esta situación la ME de regulación externa, si no es demasiado elevada podría relacionarse con una mejor actuación del deportista en la competición.

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CONSEQUENCES OF CUTTING WEIGHT ON INDICES OF BONE METABOLIC HEALTH IN  
ELITE FEMALE JUDOISTS

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Similar to other disciplines organized in weight classes, judo athletes go through extreme measures in terms of training and dieting, to make the lightest possible weight category. High-level competitive judo is associated with frequent musculo-tendinous injuries. It has been observed that female judoists who take estrogen-containing contraceptives had approximately one-third less such injuries than nonusers. In consequence, it has been suspected that a relationship exists between hormones, muscles, bones and injuries in high-level female judoists. The question arises whether such injuries could be related to maintaining minimal body mass and menstrual status. The purpose of this study was to quantitatively and qualitatively assess the effects of severe training and weight cycling in elite judoists on bone and muscle metabolism. Participants included 27 nulliparous, female, elite-judoists (age 17-29 yrs), <72 Kg body mass, no hormonal contraceptives, an age-matched control group (oarswomen). Measurements comprised anthropometry, cardiorespiratory, hormone and urinalysis in both the follicular and luteal phases. Subjects participated in a five-week program of heavy aerobic, anaerobic, and resistance training as part of Olympic preparations. Sharp increases were observed in parameters of muscle & bone breakdown, to the extent that myoglobinuria was present. These phenomena were correlated with the amount of weight loss and amenorrhic status. The decreases in plasma estrogens and increases in bone and muscle turnover were accompanied by the number of injuries almost tripling. The results suggest that judo training-induced periods of weight loss produce transient bone and muscle catabolism, which is restored when gaining or maintaining healthy body mass. However, in women judoists, recovery of normal bone and muscle status requires eumenorrhea and normal circulating estrogens. The considerable weight-bearing and biomechanical stress which judo practice exerts on bone, results in positive long-term effects on bone health if normal menstruation is maintained or soon restored.

EFFECTS OF RECREATIONAL AND COMPETITIVE JUDO KATA PRACTICE ON  
CARDIORESPIRATORY HEALTH AS EVALUATED BY A PORTABLE GAS ANALYZER  
SYSTEM. A PILOT STUDY

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The last couple of years there is an increased interest in judo kata practice, triggered by the introduction of kata contests at an international level. Various physiological and psychological scientific studies have focused on karate kata, but virtually no attention has been paid by the medical literature to the cardiopulmonary or other effects or requirements of judo kata practice. The purpose of this study was: (1) to gain initial cardiorespiratory data in both recreational and competitive judo kata players, and (2) to test the suitability of the Jaeger Oxycon Mobile™ portable gas analyzer system in similar studies. Twenty-four male subjects participated in these tests. Judo kata are standardized formal choreographic exercises, of which commonly 7 different exercises are practiced, usually in couple. Sei-ryoku zen'yō kokumin taiiku was not included because of its various solo components. Each kata was tested, though not all subjects were able to perform all kata given the highly advanced level required to suitably perform the two ultimate kata. Cardiorespiratory data were obtained by using a Jaeger Oxycon Mobile™ portable gas analyzer system, while blood lactate was determined by use of a portable lactate analyzer. Results showed that kata practice is an excellent aerobic exercise, of which the low injury component makes it suitable for judo practitioners of all ages. Considerable differences in energy expenditure exist between performers despite the standardization. We suggest that the level of experience as well as self-determined pace, intensity and type of kata are responsible for these results. Portable gas and lactate analyzers are suitable instruments to study the cardiorespiratory needs of judo kata practice.



BLUE JUDOGIS MAY BIAS COMPETITION OUTCOMES

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In this study we investigated the existence of a win bias in judo competition as a function of judogi color. We analyzed the results of four major international competitions – the 2001, 2003, and 2005 World Championships, and the 2004 Athens Olympic Games – in terms of whether or not athletes were more likely to have won their matches when wearing the blue judogi. The results indicated a statistically significant bias in winning percentage for male athletes who wear the blue judogi, but not for females. This bias increased within a tournament from beginning to end, and across years.

Key Words: Judo Judogi color competition outcomes bias

BRAIN PLASTICITY: EFFECTS OF JUDO PRACTICE ON GRAY MATTER VOLUME

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Rationale: Experimental animal studies have shown that physical exercise, planning and execution of complex movements are associated with changes in brain structure. These changes possibly reflect plastic modifications of the cortical mantle in response to an enhanced demand imposed by motor task and/or physical exercise. In humans, cortical plasticity in relation to physical activities is yet to be fully determined and quantified. Objective: To investigate changes on gray matter volume in judo players using voxel-based-morphometry (VBM) of high resolution MRI. Methods: Eight high-level judo players and eighteen healthy controls were enrolled in this study. MRI was performed in a 2T scanner (Elscent Prestige Haifa, Israel). VBM was performed using the software package SPM 2 on T1-weighted images with 1 mm isotropic voxels. The resulting gray matter volume (GMV) probabilistic maps were compared, voxel-by-voxel, using the Wilcoxon test, in order to determine differences in gray matter concentration between controls and judo practitioners. Statistical results were correct for multiple comparisons using a false discovery rate corrected p-value of .05. Results: We found significant increase in regional gray matter in the judo players' group. Increase in gray matter volume was found in the frontal lobe (pre-central gyrus, frontal middle and superior gyrus, supplementary motor area; paracentral gyrus, frontal inferior triangular gyrus, frontal middle and superior orbital gyrus, rectus gyrus and opercular gyrus), parietal lobes (parietal superior and inferior gyrus and precuneus), occipital lobes (occipital superior and middle gyrus) and temporal lobes (temporal middle and inferior gyrus). There was also increase in the grey matter volume of the cerebella (cerebellum 1, 7b and 6). Conclusion: Our findings suggest that motor planning and execution, embedded in judo practice, can induce changes in the brain GMV.

STUDY ON MECHANISM OF INJURY GENERATION AND REDUCTION THERAPY BASED ON  
JUDO FORMS CALLED AS KATA

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The techniques of Hiza-gatame (knee lock) and Hara-gatame (stomach lock) called as Kime-no-Kata aim at a positioning of elbow joints to cause a dislocation. Here, the underlying mechanism for the dislocation theory and reduction theory were investigated from the aspects of Kansetsu-waza (joint techniques). We examined the mechanisms focusing on the motion of body and the positioning of joints as well as power direction and its timing in relation to Judo-Seifuku therapy and verify the mechanism through Judo techniques in practice. Kime-no-Kata in Judo mainly consists of Atemi-waza (striking techniques) and Kansetsu-waza (joint techniques), and also includes Nage-waza (throwing techniques) and Katame-waza (grappling techniques). Their offensive and defensive techniques are essential for waza. These waza are able to verify the individual motion by actually reproducing the respective components. The techniques of Suriage (knee lock) and Tukkomi (stomach lock) aim to let the opponent lose balance utilizing the offensive force while keeping one's own balance, resulting that direct and indirect forces are loaded on the opponent's elbow joints. The force produced by Kansetsu-waza is able to easily induce a dislocation in an instance via the action of moment applying the principle of leverage. When compared with the conventional reduction procedures in clinical practice and Roser's procedures that retrospectively follow the generation process of dislocation, these procedures for Seifuku therapy are basically coincident except for a loading of excessive extension on the elbow joint. Kansetsu-waza, a decisive technique form called as Kime-no-Kata aims to take a posture of dislocation by effectively loading an external force. The dislocation generation theory (injury generation mechanism) and the theory of Judo reduction therapy retrospectively following the generation process of dislocation from the aspect of kinetics were reviewed to clarify the respective characteristics. Thus, Judo-Seifuku theory was introduced through conversely tracing the individual motions of Kansetsu-waza.

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**Introduction:** The aim of the study was to determine some motoric characteristics effecting to success at judo and judoist. **Material and Methods:** For that reason, totally 250 athletes (man and woman) beginning the judo at recently were tested (pre-test) by some motoric tests, designed in the beginning of research, at the March of 2003 in Edirne. The development of the selected judoists has been watched throughout three years. The 50 athletes (man and woman), who have been continuing the judo, were tested again (post-test) at the July of the 2006. Judoists were separated in two groups. One is successful (who were in national team of the Türkiye, and placed in the champion of the Türkiye) and the other is unsuccessful (who were not in national team of the Türkiye, and not placed in the champion of the Türkiye). The tests were; weight, height, statistics balance test, dynamics balance test, coordination test, quickness test, long jump test and speed test in the research. All gathered data were analyzed by the SPSS for Windows. Descriptive analysis and Wilcoxon Signed Rank Test (pre-test – post-test for successful women judoists and unsuccessful women judoists) were used for statistical evaluation at significance level  $p<0.05$  and  $p<0.01$ . **Results:** There were no significance differences between the pre-test and post-test for successful women judoists, the value of quickness tests, long jump test and speed test. However there were a significance differences at the level of  $p<0,05$  between the pre-test and post-test for successful women judoists, the value of statistics balance test, dynamics balance test and coordination test. There were no significance differences between the pre-test and post-test for unsuccessful women judoists, the value of statistics balance test, dynamics balance test, coordination test, quickness tests, long jump test and speed test. **Conclusion:** The athletes could have a good value of the parameters decided in the research in order to be a successful women judoists or selecting a successful women judoists, together with good physical, physiological and psychological criteria.

**Keywords:** judo, statistics balance, dynamics balance, coordination, quickness, speed.

A COMPARATIVE STUDY OF THROWING SPEED BETWEEN HEAVIER AND LIGHTER  
CATEGORIES IN JUDO

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The aim of this work was to verify if there was a difference in throwing speed performance between heavier and lighter weight categories in judo. Sixteen judoists aged 18±3 years-old, eight considered in the light weight category (-73 kg) and eight considered in the heavy weight category (+73 kg) participated in the study. A force/velocity test was used to determine the anaerobic power, strength, and pedal speed for each subject. Three trials of Nage-komi exercise, each comprised of 15s sets of Osoto-gari, Uchi-mata and Ippon-seoi-nage throws were performed by each subject to ascertain throwing speed. Throws within the sets were intersected by one period of 3 minute passive rest while the trials were separated by one period of 10 minute passive rest. Heart rate and the greatest number of throws within each set were measured for three trials. We used an ANOVA to compare the number of throws between the two weight categories and a "Student" test when the difference was significant. A correlation was used to examine the link between the different parameters. Results show that in the force/velocity test pedal speed did not differ between the two categories. However, there was a significant difference between the two categories when throwing speed was measured by the number of throws executed during the Ippon-seoi-nage and Uchi-mata, but there was no significant difference between the two categories for Osoto-gari. Our study showed that the throwing speed of judoists represented by number of throws appears to be significantly different between the two categories. The lighter category has more speed than the heavier category using arm technique (Ippon-seoi-nage), while the heavier category has more speed using leg technique with half turn of the attacker's body (Uchi-mata). As a result, throwing speed is related to the type of technique used and not weight category.



A PHYSIOLOGICAL APPROACH OF NEW SPECIAL JUDO TEST PROPOSAL

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The aim of this work was to elaborate and validate a specific test to evaluate the physical condition of judo players. Eleven elite and 12 sub-elite judo players ( $22 \pm 4$  years-old) participated in our study. They were submitted to the test of Leger et al. (1984), the vertical Jump test and the Australian test. The Special Judo Test (SJT) reproduces the physiological and mechanical characteristics of a judo fight. In SJT an attacker must perform 6 series. The duration of the first series is 23s and increasing of 3s by series (in static work of arms), separated by a rest period of 4s, increasing 2s each series. During this test the subject performs two sequences of work: (1) Static work of arms: during 3s the subject grips the sleeve and reverse of a judogi in a fixed bar; (2) Dynamic and explosive work (20s). While going down of the fixed bar, the judo player runs toward one of the two ukes (receivers), practise Uchi-komi (Ippon-seoinage) with load, and then move towards the other uke and practise Sode-tsuri-komi-goshi. The results showed significant correlations between muscular power and performance during the Uchi-komi test ( $r=0.52$ ,  $p<0.01$ ). Furthermore, there were also correlations between the number of Uchi-komi in two better series of specific judo test and the anaerobic power represented by the distance covered in 30s during the Australian shuttle test ( $r=0.86$ ,  $p<0.01$ ) and between the anaerobic capacity represented by the whole distance covered and the total number of Uchi-komi achieved at the judo test ( $r=0.88$ ,  $p<0.01$ ). We recorded an average heart rate of  $178 \pm 5$  beats.min<sup>-1</sup> with peaks of  $191 \pm 7$  beats.min<sup>-1</sup> corresponding to 93% of the maximum heart rate. Thus, it can be concluded that the Uchi-komi test proposed is primarily an anaerobic test and has similar cardiovascular solicitation of a judo match.

RECOVERY TIME AFTER WEIGH-IN DURING REGIONAL LEVEL JUDO CHAMPIONSHIP

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Judo competitions are divided by weight classes. In attempt to gain some advantage against smaller and lighter opponents, many athletes reduces significant amount of body weight few days before competitions in order to qualify to a weight class below to their actual body weight. Literature has been shown that rapid weight loss may lead to performance impairment. However, depending on some factors such as diet composition and recovery time after weigh-in, rapid weight loss may not cause performance decreases. There is no data available regarding the time between weigh-in and the first match. Depending on the duration of this interval, recovery after weight reduction may be more or less complete. In view of this, the aim of this study was to determine the time interval between weigh-in and the first match in regional level judo championship. We followed up 117 male athletes (juvenile = 35; junior = 43; senior = 39) during two São Paulo city tournaments in 2007. The data was analyzed with descriptive statistics, and the results are expressed as mean + standard deviation. The time interval was 230 + 58 minutes (juvenile = 163 + 12; junior = 227 + 29; senior = 294 + 31 minutes). The results show that recovery time after weigh-in may vary for close to 3 hours up to approximately 5 hours. Although some variations can occur depending on the competition schedule and organization matters, we believe that, at least when the weigh-in and the combats were in the same day, the interval pattern will be similar to found in the present study. Five hours may be not sufficient to promote complete rehydration and glycogen restoration and, consequently, return performance to basal values. Thus, athletes should reconsider their rapid weight loss practices.

THE INFLUENCE OF TRAINING EXERCISE ON THE ACTIVITY OF CREATINE KINASE IN  
PLASMA OF THE ELITE MEN JUDO PLAYERS DURING DIRECT STARTING PREPARATION

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Background. In many sports disciplines, as well in judo, there is the possibility of evaluating the competitors body reactions on the applied training load, on the basis of the enzyme CK (creatinine kinase) activity measurements in plasma. The aim of the study was to evaluate the effect of exercise during training sessions on the changes in creatine kinase activity in the blood plasma of judo contestants, during direct competition preparation to European Championships. Material and methods. Seven members of the Polish national men team participated in the tests. The study was undertaken during the national polish men team training camp before the European Championships. The creatine kinase activity marking was done every morning for 10 days. Blood drawn from the ear on the day following the training session was tested. The “Analco” set and “Dr. Lange” (Germany) photometer-LP 400 were used for the creatine kinase marking. Results. The results of biochemical research gain remarkable value, because they allow to evaluate actual contestants reactions under influence of applied training load, that might be the starting point to rationally planning of consecutive trainings or microcycles. Conclusions. The test results show that the changes in creatine kinase activity in blood plasma following exercise were mainly dependent on the type and intensiveness of physical exercise. The results also suggest that marking creatine kinase in blood plasma might become a useful test in the evaluation of training effects in judo in the future.

## THE DEVELOPMENT OF JUDO IN A UK UNIVERSITY ENVIRONMENT

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The historical development of judo in universities in the United Kingdom was investigated. The work draws particularly on the archives of Oxford University and Cambridge University Judo Clubs, the personal archives of Mr Tony Sweeney 9<sup>th</sup> Dan, General Secretary of the British University Judo Association, and the Richard Bowen Archive housed at the University of Bath. Bowen contends that the oldest club in Europe is the Trinity College Ju -Jutsu Club, formed by E.C.D. Rawlins, of Trinity College, Cambridge University, in 1906 with an initial membership of 25 students. Oxford University Judo Club was formed prior to 1926, the exact date is unclear. An important figure in the early days of Cambridge Judo was JJ Knonsheil, who coached from 1926/7 until 1957, with occasional guidance from Gunji Koizumi and the Budokwai. Under his tuition the Judo Varsity Matches began in 1930 between Oxford and Cambridge. The Japanese Ambassador, Viscount Matsudaira, awarded the varsity trophy that bears his name. The April 1929 edition of *The Budokwai!* includes an article by Mr C.B.G. Dobson, entitled, "Judo at Oxford". It mentions a successful lecture and demonstration of judo given by Mr Koizumi and Miss Woolhouse in Oxford on 30 January 1929, followed by a spectacular display of Kime-no-kata in the course of which Mr Koizumi attacked Miss Wolhouse with the "five-irons". The meeting to discuss the forming of the British Judo Association was held at London University's Imperial College Union, in 1948. The Universities of Liverpool and Imperial College, London were represented at this founding meeting. Following the death of Yukio Tani in 1951, the Tani Vase was presented by the Japan Society and competed for by University sides. 1957 saw the formation of the British Universities Judo Association, and competition in European and World University Championships.

EXAMINING PSYCHOLOGICAL READJUSTMENT PROCESS AFTER RETIREMENT FROM  
COMPETITIVE JUDO

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The career transition process is pointed as a difficult issue for top athletes. Retirement from athletic competition after years of time, energy, emotion and identity in their sports can be both a "crisis" and/or "chance" for personal development and life cycle transition. Objective. To examine Nakagomi's post-retirement phases working hypothesis for future athletic retirement research while linking it to judo top athletes. Method. It was presented the case studied of Mr.A after his post-retirement psychotherapy reports while comparing to description and analysis procedure of judo athlete's report in trying to identify the proposed phases: 1.retirement ceremony-mourning; 2.inner travel-seeking mind expansion, and; 3.time perspective: present connected with past and future. Discussion. Mr.A case study and judo top athlete's report on post retirement career process comparative description-analysis and phases identification has appointed for a coherent and possible use of Nakagomi's clinical research method in considering the three internal post retirement phases.

PERFIL TÉCNICO TÁCTICO DE LOS JUDOKAS INFANTILES FINALISTAS EN EL CTO. DE  
ESPAÑA

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En la presente investigación analizamos las acciones técnicas más utilizadas y que conducen al éxito a los judokas de la selección española infantil masculina, las ventajas técnicas y sanciones conseguidas a lo largo del desarrollo de los combates. El análisis de las acciones técnicas más eficaces y en su caso más utilizadas en cada uno de los pesos de judo, aportará datos del judo más eficaz en función de la categoría de peso, si a ello unimos el perfil del combate en cuanto a la temporalización de las distintas acciones, tendremos sin duda una valiosa herramienta para el diseño de los planes de entrenamiento y la enseñanza de la técnica, aspecto que puede ser abordado a lo largo del proceso de aprendizaje y desarrollo del judo, en función del gusto y de las aptitudes del judoka, de la categoría de peso, del tipo de adversario, de las enseñanzas recibidas. Los objetivos que se pretenden son: a) ofrecer a los entrenadores y jóvenes deportistas, unas directrices claras en la orientación del entrenamiento que les permita desarrollar al máximo sus posibilidades, b) identificar las características técnicas y tácticas de los deportistas integrados en el equipo nacional de judo, c) establecer los perfiles técnicos-tácticos de los finalistas del Campeonato de España infantil masculino. La muestra está formada por 14 judokas finalistas del Campeonato de España, de los que se analizaron 28 combates. La recogida de información se realizó mediante la observación directa de árbitros de la Real Federación Española de Judo que completaron la planilla oficial de registro del desarrollo de los combates de los Campeonatos de España Infantil, datos que fueron tratados con el programa SPSS. Las conclusiones indican que los componentes del equipo nacional de judo masculino de la categoría infantil se caracteriza por utilizar con mayor frecuencia el grupo de técnicas de te-waza, seguido de ashi-waza y de los sutemis, siendo también importante el número de ventajas obtenidas por sanciones. Las técnicas más eficaces en este grupo son, seoi-nage, tani-otoshi y harai-goshi.

Palabras clave: técnica, competición, judo

LA FUERZA EXPLOSIVA Y ELÁSTICO-EXPLOSIVA EN LOS JUDOKAS INFANTILES Y  
CADETES DEL EQUIPO NACIONAL ESPAÑOL

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El judo como deporte de combate con agarre, tiene unas necesidades fisiológicas que deben ser desarrolladas a través del entrenamiento, para lo cual, nuestro primer trabajo debe consistir en identificar las cualidades que se combinan en el judo, para poder así establecer los parámetros necesarios para la elaboración de un plan de entrenamiento con suficientes garantías de éxito de cara a la participación competitiva. En el deporte del judo, caracterizado por la complejidad de actos motores y capacidades motrices, se impone el desarrollo de todas las formas de fuerza, fuerza máxima, fuerza resistencia y fuerza rápida o fuerza explosiva. Dado que la fuerza y la potencia en la competición, tienden a diferenciar a los campeones del resto de los competidores, en el presente trabajo analizaremos la valoración la fuerza explosiva, elástico-explosiva de los judokas infantiles y cadetes del equipo nacional español. El objetivo del presente trabajo consiste en establecer el perfil básico funcional de los judokas de élite de las categorías de edad infantil y cadete de ambos sexos. La muestra de la investigación esta formada los 75 judokas, 39 mujeres y 36, hombres que fueron convocados a la concentración del equipo nacional. Para valorar las manifestaciones de fuerza explosiva y elástico-explosiva aplicamos los siguientes test: el Squat jump (SJ), el Counter Movement Jump (CMJ), el Squat Jump adaptado al tren superior (SJB), el Counter Movement Jump adaptado al tren superior (SJB). En el análisis de los resultados nos centramos en los valores de las medias que se han obtenido en las pruebas seleccionadas para valorar las manifestaciones de fuerza explosiva (SJ) y de fuerza elástico-explosiva (CMJ) en los miembros inferiores y superiores (SJB y CMJB) de los judokas de la selección española de judo masculina y femenina categoría cadete e infantil.

Palabras clave: Judo. Fuerza. Élite

JUDOKAS' HAND GRIP STRENGTH STUDY, ACCORDING TO AGE, WEIGHT CLASS AND  
CHAMPIONSHIP PERFORMANCE

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This study aimed to present a survey with the reference values from 254 Brazilian male judokas hand grip strength according to their age, weight class and performance during a State Judo Championship. Data were collected during the weighing-in (critical moment) with a Jamal hand grip apparatus and the mass was measured with the official federation scale. As expected, the semifinalists showed higher strength values but such difference was not significant to suggest a tendency that maximal static strength per se should be able to influence the tournament results, regarding their age and weight class. While comparing ages, significant difference ( $p < 0.05$ ) was found through factor univariate ANOVA. Post Hoc test have shown significant increases in strength from the pre-juvenile age judokas to juvenile and also from juvenile until junior age judokas. However no difference was found between junior and senior judokas. According to these differences, three homogeneous groups were formed. Their values describe a similar curve to those that represent the general, muscle or even mass growth. These significant gains in strength among male judokas from 13 until 19 years old suggest that strength training should start in these ages. Despite of the discussion presented by Maia & LOPES (2001) this seems to be a sensitive or critical period for strength training in agreement to Russian studies (FILIN & VOLKOV, 1998). As long as strength training plays an essential role in judokas preparation, it should be included in the training process mainly on adolescence since the age of 13 following the guidelines of American Academy of Pediatrics (2001). One of the mathematical models presented in this research may help to determine the strength training loads regarding the growth process, where:

$$HG = 3,728957 \times (\text{mass}) - 0,027506 \times (\text{mass})^2 + 0,00006572 \times (\text{mass})^3 - 51,318061$$

$r = 0,73$ ;  $r^2 = 0,53$ ;  $SEE = 13,5807$

Key words: Judo, growth, strength training, handgrip



THE IMPLEMENTATION OF LONG-TERM PLAYER DEVELOPMENT: A CASE STUDY

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Based on models described by Bayli (2001) the United Kingdom has implemented Long-Term Athlete Development across 33 sports through it's governing body for coaching; Sports Coach UK. British Judo is one of the nine sports to have applied this model already. A booklet named Long-Term Player Development was produced for coaches, parents and administrators in 2006. Now that the policies have been written and distributed to coaches the main challenge is the subsequent implementation of these principles. The emphasis is now on a coach-led, player-orientated long-term plan. Comberton Judo Club is one local Cambridgeshire club that is trying to apply these principles by firstly changing the structure of its lessons and then creating drills that lead players from the fundamentals stage through to train-to-train stage whilst providing the opportunity for retention at every stage. Core to this system is an approach that allows competitive players to train alongside recreational players until the train to compete stage when competitive players should be delivered to an institute of sport with an aptitude of technical knowledge, physical conditioning and physical literacy. The aim of this poster is to describe how Comberton Judo Club has implemented the long-term player development recommendations in terms of lessons learnt, future development plans, and a structure for others to follow.

QUESTIONNAIRE-BASED ASSESSMENT OF WHY PARENTS CHOOSE JUDO AS A PRACTICE  
FOR THEIR CHILDREN

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Judo has massive children participation, probably because its educational value. At this age the participation is mainly directed by their parents. However, few studies investigated the reasons why parents choose judo as a practice to be conducted by their children. Thus, the objective of this study was to identify the main reasons that affected and those that did not affect at all parents' choice. A 26-item questionnaire was answered by 137 parents from children aged 6-9 years-old. This questionnaire included common reasons alleged by judo teachers on which aspects judo can be important on children's life as well as those frequently appearing on TV, newspapers and club's advertisement. For each question a five point Likert scale was used to direct parents' choice (from "Not at all" to "extremely important"). The most scored item was "to keep his/her health" (84.3%), followed by "to increase his/her discipline" (61.5%), "because judo practice enjoyment" (43.8%), "to improve psychological well-being" (41.7%) and "to improve coordination" (40.6%). The five aspects which had less influence on parents' choice were: "because of TV or cinema judo appearance" (94.8%), "because of video game judo appearance" (93.8%), "to make his/her child somebody special or famous" (74.0%), "medical recommendation" (74.0%) and "to make his/her child slimmer" (70.8%). Thus, it can be concluded that parents' choice for judo are less influenced by mass media common appeal (to be special, famous and slim) or by medical recommendation than by aspects related to better quality of life and discipline. Thus, a focus on those aspects in the advertisement and a work directed to achieve these goals could attract more parents to choose judo for their children.

AUGMENTED REALITY APPLIED TO USHIRO-UKEMI VISUALIZATION

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The last fifty years has promoted intense development of Sports Sciences. As time goes by, new kinds and sources of knowledges have been applied to sports movement comprehension. So it's time to present a new link of options dealing with the scientific visualization, high performance computing, virtual reality and Sports. This study aims to create an Augmented Reality (AR) system to promote the visualization of different media files presenting the Ushiro-Ukemi movement. For such, the following steps were done: .gif, .avi and .wrl files were created; markers were printed in different paper materials; an AR system were created with these media files applied. 3D Studio Max, Photo Impact, Macromedia Director, DART and Microsoft Word softwares and a computer with a Pentium 4 HT, computer with a G-Force 4 graphic board, web cam, a monitor and a data show pojector were used the development of this study. The system provided the visualization of Ushiro-ukemi in motion. This system may be applied to any written materials like books allowing sports movement visualization flowing along with the time instead of static images generally seen. It may be applied also during public presentations promoting interaction between a single reader at home or during a public audition with these materials.

Key words: Judo, scientific visualization, augmented reality, Ushiro-ukemi

PILOT STUDY FOR THE CREATION OF AN ANAEROBIC POWER TEST BASED ON UCHIKOMI

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This study aims to create an anaerobic power test based on Uchikomi for Judo: the 40s Uchikomi Test. The sample were comprised by 6 volunteer black belt adult male competitors, whose ages varied from 19 to 34 years, and 25,5 years in average. The used hardwares were: YS 1500, Polar watch and a chronometer SPSS 15 and BrOffice.org Writer.

Variables	Range	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
40 s run (m)	26	243	269	255	9,38	0,4	-0,57
Number of Uchi-komi in 40 s	11	30	41	34	4,2	0,95	0,16
Resting Heart Rate (run)	23	66	89	79,33	9,69	-0,62	-1,68
40 s run Heart Rate (bpm)	20	165	185	176,17	7,36	-0,62	-0,64
Resting Heart rate (uchi-komi)	26	71	97	82,67	10,63	0,31	-1,59
Heart rate after 40 s of Uchi-komi (bpm)	12	169	181	174,83	4,79	-0,01	-1,67
Resting lactate (run)	1,35	1,14	2,49	2,04	0,47	-1,83	4,02
Blood Lactate 40 s run (mMol/L)	5	8	13	10,65	1,61	-0,56	0,26
Resting lactate (uchi-komi)	1,17	1,14	2,31	1,68	0,45	0,59	-1,29
Blood Lactate after 40 s of Uchi-komi (mMol/L)	6	6	12	8,69	2,05	0,37	0,3

TABLE 1: central tendency, variation and normality measurements

A 40 seconds running test was applied on the first day where distance, heart rate (HR) and blood lactate (Lac) were measured. Two days later the 40s Uchikomi Test was applied to the same judokas and the number of Uchikomi, the HR and Lact were measured. All variables data fell within the normality parameters and the Mauchly's test wasn't significant ( $p > 0,05$ ), so ANOVA for repeated measures could be applied. The data showed significant increases in Lac levels after the running and the Uchikomi stimuli raising from 2,04 and 1,68mMol/L to 10,65 and 8,65mMol/L, and so did the HR which was 79,3 and 82,67bpm during rest and raised to 176,17 and 174,83bpm respectively. Paired comparisons presented no significant differences between the resting HR before the run and Uchikomi, neither for resting Lac before run and Uchikomi, nor for HR after the run and Uchikomi, nor for Lac after run and Uchikomi. So, both 40s run and 40s Uchikomi are valid tests for anaerobic power measurement. Through bivariate correlation analysis, however only two significantly high correlations were found.

TABLE 2: Significant correlations

	40 s run (m) X Heart Rate after 40 s of Uchikomi (bpm)
Pearson <i>r</i>	0,93
<i>p</i> (2-tailed)	0,008
	40 s run Heart Rate (bpm) X Number of Uchikomi in 40 s
Pearson <i>r</i>	0,87
<i>p</i> (2-tailed)	0,025

These correlations show that correspondence between these and some other variables may be found in a larger sample. The validity of an anaerobic power test per se impose an significant increase the blood lactate levels and heart rate as the proposed 40s Uchikomi Test and 40s run test did.

Key-words: Judo, blood lactate, heart rate, anaerobic power, testing, Uchikomi

## TAI OTOSHI CHECKLISTS' RELIABILITY

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There are no reliable tests to evaluate the quality of the throwing techniques on current Judo research. The purpose of this work was to measure the reliability of two tai otoshi checklists. The first checklist was based on the global configuration of the tai otoshi, focusing two phases: kuzushi and tsukuri (4 points each - poor, regular, good and excellent) The second checklist specifically assessed the kuzushi of the tai otoshi, considering two "yes or no" items: motor task and effect. Three experienced Judo experts analyzed a block of 9 filmed movement patterns twice, with a one-week interval. The reliability was expressed by the intraclass correlation, ranging from 0.00 to 1.00. The closer the coefficient is to 1.00, the less error variance it reflects and the more the true score is assessed. The intertester reliability (considering the mean value of both the first and the second "one-week after" analyses) was 0.94. As to the coefficient related to the same expert on both analyses (intratester reliability), the mean correlation value was 0.89. Concerning the second checklist (kuzushi), we use the intertester agreement (% of agreement) to estimate reliability among experts. Intertester reliability values - considering the value of both the first and the second analysis - were 0.78 (motor task) and 0.67 (effect). Nevertheless, the intratester reliability values - considering the mean value of both the first and the second analyses were 0.93 (motor task) and 0,93 (effect). The results indicated that the checklists can be used as reliable research tools to assess movement patterns of the tai otoshi technique.

PHYSICAL PREPARATION OF TWO HIGH PERFORMANCE JUDO ATHLETES, A CASE STUDY

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The purpose of this study was to show the training process adopted for two judo athletes from São Paulo (Brazil), between august and December of 2001 and the results. The planning was adapted to the calendar, the judo needs and the objectives of the athletes. The macrocycle was divided in four phases and had the peak at the opportune moment. Exercises had been adapted to the trainings specify of judo. Main results: a) victories in the main regional and national tournaments; b) improvement of the maximum strength c) reduction of the percentage of corporal fat; d) maintenance of the weight in the maximum limit of the category.

Uniterms: Judo, Training, Planning.

EFFECTS OF DIFFERENT MUSCLE ACTIONS ON SPECIAL JUDO FITNESS TEST  
PERFORMANCE

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Post-activation potentiation (PAP) is a training strategy used to improve sport performance in subsequent strength loads. On the other hand, stretching exercises (proprioceptive neuromuscular facilitation, PNF) has been pointed out as detrimental to exercise performance, especially in less complex tasks. However, few studies investigated these aspects (PAP and stretching) on judo specific setting. Thus, the objective of the present study was to verify the effects of different training loads on the Special Judo Fitness Test (SJFT) performance. Seven junior and senior male judo athletes took part in this study. They had a state competition level and the following characteristics: 19.14±1.21 years; 60.7±5.3kg of weight and 168.7±5.7cm of stature. They were submitted to a squat one repetition maximum (1RM) and to a SJFT and to five non consecutive experimental sessions, determined at random, plus a SJFT: i) 15-min warm up (WU); ii) one 45-s of PNF; iii) 3x10 repetitions of 20, 40 and 60cm depth jumps (plyometrics; PLY), respectively; iv) 5 sets of 1 squat repetition at 95% 1RM, with 2min interval among them (MS); v) 3 sets of 2 squat repetitions at 90% 1RM followed by 5 horizontal jumps, with 2min interval among them (CM). The comparison among experimental conditions was done through a two-way ANOVA, followed by a Bonferroni test as a post-hoc. During the SJFT first block (15-s), the number of throws after PLY (6.42±0.53) and MS (6.28±0.48) were higher ( $p<0.05$ ) than after CM (5.71±0.48), WU (5.85±0.37) and PNF (5.85±0.37). On subsequent SJFT blocks there was no difference among the procedures used. Heart rate (bpm) 1-min after the SJFT was lower ( $p<0.05$ ) in the CM compared to the others. However, no difference on the SJFT index was identified. Thus, it can be concluded that PLY and MS is useful to improve anaerobic performance in a judo specific setting.

THE RELATIONSHIP BETWEEN COMPETITION VOLUME AND OLYMPIC QUALIFICATION. A  
STUDY OF THREE PLAYERS FROM PINWOOD JUDO CLUB, UK

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This report investigates whether using competition results of up and coming judoka can predict future Olympic competitors, using past Olympians as comparators. Competition results of Pinewood Judoka over a five year period have been collected and analysed to identify those players who are consistently winning medals. This data has then been compared to total scores from medals won by Fairbrother (Barcelona 1992 and Atlanta 1996), Roberts (Sydney 2000) and Singleton (Athens 2004) in the 4 years prior to each Olympics in order to investigate the relationship between competition volume and success and Olympic qualification. An outcome of the research is to predict whether it is possible for Pinewood Judo Club to produce another Olympian. This report aims to conclude that competition can be used in place of 'quality randori' in preparation for major events. The research advocates the use of competition experience a major contributor to success at High Performance level.



## FITNESS LEVEL OF MALE COMPETITIVE JUDO PLAYERS

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Our study aimed to determine fitness level of 28 male competitive level Judo players from Serbia. Judo is the sport in which movements are powerful, delivered in short period of time, and usually against the force of the opponent. Consequently main energy sources are high energy phosphates and glycolytic pathway. According to this we decided to evaluate fitness level of judo players by measuring muscular strength and anaerobic capacity. These were determined using dynamometer machine and standard Wingate (WAnT) testing protocol. Muscle strength of upper and lower limbs show increasing values throughout the weight categories (arm strength flexion  $78 \pm 4.4$  kg; arm extension  $76.6 \pm 5.1$ ; leg strength extension  $168.3 \pm 15.9$  kg), but in relative numbers (m.strength/body weight) middle categories show the greatest numbers. WAnT results (peak power  $786.3 \pm 74.4$  W; mean power  $644.2 \pm 39.8$  W; fatigue index  $38.2 \pm 6.6$  %) among the categories are similar as findings of muscle strength, and highest relative values are measured in -73kg and -81kg and -90kg. According to the similar test results of medal winners from World and European Championships it is necessary to further improve fitness level of our athletes.

Key words: strength, anaerobic capacity, Wingate test

## THIGH MUSCLES MUSCLES FLEXTION/EXTENSION RATIO IN ELITE JUDO PLAYERS

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Our research was conducted among 28 competitive Judo players (13 female and 15 male), Female team won 3rd and male team 5th place on European team Championship in 2006. The goal was to evaluate strength of thigh muscles, concerning flextion/extension ratio. We propose that it is necessary to determine wether there is disbalance among two groups of muscles, which could interfear with technique delivery and increase the injury risk. Isokinetic strength testing revealed the difference between left and right leg extensors, measuring 4.5 %. Average difference between left and right leg extensors was 9.9 %. The analysis showed statistically significant differences. The authors suggest that the mentioned differences should be corrected in order to achieve best possible performance. Balance plate training is proposed for such corrections.

Key words: disbalance, muscle strength, female, male.

CONTEXT OF PRACTICE IN THE ACQUISITION OF THE TAI OTOSHI

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This study investigated learning the kuzushi of the technique tai otoshi in different contexts of practice. 3 conditions were compared: a) static “traditional” group (STG); b) in motion “traditional” group (MTG); and c) with specific displacement to the kuzushi group, projecting the uke in all 160 trials (SDUG). STG and MTG projected the uke every 10th trial. 32 children were assigned to 3 experimental groups. The design was composed of 4 phases: 1) pre-test (3 trials); 2) acquisition (160 trials); 3) post-test (3 trials); and 4) retention (3 trials). With a video camera, we analyzed the data of the phases 1, 3, and 4. A global configuration checklist of the technique was designed and used: movements of kuzushi and tsukuri were considered – each component was evaluated from 1 to 4 points. Another checklist was used to analyze the kuzushi separately. It was formed by: 1) motor-task (movement performed by tori to unbalance the uke); and 2) effect (position of uke’s body as a consequence of the motor-task of the tori). Each item was evaluated as performed (one point) and not-performed (zero). Intra-group results of both checklists (except the component effect of the kuzushi checklist) showed significant superior scores on the post-test and retention compared to the pre-test for all groups, which is a evidence of learning. Considering the component effect of the kuzushi checklist, compared to the pre-test: a) the SDUG showed superior performance on post-test and retention; and b) MTG had higher performance on post-test. Inter-group analysis indicated better performance of the SDUG on post-test and retention (global configuration). No differences were found among groups in the “motor task” component; however, in the “effect” component, the SDUG showed superior scores when compared to the STG on post-test and retention, and to the MTG on retention. It can be concluded that: 1) learning the tai otoshi in a similar context of fight optimizes the acquisition of the uke’s unbalance, and 2) more than leading to learn the effect of the kuzushi, the traditional practice only allows learning the movement pattern of it.

STATE LEVEL JUDO COMPETITION RESULTS: A 7-YEAR FOLLOW-UP

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Although criticized on specific literature, children competition is quite common in judo. The main argument held by some teachers is that the results on earlier ages could be important for performance when adult. However, few studies focused on the performance maintenance in judo competition. Thus, the objective of the present study was to verify the result maintenance on a State level judo competition. Judo athletes classified on this competition in 1999 was followed during the next 7 years (1999-2006) in order to verify the percentage of medal winners in this first year which still get medals on the next years' competitions. Both male and female athletes from different age groups were analyzed (9-10 years; 11-12 years; 13-14 years; 15-16 years; 17-19 years and 20 or more years). The data were obtained from the official website of the São Paulo State Judo Federation. As the whole data was used, only descriptive statistics (mean and standard deviation) was employed. The main results were: Males – 9-10: 19.2±10.6%; 11-12: 20.7±13.9%; 13-14: 17.2±8.6%; 15-16: 15.2±11.6%; 17-19: 17.9±12.7%; 20 or more: 25.9±8.4%; Females - 9-10: 33.6±18.0%; 11-12: 33.0±13.4%; 13-14: 33.4±13.3%; 15-16: 17.0±12.6%; 17-19: 17.9±8.8%; 20 or more: 21.0±11.5%. Males had a lower mean percentage of maintenance (19.3±3.7%) than females (26.0±8.2%) when all ages and years were considered. In the 7th year of follow up, neither group had more than 12.5% (males; 20 years or more) or 29.0% (females 11-12 years) of maintenance. Thus, it can be concluded that only one among five or four medal winners continues to classify in State level tournament for males and females, respectively. Considering that many other children may quit judo after being defeated in a tournament, we consider that judo competitions on these earlier ages (9-12 years) should not be the main focus of judo practice.

COMPETITION ANALYSIS

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ABSTRACT NOT RECEIVED BY EDITORS

FEATURES OF THE TECHNICAL-TACTICAL PERFORMANCE CAPACITY OF THE WORLD'S  
TOP JUDOKA

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While in other sports performances, e. g. times, distances, or weights, can be directly measured, in judo, the target aspects of high performance training are derived from combat behaviour and parameters of the world's top athletes' technical-tactical performance capacity. Because of them, competition analysis as a complex method of performance diagnostics, targeted to gathering, processing, interpretation and analysis of information on sports competitions, is more and more becoming the dominant method of diagnostics. Target/method: By means of computer-assisted competition analyses of major international events between 2000 and 2006 (world championships, Olympic Games, junior world championships), current tendencies of combat behaviour (strategies, style of fighting, activity), of technical repertoire, of efficiency of actions, and of technical versatility of international top athletes are presented. The different results for men and women will be shown and generalized for the purpose of a profile of requirements for high performance and follow-up training (juniors). Results: The current combat behaviour of the world's top athletes is characterized by two basic styles: the technically skilled Asian style, and the unorthodox, powerful "East European" style. The basis of winning performances in judo - from the point of view of attack behaviour - is mostly a higher activity compared with the opponents, as well as a high technical-tactical mastery (better values of efficiency in attack and defence). In spite of growing specialization in high performance sports, athletes attacking their opponents with more technical versatility prevail.

ARE JUNIOR MEDALISTS ABLE TO RETAIN THEIR PERFORMANCE ON SENIOR YEARS?

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Recently, Gauthier (2006) showed that Junior World medalists were able to get medals on Senior World Championship. Most of the athletes achieved the first senior podium after one to five years. The time taken to win the first medal on Senior was five years for males (16%) and four years for females (16%). However, no information was found on this aspect in lower level tournament. Thus, the objectives of the present study were to verify how much time the athletes took until the first senior podium, as well as the junior champions took to achieve the first place on senior age. Two-hundred twenty-four male and 224 female judo players who classified on a State level championship (1999 to 2006) were considered. From these only 17.9% of the males and 21.0% of the females classified on senior championship, which is higher than reported among World Junior and Senior's medalists (Gauthier, 2006). From these athletes (males and females, respectively) who classified on senior championships, 42 and 47% classified in the 1st year, 22 and 17% in the 2nd year, 22 and 26% in the 3rd year, 10 and 8% in the 4th year, 2 and 0% in the 5th year and 2 and 2% in the 6th year. When considering Junior's first placers, only 16% for males and 14% for females were champions in the senior. In the male group, 45% repeated it after one year, 22% after two, 22% after three and 11% after six years. For the female group, 25% did it on the 1st year, 63% in the 2nd and 12% in the 4th year. Thus, only 1/5 of the junior medalists are able to retain their results on senior competition, indicating that athletes not classified on junior competition still have chance to become a successful athlete.

REINFORCEMENT OF PHYSICAL STRENGTH AND JUDO TRAINING AT RITSUMEIKAN  
UNIVERSITY JUDO CLUB (NO. 2)

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At the 4th IJF Judo Research Symposium in Cairo, 2005, we presented about Reinforcement of Physical Strength and Judo Training at Ritsumeikan University Judo Club. This is a second report to introduce the results and our approach at Ritsumeikan's Judo reinforcement program in recent two years, 2005 and 2006. In fact, we made our best results ever at the national competition in 2006, but, on the other hand, some of our athletes didn't do well in their schoolwork and that is not acceptable since the compatibility between study and Judo is our motto. From now on, since Jigoro Kano was a great educator, we will continuously studying what is necessary for farther reinforcement of our athletes while pursuit Jigoro Kano's thought and ideal of Judo.



## TIME STRUCTURE AND ACTIVITIES PERFORMED DURING A JUDO MATCH

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The format of international judo competition is one continuous 5-min period, which can be complemented by an extra time until one athlete scores or until the end of the new 5-min period. During the time allowed, there are many interruptions and the typical time structure is 30s of activity with a 10s interval (Castarlenas and Planas, 1997; Sikorski et al., 1987). However, no study has investigated these specific activities performed and their time structure during the action period. It is usually accepted that with this knowledge we can improve the training process. Thus, the objectives of this study were: (1) to determine the time structure of a judo combat; (2) to verify the time spent on preparation, kumi-kata, technique application and ne-waza and (3) to verify if there is any difference among three consecutive matches. Ten male adult judo athletes were investigated in three consecutive matches. Comparisons were done through an ANOVA with repeated measurements. Results are expressed as mean  $\pm$  standard deviation and in percent of total time for each sequence (time between hajime and matte; for the interval it was considered the time between matte and hajime): Combat 1 - Preparation: 4 $\pm$ 1s (12 $\pm$ 4%); Kumi-kata: 16 $\pm$ 5s (49 $\pm$ 15%); Technique: 1.4 $\pm$ 0.3s (4 $\pm$ 1%); Ne-waza: 6 $\pm$ 4s (7 $\pm$ 5%); Interval: 7 $\pm$ 1s (19 $\pm$ 3%); Combat 2 - Preparation: 4 $\pm$ 2s (13 $\pm$ 7%); Kumi-kata: 18 $\pm$ 3s (56 $\pm$ 9%); Technique: 1.0 $\pm$ 0.4s (3 $\pm$ 1%); Ne-waza: 4 $\pm$ 2s (4 $\pm$ 2%); Interval: 6 $\pm$ 2s (16 $\pm$ 6%); Combat 3 - Preparation: 4 $\pm$ 1s (13 $\pm$ 3%); Kumi-kata: 17 $\pm$ 3s (49 $\pm$ 10%); Technique: 1.7 $\pm$ 0.5s (5 $\pm$ 2%); Ne-waza: 5 $\pm$ 2s (5 $\pm$ 1%); Interval: 7 $\pm$ 1 (19 $\pm$ 3%). No difference was found among the three fights. The typical match has 11 sequences, with four ne-waza periods. Our results show a shorter mean interval time with a similar action time (27s) compared to previous studies. Kumi-kata seems to be an important and decisive factor in competitive judo as most of the time is spent on it.

CULTURE AND ORGANIZATIONAL MODEL OF THE JUDO FEDERATION OF THE RIO DE  
JANEIRO STATE (FJERJ)

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Sport is one of the main social phenomena and one of the biggest institutions of the planet (Garcia, 2002 and Rubio, 2002). According to Pires and Sarmiento (2001), there is in the world of Sport an epistemological space of intervention whose professional expression is related to the practical Management and Organization of Sport activities. In this environment of systematization of the Management theories and practices in the world of Sport, there are the concepts of Organizational Culture and Structure, which are present in the most various organizational studies of the contemporary world (Schein, 1985 and Mintzberg, 1999). Through a qualitative methodology, it was the purpose of this study to provide a better knowledge of the organizational paradoxes related to the Sport Management. Our proposal was to identify the features of the Organizational Culture and Structural model applied in the Judo Federation of the Rio de Janeiro State. The analyses had left first, of a theory framing on the related subjects, and later the content analysis of official documents of the FJERJ and interviews made with members of the organization. Second Vala (1986) the content analysis is based on the elementary operation to define categories, with the objective to simplify to harness the possible apprehension and if the explanation. The categories and sub-categories definite and identified in this study had been: A=Organizational Culture (A1-Nature of the Organization/Identity, A2-History, A3-Values) B=Management/Structure (B1-Model, B2-Mission, B3-Human Resources). The Organizational Culture as well as the Structural model has shown that each Organization or Sport Management has its particular features. These considerations have shown a paradox within the management of the FJERJ. The FJERJ should also fight for the maintaining of the traditional values related to the modality of which it is responsible and simultaneously to adapt it the requirements related with the Sport Management.

THE DEVELOPMENT OF A VIDEO ANALYSIS CODE FOR PERFORMANCE JUDO: UTILISING  
THE KNOWLEDGE CONSTRUCT OF WORLD CLASS

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The purpose of this qualitative study is to utilise coaches' knowledge through their experiences and expertise, and together with the developing technological era produce a tool that will aid the analysis of judo. Four expert subjects were chosen due to their superior backgrounds and were interviewed using the open interviewing method. The data collected was then transcribed and categorised, and from the information gained a code was constructed, which will be used alongside video to analyse judo contests, in conjunction with what coaches require. The video analysis code has the potential to identify strengths and weaknesses of a player, thus has the infinite vision to push judo to a completely new competitive level.

Key words: Judo; Video Analysis; Coaches knowledge; Coaches expertise; Coaches experience.

## L'APTITUDE AEROBIE CHEZ LES JUDOKAS TUNISIENS

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### Résumé

Le profil multidimensionnel du judoka de haut niveau est envisagé dans le but d'aider l'entraîneur à bien identifier et sélectionner ses sportifs d'une part et établir un programme judicieux lui permettant de les faire progresser jusqu'à accéder à un niveau international. Le judo est un sport à exigences multiples dont l'endurance et la résistance. Oui, l'endurance qui permet des adaptations cardio-vasculaires multiples et bénéfiques à toutes les disciplines. Parmi ces adaptations on peut citer : les dimensions du cœur, le volume d'éjection systolique, la fréquence cardiaque, le débit cardiaque, le débit sanguin, la pression sanguine, la fourniture et le transport d'oxygène, etc. Comme la consommation maximale d'oxygène (VO<sub>2</sub>max.) est considérée par la plupart des physiologistes de l'exercice comme le meilleur indicateur de l'aptitude aérobie cardio-respiratoire, nous avons essayé de faire un « feed-back » se basant principalement sur ce paramètre afin de se situer par rapport à soi et par rapport à autrui. Dans cette optique, nous avons essayé d'établir une étude comparative de la capacité aérobie qui est fondamentale même en judo plutôt connu comme un sport à dominance anaérobie lactique (résistance). Donc, nous avons confronté : Les données tunisiennes entre-elles pour les judokas féminins et masculins. Les données tunisiennes à quelques données étrangères. Un tel travail nous a pour fort important et indispensable du moment où la Tunisie a accueilli deux échéances de grande envergure à savoir le championnat du monde juniors à l'an 2000 et les jeux méditerranéens de 2001. D'autant plus que l'objectif n'est plus la participation pour une simple figuration, mais plutôt pour se rapprocher d'année en année vers le podium. Pour atteindre cet objectif et pour pouvoir réaliser des performances honorables, il faut des sportifs qui disposent des caractéristiques modèles des sportifs de haut niveau en commençant par une capacité aérobie satisfaisante.

Mots clés : Capacité aérobie, VO<sub>2</sub>max., haut niveau, judo

### Introduction

Il est admis que le judo, sport de l'opposition acharnée, de moyenne durée (5 min.), repris 5 à 6 fois au cours d'une journée de compétition comporte des périodes d'attaque répétitives de haute intensité. Ces dernières sont alternées par des phases d'accalmie dont les durées varient respectivement entre 10 et 20 sec. Ces efforts inscrits dans le domaine anaérobie se traduisent par une lactatémie relativement élevée (10 à 25 mmol/l). Cet état physiologique contraignant ne peut évidemment être maintenu indéfiniment. Il exige ainsi l'intervention de certains mécanismes d'adaptation nécessaires au rétablissement de certaines conditions métaboliques énergétiques indispensables à la contraction musculaire (ATP, CP, Glycogène,...).

Dans ce contexte, le registre aérobie revêt une importance capitale durant et après l'opposition et même entre les séances d'entraînement. Conçu dans un cycle formation ou de préparation, un fond aérobie constitue une base physiologique favorable d'entraînement tant en volume qu'en intensité requis pour le développement des autres qualités physiques.

Compte tenu de l'intérêt accordé à ce facteur, nous avons dans cette présente étude, essayer à travers l'évaluation par la méthode directe et indirecte, mais aussi l'exploitation des valeurs de VO<sub>2</sub>max nationales et internationales d'élucider l'intérêt croissant attribué à ce paramètre, son évolution et par la

même occasion, situer le profil aérobie de nos judokas en les comparant à d'autres équipes performantes (France, Japon, ...).

#### Population d'étude

L'évaluation de l'aptitude aérobie réalisée entre 1991 et 2000, a porté sur différents groupes de judokas tunisiens ( juniors et seniors des deux sexes). Dans le cadre de la comparaison, nous avons utilisé des données étrangères.

#### Protocoles

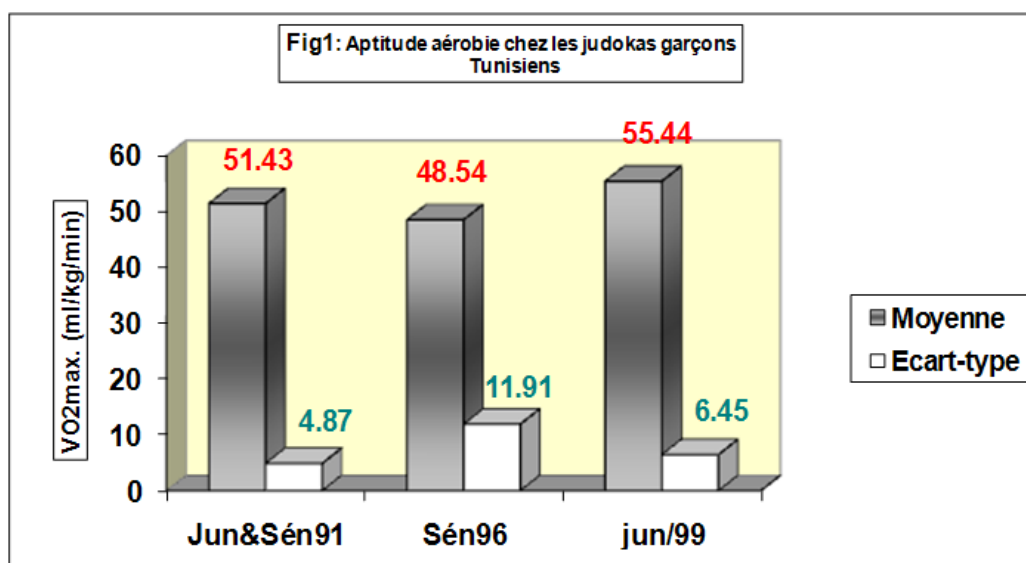
Les données faisant l'objet d'étude sont recueillies à partir d'épreuves progressives maximales de laboratoire (VO<sub>2</sub>max. par méthode directe) et d'autres de terrain (Léger & Boucher 1980 et Léger & Mercier 1983).

#### Statistiques

Ne disposant que de certaines valeurs moyennées chez les équipes étrangères et n'ayant pas non plus assuré un échantillonnage adéquat par rapport à la catégorie de poids, notre travail s'est juste limité à une comparaison entre les moyennes des VO<sub>2</sub>max. Par ailleurs, et hormis l'existence des valeurs individuelles trouvées, nous n'avons pas procédé à la recherche des différences statistiques entre les catégories d'âge étant donné que ces valeurs sont déterminées par moyen directe mais aussi estimées à travers des tests de terrain.

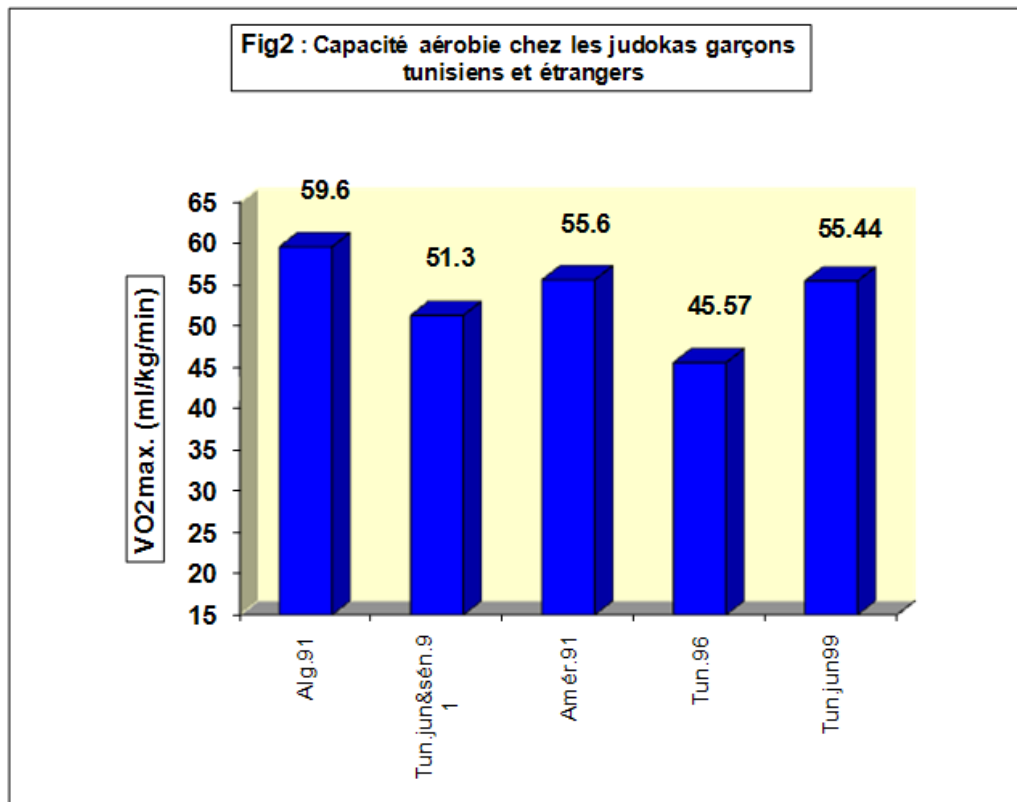
#### Analyse des résultats

La figure 1 montre chez les garçons de l'année 1991 à 1999, une moyenne de VO<sub>2</sub>max. passant de  $51.43 \pm 4.87$  ml/kg/min. (juniors et seniors) à  $55.44 \pm 6.45$  ml/kg/min. (juniors seulement). Cette évolution traduit peut être une meilleure gestion de la charge de l'entraînement pour un travail aérobie, soutenue probablement par une fréquence d'entraînement plus importante, ou tout simplement que la nouvelle recrue dispose initialement d'une bonne aptitude aérobie et d'une bonne composition corporelle (% de masse grasse faible au profit de la masse maigre).



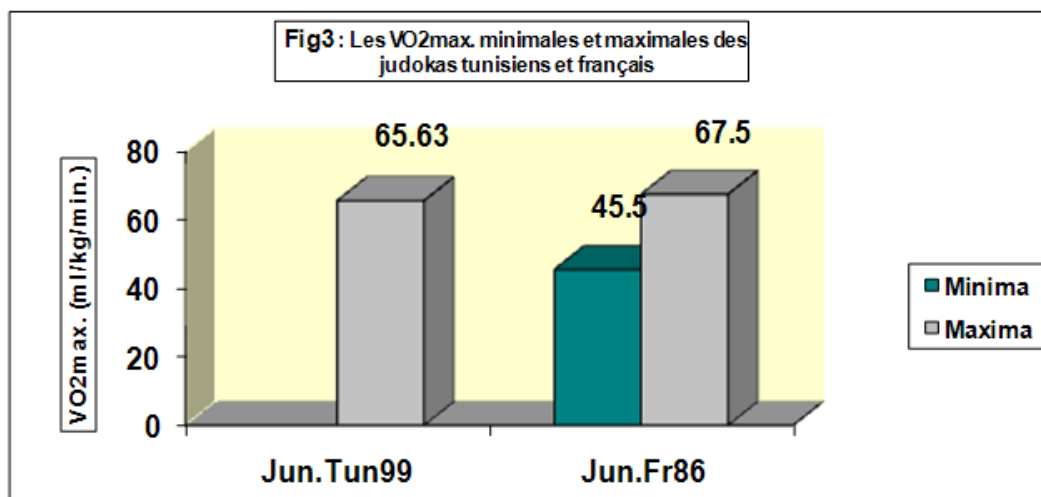
Cependant, la valeur de VO<sub>2</sub>max. chez les judokas tunisiens seniors en 1996 n'est que de  $48.54 \pm 11.91$  ml/kg/min., cette donnée est relativement faible par rapport à celle des juniors de 1999, mais elle constitue une évolution peut être bien cohérente étant donné les effets chroniques concomitants au développement des filières anaérobie alactique et lactique recherché chez les judokas élités (groupe Atlanta 96) afin de répondre aux conditions physiologiques de compétition. Ces valeurs demeurent cohérentes avec celles des judokas Russes ( Hosni 1984, Hosni 1996), japonais (Kumagai et coll. 1988) et ceux qui ont participé aux Jeux Olympiques (Ebine et coll.1991). Ces judokas avaient respectivement

des moyennes de VO<sub>2</sub>max de 44.1 et 45.9 ml/kg/min. Ces valeurs anciennes datant en moyenne depuis 1988 dénotent un manque de travail dans ce registre physiologique. En effet, selon Neumann (1988), les normes respectives à cette période se situaient entre 50 et 55 ml/kg/min. pour les judokas filles et entre 55 et 60 ml/kg/min. pour les judokas garçons.

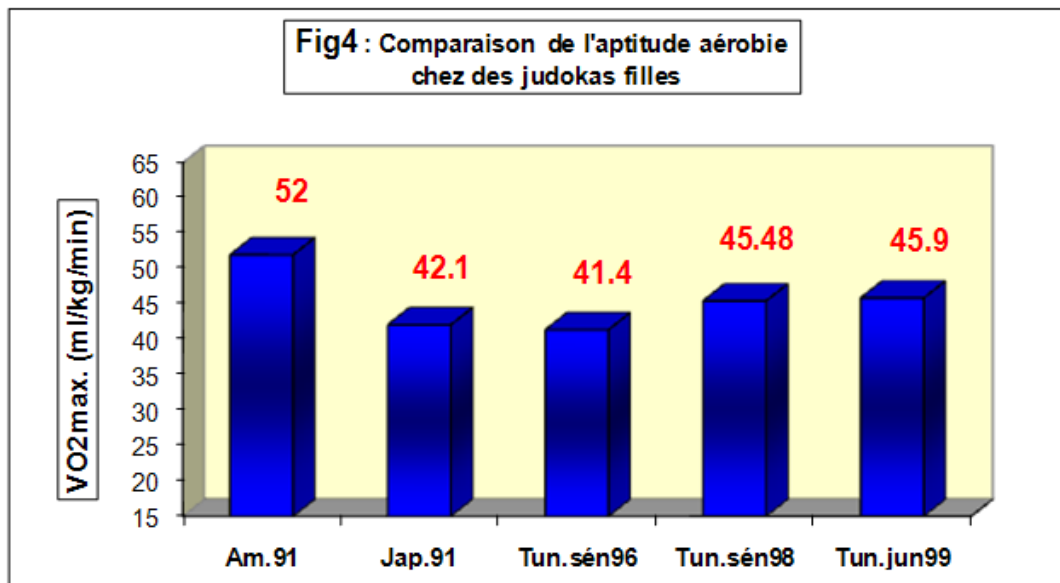


De même, des travaux de Majean et Gaillat (1986), Feki et coll. (1994), Briki (1991) et Callister et coll. (1991) montrent des valeurs les plus élevées allant de 51.43 ml/kg/min. chez les tunisiens jusqu'à 67,5 ml/kg/min. chez les judokas juniors français de section sport - étude. Les algériens et les américains ont respectivement des VO<sub>2</sub>max. de 59.6 et 55.6 ml/kg/min.

Il est rassurant de voir que certains de nos juniors garçons testés sur terrain en 1999, présentent des VO<sub>2</sub>max. de l'ordre de 65.63 ml/kg/min., c'est à dire légèrement inférieures à celles des juniors français (67.5 ml/kg/min.)



Les moyennes de VO<sub>2</sub>max. obtenues en 1999 chez les filles tunisiennes juniors (45.9 ml/kg/min.), malgré qu'elles soient supérieures à celles des patriotes seniors appartenant à l'élite de 1996 (41.4 ml/kg/min.) et aux japonaises (Ebine et coll. 1991 ayant participé aux Jeux Olympiques (42.1 ml/kg/min.), demeurent insuffisantes pour atteindre des bonnes performances.



#### Conclusion

Ce travail portant sur l'étude de l'endurance en judo a permis de situer et de suivre l'évolution du niveau de développement de cette qualité chez nos élites nationales juniors et seniors, filles et garçons et de le comparer à celui de certaines équipes étrangères.

Malgré que cette qualité ne soit de manière directe déterminante de la performance, elle reste toutefois et compte tenu de l'aspect intermittent de cette discipline nécessaire, ne serait ce que dans le cadre de l'amélioration des processus de récupération suite à des efforts répétés de haute intensité réalisés pendant les combats.

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APLICACIÓN DE DIFERENTES MÉTODOS DE ENTRENAMIENTO CONCURRENTE PARA  
MEJORAR EL RENDIMIENTO DEL JUDOKA

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El objetivo de este trabajo es determinar el efecto de distintas metodologías de entrenamiento concurrente (EC) de fuerza y de resistencia sobre el rendimiento en Judo. Para ello, se han establecido tres grupos mediante un diseño cuasi-experimental, siguiendo un muestreo aleatorio no probabilístico accidental. Los colaboradores han sido estudiantes de educación física (19-22 años y cierta experiencia en la modalidad), a los cuales, se les ha aplicado un tipo de acondicionamiento (17 semanas). Un grupo trabajó sólo la fuerza (F=8); otro entrenó la resistencia aeróbica (5 x 4 estaciones con técnicas de judo a la intensidad del umbral aeróbico; 1min25s en cada una y recuperando 3min), seguida de un trabajo de fuerza explosiva y resistencia de fuerza (FR2=8)], con seis horas entre ambas sesiones; el último grupo (FR1=7) ejecutó el mismo que el grupo FR2, aunque en una misma sesión. Dicho trabajo se evaluó mediante un test incremental en tapiz, otro más de fuerza para establecer la RM y el Special Judo Fitness Test (SJFT). Los resultados mostraron que para el VO<sub>2</sub>máx se consiguieron mejoras para los grupos FR1 (P=0.001) y FR2 (P=0.009). En el caso de la FDM en el ejercicio de remo, todos los grupos lograron mejoras (F: P=0.001; FR2: P = 0.01; FR1: P=0.04), ocurriendo lo mismo en el press de banca (F: P=0.001; FR2: P=0.001; FR1: P=0.002) y en prensa atlética (F: P=0.001; FR2: P=0.001; FR1: P=0.002). Finalizado el entrenamiento (4 semanas) se produjo una ligera, pero no significativa, regresión en los resultados. Para índice del SJFT, no se produjo una mejora en ninguno de los grupos. Por tanto, el EC aplicado, tanto en dos sesiones como en una, consiguió incrementar ambas cualidades en los testes no específicos (la fuerza y resistencia mejoraron, pero no se reflejó en el SJFT) sin producir interferencias entre ambas.

THE STRENGTH AND POWER IN JUDO – CHARACTERISTICS MALE AND FEMALE

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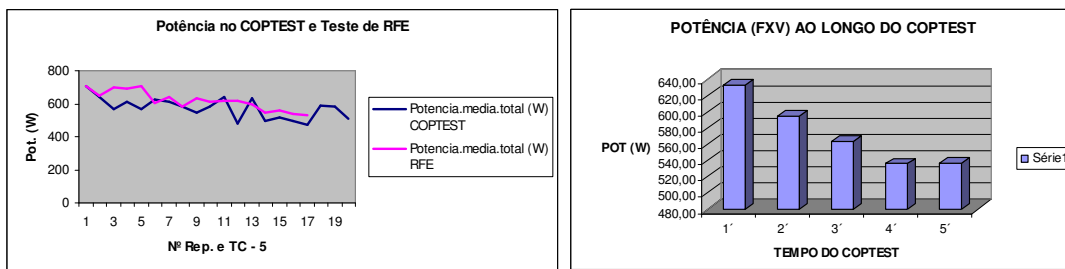
The purpose of this study was to compare the characteristics of the strength and power and the explosive resistance in male and female judokas. Twenty two men and woman judokas of Portuguese team (mean and sd body mass, M=76,3 ±0,03 and F=55 ± 8,2; age, M=22,3±1,8 and F=21,6 ±2,6; fat, 9,98 ±2,2 and 16,9 ± 3,1). The power-load relationships of the arm extensor muscles were tested in a bench-press position using progressive relative loads till 100% 1RM, for the leg extensor muscles we use de Squat Jump (SJ), Countermovement Jump (CMJ) with progressive relative loads. For the Resistance Explosive Strength for the arms we used the load of the power (Watts) and finished were the athletes performed -20%. For the Resistance Explosive Strength for the legs we used the Repeated Jump (RJ). During the upper extremity test actions, bar displacement, average velocity (metres per second) and mean power (watts) were recorded by linking a rotary encoder to the end part of the bar. The rotary encoder recorded the position and direction of the bar. The rotary encoder recorded the position and direction of the bar within an accuracy of 0.0002 m. Customized software (JLML I+D, Madrid, Spain) was used to calculate the output of the each repetition of the bench-press performed throughout the whole range motion. During the lower extremity test actions, the mean power (watts) was recorded by a platform. Customized software (ISONET500 - JLML I+D, Madrid, Spain) was used to calculate the output of the each repetition. The COPTEST(a) a competitive simulation test was used to evaluate the blood lactate concentrations and remove and recovery and evaluate the “Explosive Strength” resistance loading. Standard statistical methods were used to calculate the means and standard deviations (SD). The average of men’s and woman’s results, were compared using one-way analyses of variance (ANOVA). The P≤0.05 criterion was used for establishing statistical significance. The strength characteristics of the athletes of the upper extremity muscles are presented in Table 1. Peak force, one repetition concentric maximum and peak power were significantly lower in woman athletes than in man. No significant differences were observed and number repetitions of explosive resistance and the power strength (%1RM).

Table1 – Mean(SD) and (ANOVA) of Upper Body Characteristics Strength between man and woman

	Peak Force (N)	1RM (Kg)	Power (% 1RM)	Mediam Power (W)	Peak Power (W)	Explosive Resist (N° Rp.)
Men (n=16)	1668,79±446,1	104,4±23,2	52,1 ±6,1	611,4±125,7	2107,2±480,7	14,1±4
Woman (n=6)	995,38±393,4	55±11,7	58,3±8,9	325,7±70,1	1430,2±479,1	11,3±3,3
Sig.	**	**	ns	**	*	ns

\*p<0.05; \*\*p<0.01

The explosive strength of the lower extremity muscles are represented in (cm) SJ (M=34 ±6 and F=31,3 ± 1,6), CMJ (M=37 ±5,1 and F=32,8 ± 4,7), Elasticity Index (M=9,3 ±7,7 and F=5,4 ± 15,1) and RJ (30'') (M=28,7 ±3,2 and F=24 ± 2).



No significantly differences were represented between the test of Explosive Resistance in laboratory and the COPTEST(a) a competitive simulation Test. In COPTEST(a), between the first minute and the last minute (5') the mean in power strength decreases slightly till -15%. In addition the peak blood lactate concentration of COPTEST(a) was (M=17,4 ±2,7 and F=14,5 ± 2,3 mmol.l-1) and after ten minutes the blood concentration decreases till -45%. In summary, the results of this study indicated that absolute maximal strength and muscle power output in the bench press performance are significantly different in male and female athletes, but no differences were represented in explosive resistance. In the jumps power (lower body) the differences were noted, but lower values than those recorded in the upper body.

## RELATIONSHIP BETWEEN LIFTING HAND HOLD AND FAVORITE TECHNIQUE IN JUDO

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Although all judokas learn basic and correct holds (tadashii kumikata) on both pulling and lifting hands (i.e. where and how to hold a judo uniform (judogi), there are many variations of holds in the free sparing (randori) and during judo bouts. These variations seem to depend on each judoka's judo proficiency, personal preference or comfort level when he or she attempts to gain control during each pre-throwing and throwing phase, off-balance, entry and execution. The purpose of this study was to investigate possible relationships between variations of holds and favorite techniques (Tokui-waza). More specifically, this study focused on a lifting hand hold (Tsurite) and its location, application and modification and how the lifting hand hold contributed each judoka's selection of special or favorite techniques. Also, how the lifting hand hold was used when special or favorite techniques were attempted. In addition to this prime purpose, the author attempted to discover the major contribution of the hold variations and what contributed to the selection of a lifting hand hold (dominant hand versus non-dominant hand). The basic, standard or correct holds are taken either natural posture or defensive posture by holding a partner's lapel with one hand (Tsurite) and his/her sleeve with the other hand (hikite). Although there are many variations of holds, these holds are largely categorized by seven classifications; standard, cross, power, back, Russian, double lapel and double sleeve grips (Pedro, 2005). Also, favorite techniques (Tokuiwaza) were specified by Brousse and Matsumoto (1999) as "most students who become proficient in judo gradually modify and adapt their favorite techniques... When you master a technique well enough to make it singularly effective for yourself, that technique is called your tokuiwaza, which literally means "special" or "favorite" technique"(p.18). This qualitative study was conducted by personal interviews, questionnaires, observation and video analysis of judo practices and competitions. The results proved useful when the standard holds were taught for novice judokas and when judokas discover their favorite techniques as their skill level improved.

## THE JUDO IN THE ITALIAN PRIMARY SCHOOL

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The Committee for the juvenile activity of the FIJLKAM, after the reform 2003 Moratti, (what it looks out upon in the new plans of study the sporting practice as one "cultural tool to read and to govern the experience"), it has constituted some work groups, with the purpose to introduce the teaching of the judo in the school, having: - ascertained that the judo in the Italian schools was not practiced in the school's hours, but in scholastic extra schedules and only from a small number of schools; - individualized the necessity to delineate a common program, supported by a manual. Our group is devoted to the analysis and the study of the practice of the judo in the various primary schools of different Italian regions. The concrete effected projects, the manifold developed experiences, the applied methods and the various picked up results and discuss, we have conducted us to the elaboration of a specific program introduced in a relative manual. With this "oral presentation" we would like: - to expose some of the most meaningful steps, that have conducted to the elaboration of such didactic technical program; - to introduce the correlative explanatory manual.

APPLIED PSYCHOLOGICAL RESEARCH IN JUDO

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Today, Budo indicates Kendo, Judo, Karatedo, Aikido, Iaido, Kyudo and Naginatado. However, in Edo period, Budo indicated Bushido which was the ethics of warriors as leaders among other classes. Today's Budo corresponds to Bugei or Bujyutsu including swimming and horsemanship. Likewise, Kendo corresponds to Kenpo (sword fighting), Knjyutsu or Gekken (fencing), and Judo corresponds to Yawara, Jujitsu, or Taijyutsu (which is practiced without weapon). Although it is said that Bujyutsu turned to be Budo in the latter half of 1910. We are not sure exactly when this transition actually happened. The only evidence was presented in the book called "From Jujyutsu to Judo" in 1882 (founder of Judo: Dr. Jigoro Kano) International Judo Federation (IJF) was established around Europe in 1951 and Judo gained in popularity around the world rapidly after the 18th Tokyo Olympic game in 1964. Nowadays four million people practice Judo in 1951 countries (member countries of IJF). As Judo becomes internationalized, more people believe that Judo is a competitive sport. Some people, however, insist that Judo is not a competitive sport. Is Judo Budo or a sport? This is a controversial issue, and many researchers have studied on the attitudes towards judo. Generally, Budo is regarded as a composite of "Shin" "Gi" and "Tai". In Sekiguchi-ryu Jujyutsu, they are called "Shin ki ryoku" and in Kito-ryu Jujyutsu, they are called Shi ki ryoku. That is, Shin, Ki and Ryoku need to work together in order to maximize Gi. Ipoon is accomplished when Shin, Ki, and Ryoku get together. The symposium on the gymnastic significance of Judo was held at the convention of Japan Society of Physical Education, Health and Sport Sciences in 1965. At that time, modernization of Budo was discussed. We interpret the changing concept of Judo as a conflict between traditional Judo and competitive Judo. Then, to clarify what image people had for the judo done in every country in the world, we advanced the research. It rapidly spurs in the spread development of the judo after the judo is formally adopted for the Tokyo Olympics game in 1964 and people in the world catch the judo from various angles, and commerce the game (victory), the principle, and the physical education through life, etc. However, the Oconahica of approving the chairman of All Japan Judo Federation Kodokan superintendent is describing recently in the greeting at the new year, "It doesn't seem that the judo the ideal of the approving master universally did the spread development to the world". Then, knowing what image you held for the judo decided to advance the idea research to the judo lover who was studying the judo in the world in case of one of the critical factors in the internationalization of the judo in the future.

Key words: Judo, Image of Judo, University students, Judo practitioners ,

CONTEST ANALYSIS OF WORLD JUDO CHAMPIONSHIPS IN 1995-2005

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International Judo Federation (IJF) has been promoting judo to be more dynamic and aggressive in competition for over 10 years. A series of rule changes/modification such as enforced penalties against negative judo in late 90's and introduction of golden score in 2003 required athletes to be more physically fit and attack continuously. In addition, one minute addition to women's contest time period in 2003 set a higher standard for woman judokas than before. The purpose of this study was to clarify how athletes' performance in competition has been changed since 1995 by analyzing scoring and winning points, means of scoring points and penalties in the World Judo Championships (WCs). IJF official results including 4750 contests of the 6 WCs were used in this study. Some of the major findings were (1) ratio of ippon has been increased from 51.4% in 1995 to 59.6% in 2003, but decreased to 57.1% in 2005, (2) ratio of kinsa/golden score reduced significantly from 5.7% in 2001 to 2.9% in 2003 and 2.1% in 2005, (3) ratio of ippon for women was raised significantly from 50.2% in 2001 to 58.1% in 2003, when that for men was at the highest in 2001(65.0%) but 56.8% in 2005. The results indicate world judo has become more dynamic by means of increased ippons and declining tendency of kinsa/GS. Although there was a clear distinction between men and women until 2003, sexual difference in competition performance became smaller when difference in time period was disappeared in 2003.

THE EFFECTIVENESS OF JUDO TECHNIQUES INCORPORATED INTO FALL PREVENTION  
TRAINING

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The purpose of the study was to examine the effectiveness of judo techniques that were incorporated into fall prevention training program for the healthy elderly. The subjects were 14 elderly individuals who lived in urban areas and did not have any history of orthopedic illness. They were divided into 2 groups: 6 of them underwent fall prevention training (intervention group) and 8 were followed without any intervention (control group). Persons from the intervention group participated in fall prevention training (2 times a week, 30 min, 10 weeks) under the supervision of a judo therapist. Both before and after the training, motor function test and subjective degree of health survey were performed in both study groups. From the obtained results, it was clear that incorporation of judo techniques into fall prevention exercise programs effectively improved motor functions in the elderly.

THE SIGNIFICANCE OF THE BONE DENSITY MEASUREMENT FOR JUDO PLAYERS BY  
ULTRASOUND MEASURING METHOD

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Fifty-one male students and 24 female students who belong to the Judo club of University A or University B participated in this study. Their age ranged from 18 to 22. The test used was “Benus III BD-620” produced by Tanita Company. This is an instrument to measure human calcaneus bone density by ultrasound. A comparison of the male group with the standard values set by the maker showed no significantly high values. On the contrary, those of the female group proved significantly high. In addition, some male examinees in the low bone density group suffered from ankle injuries more frequently.



SYSTEMATIZATION OF TRAINING AND PERFORMANCE OF JUDO ATHLETES FROM THE  
NORTH REGION HIGH PERFORMANCE TRAINING CENTER (CTAR/RN)

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This study aims to present the training process adopted at north region high PERFORMANCE training center (CTAR/RN) for the Judo team and the results obtained during 2006. For the first time in Amazonas State history judocas were evaluated adequated to Judo needs, a season planing with 3 cicles was developed to direct the training acording to the competition calendar, and also the judo specific needs and the personal athletes' goals for reaching the peaks at the right moment. General and Judo specific methods of training were adopted according to the training phase. Main results: a) the anthropometric parameters and the motor tests evaluated showed that the judokas were fit to their weigth classes; b) since the CTAR/RN was developed and this coach commission was hired, never, in the Amazonas State, Judo has achieved such expressive victories in the main regional, national and international level tournaments with juvenile, junior and senior athletes. It may be concluded that the good performance results are directly linked to adequated season planning and its exectution, but also with the creation of an adequated training center, proper investment in Judo, good administration, criterious professional and athletes selection.

Key:words: Judo, Training, Planning.

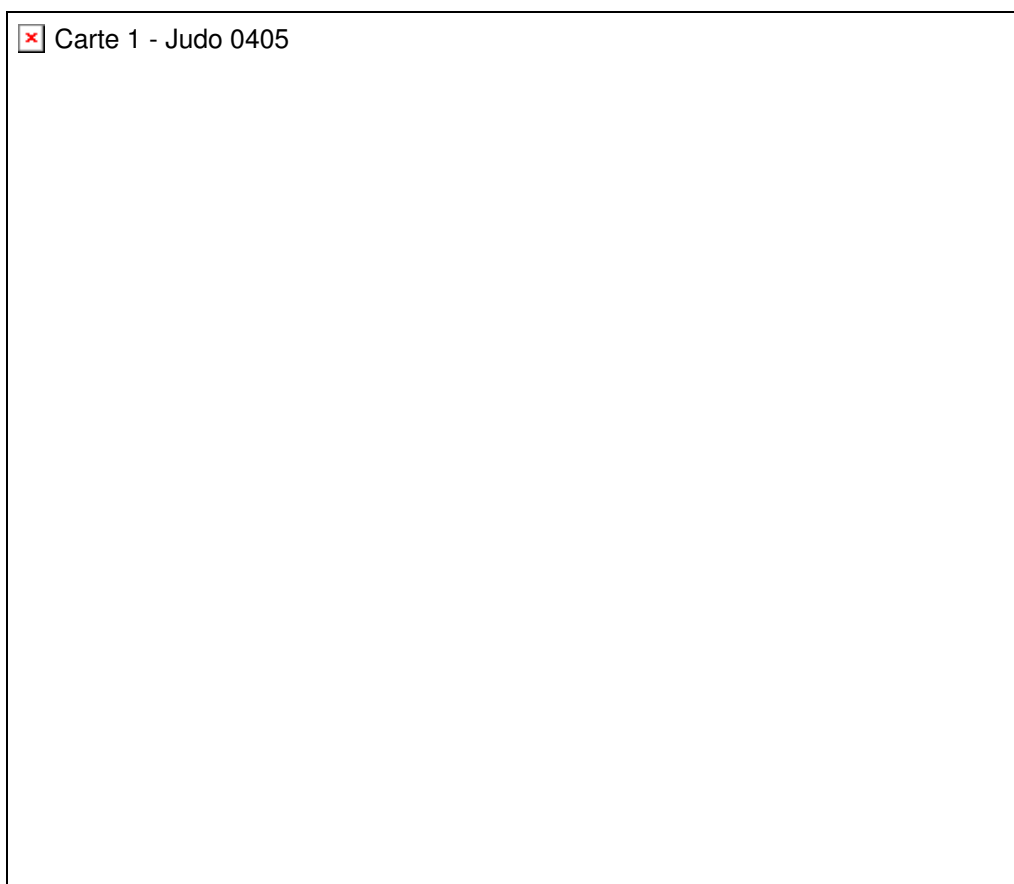
## LA GEOGRAPHIE : UNE AIDE AU DEVELOPPEMENT DE LA PRATIQUE DU JUDO

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Cette présentation a pour objectif de montrer l'intérêt de l'analyse géographique pour le développement de la pratique du judo. En effet, cette activité sportive possède une organisation géographique qui différencie le territoire national : certaines régions ont plus de pratiquants que d'autres tant en terme quantitatifs que relatifs (fig. 1). Les explications d'une telle carte peuvent être historiques et font alors référence à l'implantation et la diffusion du judo dans le pays. Mais elles sont aussi d'ordre structurel, expliquant les différentiels à l'aide du facteur démographique (population disponible, structure par âge) ou concurrentiel (présence d'autres activités sportives). Par une démarche tenant compte de ces variations spatiales, il est possible d'identifier les territoires ayant les plus forts potentiels de développement et d'engager alors des politiques ciblées pour atteindre des objectifs qui ont été quantifiés. Notre présentation se focalisera sur la France avec une double perspective nationale et régionale.

Figure 1 - La pratique du judo en France (2004-2005)



DIFFERENCES OF THE GROUPS OF THROWS USED BY MAN AND WOMAN IN DIFFERENT  
WEIGHT CATEGORIES DURING THE EUROPEAN JUNIOR JUDO CHAMPIONSHIPS 2005

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Goal of the paper is to identify and analyze the most used throwing techniques by every category in men and women part of competition in order to improve judo training. 238 fights were analyzed in men, and 171 fights in women part of European championship. Weight categories are grouping according to similarities of using certain groups of throws. Categories -48kg and -52kg have the same distribution of groups of throws. Dominated techniques are hand techniques followed by leg, sacrifice and hip techniques. In the Category -57kg the most dominant group of throws are also hand throws. Second group comprises weight categories -63 kg up to +78 kg. Within this group only the category -78kg has slightly different distribution of the dominant groups of throws, but the leg throws are still the most used ones. In the men's part of the tournament one can also distinguish two groups. In the first group there are categories -60kg, -66kg and -73kg. The dominant group of throws in these categories is hand techniques. The leg techniques are the second most used ones. The second group includes categories from -81kg to +100kg. In categories -81kg, -90kg and +100kg the second most used techniques are the hand techniques. The ranking of the rest group of techniques is different and specific for every category. Interesting thing about these categories is that the hip techniques aren't the last according to use (except in category -90kg). Conclusion: It is clearly shown that the judo is different for every category and that one must train it that way. The individual approach or at least making the homogenic groups enables bigger efficiency of the training and greater chance to accomplishing good international results.

## TAI OTOSHI CHECKLISTS' CONTENT VALIDITY

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The aim of this study was to address whether two tai otoshi checklists have content validity. Both checklists consider tori as right-handed. The first checklist was based on the global configuration of the tai otoshi, focusing two phases: 1) kuzushi, which was classified as POOR (tori moves toward uke, not unbalancing the uke), REGULAR (tori performs an arm movement after the body rotation, changing the order of kuzushi and tsukuri), GOOD (tori performs a body rotation, positioning the hand below the chest, but uke's body is unbalanced ahead), and EXCELLENT (tori performs a body rotation with the right hand at the same height of the chest, and the uke must be supporting him/herself only on the tip of the right foot); and 2) tsukuri: POOR (tori does not perform the body turn), REGULAR (tori performs the body rotation very close to uke), GOOD (uke, who is behind the back of tori, is projected over the tori's hip), EXCELLENT (the projection of the uke is performed behind of the tori's right leg). The second checklist specifically assessed the kuzushi of the tai otoshi, through two "yes or no" items: 1) motor task (tori's movement performed to unbalance uke) and 2) effect (unbalance on uke as a consequence of the movement performed by tori). Ten experienced Judo teachers/coaches answered three questions about the clarity of the content, the technical pertinence of the content, and the applicability of the checklist as a research tool. The results showed that the checklist 1 (global configuration) is: very easy (20%) or easy (70%) to understand, very adequate (30%) or adequate (60%), and very applicable (40%) and applicable (60%). The second checklist (kuzushi) was evaluated as: very easy (80%) or easy (20%) to understand, very adequate (80%) or adequate (20%), and very applicable (60%) and applicable (40%). Therefore, both checklists can be used as valid research tools in the qualitative analysis of the tai otoshi.

LATERALITY: HAVE THE LEFT-LIMBED JUDOKA ANY ADVANTAGES IN JUDO FIGHT?

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The aim of the present paper was to define the laterality of upper limbs and lower limbs and its relation with the level of achievements in this sport by young judo competitors. This research involved 90 participants of the International Judo Tournament for Young Competitors in Wieliczka-Poland (16 June 2006). Their age and training experience were  $13.5 \pm (SD)0.52$  and  $4.5 \pm 1.83$  year respectively. Before the Tournament held in nine weight categories, the Zazzo test was used to diagnose laterality. We tried to find laterality relationship with the level of achievements in judo tournaments (M - medalists; N - non-medalists). The hypothesis concerning the independence of traits was verified by means of Fisher's exact test at the level of  $P < 0.05$ . Thirty-five boys from the entire surveyed group won medals in nine weight categories. The left-handed competitors ( $n = 22$ ) took a little better at winning medals because half them were in the Group of Medalists. The right-handed competitors ( $n=64$ ) achieved a lower value of this quantity and it amounted to 0.38. The frequency of distribution may only indicate some tendency ( $P=0.164$ ). A little more than half (0.51) of the group of competitors with left-leg preference ( $n= 35$ ) became medalists, while this ratio amounted to 0.31 in the case of the judoka with right-leg preference. During the analysis of the data concerning laterality involving lower limbs, the probability that we would receive a different distribution from the one that is present in four cells table was considerably lower and this indicates a significant convergence ( $P=0.043$ ). In conclusion: judo young competitors, who are characterized by left-limb laterality have better chances of winning medals at tournaments. Their opponents fight under the conditions of increased entropy and they more often lose probably due to unexpected technical and tactical actions. Thanks for K. Kaczmarczyk for her help in data collection.

MOTIVATIONAL DIFFERENCES ACCORDING TO GENDER AND COMPETITIVE LEVEL OF  
JUDO PLAYERS

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The aim of this study was to determine the motivation pattern of the Brazilian judo players according to their sex and sports level. Forty one male and 13 female judo athletes answered a nine-factor motivation survey (Terry and Fowles 1985). Their mean ages were 18.0 (male) and 17.5 (female), whereas their training experiences were 9.1 and 6.0, respectively. They were divided in Elite (National, South-American and Pan-American medallists) and Non-elite (Nothing, Regional or State medallists). A 2-way Analysis of Variance (factors of sex and sports level) and Covariance (covariate age) was used to compare groups. The significant differences in the motivation of women and men occurred in four factors: excellence - opportunities to do something very well for its own sake; health and fitness; independence - opportunities to take control of one's own situation; stress - excitement, tension, and pressure which sport generates. Those factors values were lower in females than males. The results for sports level showed that the contestants were characterized by a really greater intensity concerning the desire to maintain health and improve physical fitness (H&F), which was more important for the Non-elite than for Elite. The only significant interaction was observed in H&F for sports level of competitors by sex. We find the significantly lower value of H&F motive in Elite Females than in Non-elite Females, whereas those values were similar in Elite and Non-elite Males. In conclusion, female judo players give less importance to excellence, H&F, independence and stress than male judo players. The only difference in competitive level was H&F, with lower level judo players giving more importance to this aspect. Thus, motivation to judo participation seems to be different among male and females and coaches should be aware of this in order to deal properly with his/her athletes.

## MOUNTAIN TRAINING FOR JUDOKAS PREPARATION

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How is it known that with doing mountain training preparation it is helpful to the sportsmen to achieve a higher level of physical capacity? For these purposes during the preparation of highly skilled judokas a few training camps are planned on mountains during a year. Using mountain conditioning training is a dangerous methodical way of training judokas, because if one does not take into consideration the individual or the group regularities in adaptation to the mountain conditions, this can quickly harm the health of the sportsman or bring him into a chronic exhaustion condition, which will give the adverse effect of this preparation. As an example to reveal this regularity in a group, a training camp was held with judokas on a mountain with an altitude of 1650 meters above sea level. 18 judokas participated in this training camp for 18 days. These judokas were of more or less of the same level of fitness but of different body weights. All Judokas carried out the training load corresponding to their functionality. This was to determine the level of control of changes occurring to an organism of the sportsmen, the use of the index of a functional condition gave the information about dynamics of adaptable shift changes in the cardiovascular system. For the analysis of the levels of physiological changes, the biochemical parameters of blood (hemoglobin, iron, phosphorus, etc.) were investigated. During these researches it was established: 1 – The efficiency of judokas adaptation to conditions on a mountain's climate depends on a level of their functional condition before the mountain training camp, then higher was the level of preliminary readiness, then less is the period of acclimatization; 2 – The duration of adaptation corresponds on the weight of the sportsman, the higher his weight, the longer and more difficult is the period of acclimatization. Heavyweight judokas have adaptation periods of 10 or even up to 12 days, but for judokas of medium weight this period is shorter and last up to 6 to 8 days whilst for light weight sportsmen this is of about 4-5 days. Thus, coaches that are planning to spend training camps on mountain conditions are to keep to the revealed regularity (parameters).

PROBLEMS OF JUDOKAS' SELECTION FOR OLYMPIC GAMES OF 2008 AND PROPOSALS FOR  
THE OLYMPIC GAMES OF 2012

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Some of the Principles and criteria existing today in a selection of judokas for the Olympic Games (OG) of 2008 are not quite correct. Therefore it is necessary to discuss and improve these criteria to develop better proposals on the selection of sportsmen for a coming OG of 2012. Problems: Why does a country (national federation) prepare Olympic champions of 2004, for the Olympics when these same athletes have no license from the International Judo Federation (IJF) or when athletes do not qualify to a certain weight category and are not nominate the represent their country in the following OG of 2008 of such weight? This should not be the case and they should be given a license. An example of this is from the last selection criteria for judokas (men) of Europe in the OG of 2004. Olympic champions of 2000 - from Turkey (66 kg), Italy (73 kg), the Netherlands (90 kg), France (+100 kg) did not receive licenses for participation in OG of 2004. The same happened in the OG of 2008 when sportsmen from Europe become Olympic champions of 2004, namely the judokas from Greece (81 kg), Georgia (90 kg) and Belarus (100 kg) who had no licenses for participation in OG of 2008. These countries which have already prepared Olympic champions, again should win licenses in these weight categories for participating in OG either by results of the World Championship of 2007 or in continental selection competitions. Expediently the IJF should give out licenses for these countries that have the right to nominate judokas in these weight categories to participate in following OG without having to qualify again in competition. This enables the country, and its national federation, that already have licenses of these some weights categories, to concentrate more on the financial assets and organizational resources rather than on a winning of licenses in other weight categories. Why only a small amount of places are given by IJF to the European Judo Union (EJU) for women? In each of their weight category there are only 5 places, which essentially complicate (toughens) matters, for the majority of European federation representatives to win female licenses to have the right to partake in OG. It is clearly visible, that there is discrimination for women in comparison with the men's quotas given from 5 for women to 9 for men. **Proposals:** 1. IJF should give licenses for the right of participation in OG of 2012 for those national federations of countries, who in the respective weight categories have prepared Olympic champions of 2008. 2. IJF should reconsider the quantity of quotas for women given out to the EJU to more than 5 people. It should increase due to the quotas given for men are higher. The fact that quotas are given out earlier to the country that organizes OG, this has reduced the quantity of licenses for men up to 4 places and for women up to 3, except of what they could win during qualifying competition rating selections. This makes it worse for European quotas instead of increasing European they have been reduced and the IJF should look into this matter. 3. The EJU should reconsider a different system of selection for the OG of 2012, different to those quotas which we will receive from IJF. Selection for the European judokas is carried out only by results of the European Championships 2009, 2010, 2011, 2012 (on a total sum of the collected points in these four European Championships). The status and the importance of the European Championships will considerably increase. Points are gathered for the result attained in each European Championship on all weight categories and does not go personally to sportsmen but only to the countries and their total amount of points gathered for the determination of those four years, whether the country gets the license in each of their weight category for the right of participation in OG according to those quotas which are allocated by the IJF to the EJU or not.



PSYCHOLOGICAL PROFILES IN JUDO: IMPLICATIONS FOR TALENT IDENTIFICATION AND  
DEVELOPMENT

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The purpose of this study is Comparison and determination of psychological profiles of Iran's elite male judoka in three age categories of cadets , juniors and seniors for talent identification and development in Judo. three group of elite athletic, cadets (N =68), juniors (N=82), seniors(N=68) who voluntarily participated ,were examined by the questioner of SASI. the finding revealed that not statistically significantly differ on six psychological factors of motivation , concentration , goal setting , imagery , self control and self confidence between groups.the psychological profiles of cadets , juniors, seniors shows that highest scores on the motivation,goal setting and self- confidence. In conclusion, this study shows a profile of psychological aspect of Iranian elite level male Judokas which can be considered as a valuable model in talent identification and development in Judo.

Key words : talent identification, judoka, psychological profile

SIMILARITIES BETWEEN PHYSIOLOGICAL PARAMETERS OF THE JUDO BOUT AND THE  
BASIC AND SPECIFIC FITNESS TESTS

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Goal of the paper is to analyze the possibility to predict functional abilities (specific endurance) via specific judo fitness tests. The sample of participants was 8 elite Croatian judokas (6 seniors and 2 juniors). They were tested with one basic endurance test (treadmill running test) and two specific judo fitness tests. First test was Specific judo fitness test originally created by Sterkowicz and the second was test Throw + two push ups in 90 seconds created by Sertić. The result in both tests is evaluated with the number of throws executed during the time of the tests. The physiological parameters observed during the tests were concentration of lactic acid measured one minute after the tests and after the judo bout and the maximal heart rate during the tests and bout. All judokas were carrying heart beats monitors which were recording through all the time of duration of the tests and judo bout. The parameters of lactic acid in blood and maximal heart rate during the activity were the indicators of the similarities between tests and the bouts, and because of their high coleration one can draw conclusions about functional abilities of judokas. Mean concentration of the lactic acid and the mean maximal heart beat during the Specific judo fitness test was 13.6 mmol/l / 188BPM, after the throw + two push ups test 14,2 mmol/l / 187BPM, after the basic test on the treadmill 13,7mmol/l / 197BPM and after the judo bout 13,7 mmol/l/189 BPM. Conclusion: One can conclude that the specific judo endurance and the functional abilities of the judokas can be estimated equally good by good results in each one of these three tests. Knowing the status of functional abilities of judoka helps to create more efficient training program and improve the judoka's status prior the important championships.

SPECIFIC DYNAMOMETER TO MEASURE THE FORCE OF THE ARMS OF JUDO ATHLETES

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The dynamometer is a method used to measure the muscles force, in special the maximum voluntary isometric contraction and explosive force (EF). Judo is a modality that uses these two manifestations of arm force. The major goal of this study is to present a new tool capable to evaluate asymmetry of members and the EF in similar movements to the executed ones during a fight. The dynamometer is composed of two force cells fixed between two steel handles. These handles are connected in a structure on wall that allows the adjustment of the height and distance between the force cells. During the execution of the test the athlete has, in real time, the feedback. The feedback is given through a monitor placed above of the device, which also shows the register of the curve force-time supplied for software. The athlete stay in front of the device, duly adjusted for him, and simulates an attack. An evaluation carried through on judokas (Brazilian National Team), where 13 were females ( $66,9 \pm 18,7\text{kg}$ , and  $151,8 \pm 45,5\text{cm}$ ) and 13 were males ( $87,1 \pm 24,7\text{kg}$ , and  $177,2 \pm 10,3\text{cm}$ ) presented the following results for the test of flexors explosive force of the elbow (simulating the Ko soto gari attack): Females and Males averages were respectively: right arm force  $669 \pm 144,4\text{N}$  and  $979 \pm 210,4\text{N}$ , left arm force  $619 \pm 110,8\text{N}$  and  $912,5 \pm 194,4\text{N}$  and asymmetry  $10,63 \pm 9,3\%$  and  $7,0 \pm 4\%$ . Only two athletes of the female team had a bigger asymmetry than 15%. These results only demonstrate one of the tests that can be carried through with this system. This system still registers the forces in any direction of the movement and also makes it possible the asymmetry evaluation. So, by using this system more complete evaluations of the athlete's physical capacities can be realized.

A SURVEY ON THE PROBLEMS OF JUDO ATHLETES AFTER RECONSTRUCTION OF  
ANTERIOR CRUCIATE LIGAMENT DUE TO REINTEGRATION INTO ACTIVE PLAYER

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ABSTRACT NOT RECEIVED BY EDITORS UNTIL SEPTEMBER 09th

## LE PROGRAMME DE L'EXERCICE D'INTERVALLE DU JUDO POUR LES ATHLÈTES FEMMES

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Cette étude a pour but d'analyser la réponse physiologique dans l'entraînement de judo pour les femmes et proposer le programme de l'exercice d'intervalle du judo. D'après AMTTMAN(2005), meilleure façon de travail de judo et repos pour le mécanisme d'approvisionnement de l'énergie en l'oxygène et non-oxygénée est la proportion des 2 travaux pour 1 repos (ou des 3 travaux pour 1 repos) par série. Nous avons proposé 4 types de programme de l'exercice d'intervalle du judo en se référant de façon d'AMTTMAN et avons mesuré l'acide lactique dans le sang, l'estimation d'effort perçue de BORG(RPE) et la pulsation (HR) dans le TEST-MATCH et RANDORI. «Les programmes»: 1. Randori d'intervalle 100% «travail : repos = 1 : 1» 5 minutes Randori = 5 minutes Repos x 5 séries; 2. Motodachi-Taté «travail : repos = 1 : 0.1» 5 minutes Randori + 30 secondes Repos x 5 séries; 3. randori Intervalle 50% «travail : repos = 2 : 1» 5 minutes Randori x 2 + 5 minutes Repos x 5 séries; 4. test match «travail : repos = 6 : 1» 5 minutes match x 30 minutes Repos x 4 séries. En acide lactique dans le sang, Test match est 12.5 mmol/l, il était remarquablement élevé. Ensuite, Randori d'intervalle 100% est 3.59 mmol/l, Motodachi-Taté est 4.52 mmol/l, et randori Intervalle 50% est 2.6 mmol/l. ( $F(3,27) = 14.117, p < .01$ ). Puisque que Test match est comme la compétition, par conséquent, elles ont fait les plus grands travaux. Et la fatigabilité est montée en faisant le produit d'acide lactique dans le muscle. AMTTMAN (2005) a signalé que «travail : repos» est 2:1~3 :1, 7~8 série, il est très efficace de capacité pour le mécanisme d'approvisionnement de l'énergie en l'oxygène et non-oxygénée. Mais, À la différence de façon de AMTTMAN, Ce résultat n'a pas de une grande différence par l'acide lactique dans le sang, RPE, et HR max dans le Randori les temps de randori. Nous pensons que le judo est très personnelle mouvement, C'est à dire que ça dépend de partenaire, La tendance de mouvement que il ne faudra pas force musculaire, Il faudra la technique, la vitesse et la adaptation pendant Randori.

ANÁLISIS DE DISTINTOS INDICADORES CONDICIONALES DE JUDOKAS DE RELEVANCIA  
INTERNACIONAL VS JUDOKAS DE RELEVANCIA NACIONAL

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El propósito de este estudio es conocer si existe un perfil condicional específico y común de los campeones internacionales y si éste se diferencia significativamente del de los judokas, que actuando en el contexto de la alta competición, aún no han sido capaces de lograr el éxito a ese nivel competitivo. Para ello se trabajó con una muestra de 110 judokas (54 campeones internacionales a los que denominamos “expertos” y 56 judokas de categoría nacional que aún no habían conseguido medallas continentales o mundiales; a este grupo de judokas los denominamos “novatos”. Antes del inicio del estudio se comprobó la normalidad de la muestra mediante el estadístico de Kolmogorov-Smirnov. La edad media de los expertos (E) fue de  $27,11 \pm 1,27$  y la de los novatos (N) de  $24,62 \pm 1,56$ . El estudio se realizó bajo diseño cuasi-experimental. Las variables estudiadas fueron: Consumo máximo de oxígeno, Fuerza explosiva máxima, Tiempo hasta la adquisición de la fuerza dinámica máxima, producción y aclaración láctica tras la realización del COPTEST©, y resistencia a la fuerza en régimen de velocidad. El análisis de los datos reveló que existen diferencias significativas en todas las variables estudiadas para  $p < 0,001$ . VO2Max en  $\text{ml/kg} \cdot \text{min}^{-1}$  ( $E=54,47 \pm 2,34$ ;  $N=56,14 \pm 2,21$ ). En fuerza explosiva en n/s ( $E= 46961 \pm 14304$ ;  $N= 30527 \pm 6228$ ). El tiempo hasta la adquisición de la fuerza dinámica máxima en ms ( $E=41,28 \pm 15,97$ ;  $N= 62,13 \pm 19,27$ ). Sobre el lactato producido medido en  $\text{mmol/l}$  ( $E= 12,02 \pm 1,35$ ;  $E= 13,89 \pm 1,33$ ). El aclaración láctica a los 5’ de haber finalizado el COPTEST© también reveló diferencias significativas, en  $\text{mmol/l/5’}$  ( $E= 4,56 \pm 0,83$ ;  $N= 3,32 \pm 0,82$ ). Por último la resistencia a la fuerza en régimen de velocidad, medido en unidades JMG revelaba el siguiente resultado ( $E=-33,57 \pm 11,93$ ;  $N= -12,66 \pm 11,19$ ). Las conclusiones del estudio demuestran que existen diferencias significativas en la condición física de los grandes campeones con relación a los judokas que aún siendo de alto rendimiento aún no han adquirido su madurez competitiva. Destacan las diferencias en las variables de fuerza explosiva máxima (MRFD) y aclaración láctica tras la realización de un test de simulación competitiva. Posteriores estudios podrán relacionar estos resultados con medidores de carácter técnico y/o táctico.