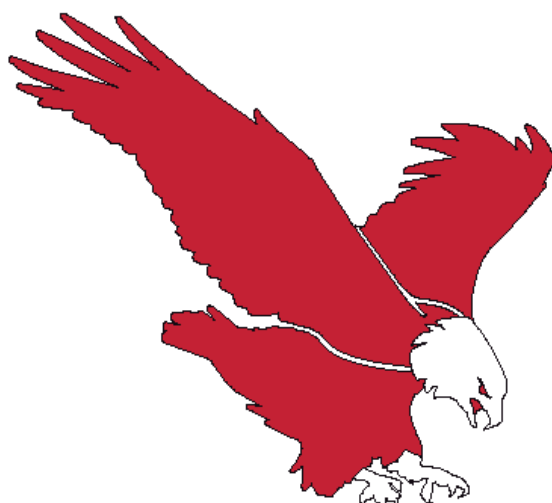


**3rd World Scientific Congress
of Combat Sports and Martial Arts
and 3rd IMACSSS International Conference**

ABSTRACT BOOK

October 15–17, 2014, Rzeszów, Poland

Wojciech Jan Cynarski and Anna Nizioł [Eds.]



**Faculty of Physical Education, University of Rzeszów
Rzeszów 2014**

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- IMACSSS – International Martial Arts and Combat Sport Scientific Society
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In cooperation with:

- EMAC – European Martial Arts Committee – Warsaw
- IASK – International Association of Sport Kinetics – Warsaw
- IMAF – International Martial Arts Federation / KOKUSAI BUDOIN Europe. Oldest Japanese world Budo-organisation. Chairman Europe Hanshi H.D. Rauscher 8th dan
- IMAS – the Institute of Martial Arts and Sciences – Lancashire, UK
- ISSSS – International Society for Social Sciences of Sport – Warsaw
- JAB – Japanese Academy of Budo – Tokyo

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- Rector of the University of Rzeszów
- “Ido Movement for Culture. Journal of Martial Arts Anthropology” <http://www.idokan.pl>
- “Revista de Artes Marciales Asiaticas” <http://revpubli.unileon.es/ojs/index.php/artesmarciales>
- “Physical Activity Review” <http://www.physactiv.ajd.czyst.pl/>

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INTRODUCTION

We have invited everybody interested in the subject to cooperate and take part in the Congress. We relish the fact that so many people and organizations have responded positively to our invitation.

The foundation of IMACSSS – the International Martial Arts and Combat Sports Scientific Society – was preceded by a long-term activity of the Idokan Poland Association (IPA, founded in March 1993), cooperation of researchers assembled in “Ido Movement for Culture. Journal of Martial Arts Anthropology” and international scientific conferences organized in Poland and Portugal. In 2006 the First World Scientific Congress of Combat Sports and Martial Arts was organized in Rzeszów on the initiative of Professor Roman Maciej Kalina, supported by Professors K. Obodyński and W.J. Cynarski. As a result, an international scientific association was created four years later.

The Second World Scientific Congress of Combat Sports and Martial Arts in Rzeszów took place in September 2010. It established the international IMACSSS board. Next year, in 2011, there were two important events: Congress CS&MA in Viseu (Portugal) and II International IPA Symposium in Rzeszów. In 2012 Dr Sergio Raimondo organized the first official IMACSSS International Conference in Genoa (Italy). In the same year Professor W.J. Cynarski participated, as an invited speaker, in a conference at Japanese Academy of Budo in Tokyo. In March 2013 the IMACSSS President patronized the International IPA Symposium organized on the occasion of the 20th anniversary of the association. The following event was 2nd IMACSSS International Conference in Tsukuba (Japan) in September 2013 and finally there is the third one – now, in October 2014. Thus, the organizational process as well as the intuitional development are constantly in progress.

The Rzeszow School of Martial Arts Science has organized conferences and symposiums devoted to humanistic subjects for more than 10 years (not including single sessions during various scientific conferences). The congresses are our tradition. This 3rd World Scientific Congress of Combat Sports and Martial Arts, 3rd Martial Arts’ Gala and 3rd IMACSSS International Conference are connected with the 4th Workshops of Martial Arts (in co-operation with IPA) and 7th Symposium of the Rzeszow School “Man – Martial Arts – Humanism” (papers prepared from social and humanistic perspective). But, our Congress is multidisciplinary. Only in this way the ‘martial arts science’ can be developed. We are open to a wide range of topics, having in mind the holistic paradigm. We have accepted works within the following research fields:

- Topic 1: Coaching, training and fighting skills;
- Topic 2: Biomedical problems of combat sports and martial arts;
- Topic 3: Humanistic, philosophical, socio-cultural issues, psychological, pedagogical, historical (during the 7th Symposium “Man – Martial Arts – Humanism”).

There was also a possibility to apply for practical activities within the Workshops of Martial Arts. And all young scientists were able to take part in the 2nd Edition of the IMACSSS Young Researcher Awards (a special session for candidates for these Awards). Professor Carlos Gutiérrez-García is the chairman of this special YRA Committee.

Thank you for your participation in this event and for your works sent to us. We appreciate the work done by the reviewers. We hope, it will be special experience and an opportunity to gain new, inspiring knowledge for all participants – scientists, pedagogues, coaches and all practitioners.

Wojciech J. Cynarski, Anna Nizioł

FOREWORD BY PROF. ALEKSANDER BOBKO, RECTOR UR



Europe has been in a state of peace for almost seventy years, interrupted only by local, alas, often very bloody conflicts. New generations grow up without the awareness of what the war is. There is no obligatory military service in many European countries and raising teenagers is dominated by the spirit of tolerance, kindness towards other people, even pacifism and submission to the stronger. Eternal dreams about “everlasting peace” seem to be at hand. Is there, in such circumstances, still a place for mastering in martial arts?

I do not intend to make an in-depth analysis of this matter. However, I will quote the words of a great thinker of the Age of the Enlightenment – Immanuel Kant, whose philosophy exposes enormous abilities of a rational man and expresses hope that humanity is capable of fulfilling the project of everlasting peace. Despite such beliefs he wrote: “War itself, if it is carried on with order and with a sacred respect for the rights of citizens, has something sublime in it, and makes the disposition of the people who carry it on thus, only more sublime, the more numerous are the dangers to which they are exposed, and in respect of which they behave with courage. On the other hand, a long peace generally brings about a predominant commercial spirit, and along with it, low selfishness, cowardice, and effeminacy, and debases the disposition of the people” [I. Kant: *Critique of Judgment*].

I do not know the ideals that drive activity of the International Martial Arts and Combat Sports Scientific Society (IMACSSS). I am convinced, however, that in modern times happily overwhelmed by the spirit of trade and consumerism it has a specific role to fulfil. Martial arts practiced according to a set of fixed rules may undoubtedly suit proper development of a man, they can dignify him, teach discipline, responsibility and may introduce an element of sublimity Kant wrote about.

I have to express my happiness from that fact that academics of the University of Rzeszów are involved in the activity of the Idokan Poland Association (since over 20 years) and IMACSSS. Their participation enriches the scenery of the University with, although niche, but interesting scope of research and practice. It makes the future development of the young Faculty of Physical Education look promising.

The World Scientific Congress of Combat Sports and Martial Arts is organised here 3rd time, and probably not least. All participants are sincerely welcome to, now and always.

Prof. zw. Dr hab. Aleksander Bobko
Rector of the University of Rzeszów

KEYNOTE SPEAKERS AND SPEECHES



1. Fuminori NAKIRI

Career:

Professor Emeritus - Tokyo University of Agriculture and Technology

Visiting Professor and Vice Director - Institute for Nanoscience & Nanotechnology, Waseda University

Most Recent Academic Background

March, 1971 Graduated - Faculty of Physical Education, Tokyo University of Education

March, 1974 Finished - Graduate School of Physical Education, Tokyo University of Education

Abridged Professional Experience

June, 1974 Research Associate - Institute of Health and Sport Science, University of Tsukuba

March, 1979 Assistant Professor - Institute of Health and Sport Science, University of Tsukuba

April, 1979 Senior Assistant Professor - Tokyo University of Agriculture and Technology

April, 1980 Associate Professor - Faculty of Engineering, Tokyo University of Agriculture and Technology

April, 1993 Professor - Faculty of Engineering, Tokyo University of Agriculture and Technology

April, 2004 Director - Health Service Center

April, 2011 Trustee (Vice-President for Public Relations and International Affairs), Tokyo University of Agriculture and Technology

April, 2013 Professor Emeritus-Tokyo University of Agriculture and Technology (until present)

Field of Specialization: Sports Science (Kendo, Biomechanics, Exercise Physiology, Sport Engineering)

Main Publications:

Fuminori Nakiri, Naoya Yokoyama, Yuji Arita, Tetsuya Kubo, Shin-ichi Yamagami, *Influence of Datotsu in Kendo on the Human Head: Impact Estimation Using Simulation with Crash Dummy*, "Research Journal of Budo", 37,3,1-11, 2005, etc.

Membership with Academic Societies:

President of the Japanese Academy of Budo,

Vice-President of the International Martial Arts and Combat Sports Scientific Society (IMACSSS),

Honour Member of the Idokan Poland Association (IPA)

Budo Activity:

Centenary of Immigration to Brazil Special Budo Delegation (Kendo), 2008.6 etc.

Fuminori NAKIRI

Tokyo University of Agriculture and Technology, Tokyo (Japan)

CONCEPT OF *BUDO* AND THE HISTORY AND ACTIVITIES OF THE JAPANESE ACADEMY OF BUDO

History

The Nippon Budokan was constructed to serve as the venue for judo at the 18th Olympic Games in Tokyo in 1964. The first director of the Nippon Budokan, Matsutaro Shoriki, stated that “In order to promote budo participation among youth, we will need a new generation of excellent instructors in tune with the age. To do this, we need to develop budo as an academic field of inquiry.” Shoriki spearheaded an effort to work with universities and people involved with budo, and the Japanese Academy of Budo was subsequently established in 1968.

Organization and Activities

The policy of the Japanese Academy of Budo is that budo studies should not be an independent field of inquiry that is separated from practice, but that research activities should be conducted in a way that would always link research with the place of practice, which offers great originality from an academic perspective.

The Academy’s headquarters are located inside the Nippon Budokan, and its membership includes budo teachers, university professors in health and physical education who specialize in budo, and health and physical education teachers at elementary, junior high, and high schools. The Academy currently has around 900 members.

Branch chapters have been founded in Tokyo, Saitama, Tokai, Hokuriku, Kansai, Yamanashi and Chushikoku, with research presentations conducted in each region. Additionally, there are specialist subcommittees for the various budo disciplines (judo, kendo, sumo, kyudo, karate and naginata). Subsidies are used to hold symposiums and lectures and to conduct research activities for publication in periodicals. In 2014, the Academy also established a specialist subcommittee for budo for the disabled.

The main activity of the Academy is the organization of an annual research convention. The convention hosts a general meeting, research presentations (oral and poster), and a symposium on a timely topic, accompanied by lectures and workshops conducted within the specialist subcommittees. Research presentations are categorized into the humanities, natural sciences, and budo instruction. The *Research Journal of Budo*, the periodical of the Academy, is published three times per year. The contents of the periodical can be viewed by anyone accessing the J-Stage site from the Academy website (www.budo.ac).

Concept of Budo

In Japan, the term budo first appeared in *AzumaKagami* (1195), in reference to warrior ancestry and the warrior profession. In *Taiheiki* (1371), it was used with reference to the way in which warriors were supposed to live their lives, contrasting with the way described in science, literature, and the arts. In a 1641 scroll of the Takenouchi-ryu school of classical bujutsu, the term appeared with reference to the martial arts (*bujutsu*, *bungei*). During the Edo period, budo was commonly used to denote the same ideals as those in bushido. It was in 1919 when Hiromichi Nishikubo of the Dai Nippon Butoku Kai changed “bujutsu” into “budo,” and thus *kenjutsu*, *jujutsu*, and *kyujutsu* became known as kendo, judo, and kyudo, respectively. The term “kakugi” (fighting techniques) started to be used in 1958, but it was changed to “budo” in 1986 and it is still in use today (Source: Tamio Nakamura).

With regard to the conceptual definitions and characteristics of budo, I would like to discuss the representative views of two people in particular. The first is Dr. Yasuhiko Torii, the former president of Keio University as well as the former chairman of the Central Council for Education of MEXT. Referring to Ruth Benedict’s classic work, *The Chrysanthemum and the Sword* (1946), he identifies the following qualities as having been lost by the Japanese: courtesy, returning favor, honor, shame, tenderness, hope, ambition, effort

and endurance. After Japan's defeat in the Second World War, post-war education became Westernized and democratized, and notions of individualism advanced. A self-tormenting view of history subsequently took root, and traditional outlooks concerning philosophy, ideas, culture, history and behavior were shunned.

He thus argues that the social significance of budo is immense, given the present need for Japanese to reestablish their culture and identity. When speaking about the characteristics of budo, he talked about Inazo Nitobe's book, *Bushido: The Soul of Japan*, stressing the importance of moral development as human beings.

The other person I would like to mention is Dr. Tsuneo Sougawa, professor at Waseda University. He formulated the following four elements in the construction of the concept of modern budo:

1. Japanese traditions or ideas that are inherently Japanese
2. A mentality seeking differentiation from non-Japanese sporting culture
3. A cultivation of the mind that aims for personal development through exercises in physical techniques derived from battle
4. Competition and character in international sports

Bearing these views in mind, the Japanese Academy of Budo will continue its efforts to elucidate the conceptual definitions and characteristics of *budo*.



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Education

1989 – Ph.D., Physical Education and Human Movement Studies, University of Oregon, Eugene, OR, USA

Professional Experience

2/2014 – present Professor, Department of Kinesiology, Faculty of Sports Studies, Masaryk University, Brno, Czech Republic

09/2011–2/2014 – Associate Professor, Department of Taekwondo, College of Physical Education, Keimyung University, Daegu, Korea

Offices, Functions, Committees

1996–1999 Regional Director for Europe, Martial Arts Commission, International Council of Health, Physical Education, Recreation, Sport and Dance (ICHPER-SD).

1980–1983 Member, Executive Committee, Taekwondo Bond Netherlands, The Hague, The Netherlands

National Coach Education Program

1981 *Taekwondo Bond Netherlands and Netherlands Taekwondo Association*
Set up the coach education program for both taekwondo organizations

Coaching

1993–1994 Head coach, women's taekwondo team, College of Human Kinetics, University of the Philippines, Diliman, QC, Philippines

1984–1986 Head coach and founder, University of Oregon Taekwondo Club, Eugene, USA

1969–1983 Head coach, taekwondo clubs in The Netherlands

Research focus

Multi-factorial modeling of combat sports performance

Epidemiology and multi-dimensional modeling of combat sports injuries

International recognition

“The impact factor should be used with informed peer review” (<http://wokinfo.com/essays/impact-factor/>)

h-index (ISI): 20

i10-index: 42

Number of citations: 1284 (as of August 9, 2014)

Cited publications: 80

h-index (Publish or Perish): 19

g-index: 30

Number of citations: 1389 (as of August 9, 2014)

Cited publications: 124

Reviewer – ISI/Scopus journals (2005-present)

Sports Medicine

European Journal of Sport Science

Journal of Sports Sciences

British Journal of Sports Medicine

Perceptual and Motor Skills

International Sports Med Journal

Publications

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THE OREGON TAEKWONDO RESEARCH PROJECT: A REVIEW AND RE-ANALYSIS

The Oregon Taekwondo Research Project (OTRP) was conceived by the author at the University of Oregon, USA, in the late 1980s with the assessment of isokinetic strength of male university taekwondo athletes. The hamstrings to quadriceps (H/Q) ratio of the right leg was $93.42 \pm 14.35\%$ at $180^\circ/\text{sec}$ and that of the left, $88.34 \pm 27.24\%$ ($d = 0.24$, 95% CI: -10.39 – 20.42). The control group recorded $70.46 \pm 27.24\%$ and $73.14 \pm 20.05\%$, respectively ($d = 0.11$, 95% CI: -14.74 – 20.29) (Pieter et al., 1989).

After the pilot study with these recreational athletes, testing was done on members of the US national men's and women's teams as well as those of their junior counterparts. The project included sports physiology, sports psychology, kinanthropometry, biomechanics and epidemiology of competition injuries.

Although performance analysis was initially included, the results were never published other than in a report for the national governing body to indicate that two of the strategies used were clinching and going out of bounds. Those who won their matches went out of bounds less than those who lost. Winners initiated attacks rather than counter-attacks, with the roundhouse kick being the most frequently used technique for both successful and unsuccessful competitors. The remainder of this abstract will give an overview of the various components of the OTRP, which is believed to have been the most extensive taekwondo research conducted in the USA or anywhere else at the time.

Aerobic endurance of the men relative to lean body mass (LBM) per ratio standard (60.32 ± 3.94 ml/kg/min) was higher than that of the women (53.02 ± 8.79 ml/kg/min) but the effect was not clear: $d = 0.57$, 95% CI: -1.66 – 19.25). This was also true for mean anaerobic power per ratio standard LBM: 9.97 ± 1.29 vs. 8.98 ± 1.30 W/kg/LBM ($d = 0.77$, 95% CI: 0.04 – 1.67) (Taaffe and Pieter, 1990). In pre-pubertal boys

(13.26 ± 0.69 years), absolute mean anaerobic power (347.75 ± 81.76 W) was lower than in their older counterparts (16.26 ± 1.01 years, 513.11 ± 101.96 W, $d = 1.73$, 95% CI: $-25.98 - 34.44$) but the effect was not clear as well (Bercades et al., 1995).

In pre-pubertal girls (12.46 ± 0.35 years), anaerobic power decline (1.13 ± 0.07 %) was significantly higher than in their older counterparts (15.42 ± 1.26 years, 1.04 ± 0.04 %, $d = 1.48$, 95% CI: $1.46 - 1.50$). Girls (15.1 ± 1.7 years, 3.2 ± 0.9) were more endomorphic than boys (15.2 ± 1.8 years, 2.3 ± 0.8 , $d = 1.07$, 95% CI: $0.83 - 1.25$), but less mesomorphic (3.4 ± 1.1 versus 4.2 ± 1.2 , $d = 1.07$, 95% CI: $0.42 - 0.99$) (Bercades et al., 1995).

Epidemiological data on competition injuries in adult taekwondo athletes revealed that men did not incur more injuries than their female counterparts: 95.1 injuries/1,000 athlete-exposures (A-E) (95% CI: $84.7 - 105.4$) versus 105.5 (95% CI: $89.8 - 121.1$)/1,000 A-E (95% CI: $89.8 - 121.1$) (Zemper and Pieter, 1989). Time-loss injury rates for junior (6 – 16 years old) taekwondo athletes were 25.54/1,000 A-E (95% CI: $21.52 - 29.56$) and 29.91/1,000 A-E (95% CI: $21.27 - 38.55$) for boys and girls, respectively, and did not differ statistically (Pieter and Zemper, 1997).

Two weeks before the 1987 World Championships, a combined group of recreational male and female taekwondo athletes scored higher on vigor (25.0 ± 3.7) than their elite counterparts (21.4 ± 6.9), which was statistically significant ($d = 0.72$, 95% CI: $-0.99 - 4.47$), although the effect was not clear (Pieter, 1991).

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1976–Certification in Coaching Judo (Polish classification: 2nd Class Coach)

1982 – Doctor of Philosophy in Physical Education

1985/86 –research internship at Moscow Institute of Physical Culture and Sports

1987 –Higher Certification in Coaching Judo (Polish classification: 1st Class Coach)

1993 –Doctor of Philosophy in Physical Culture Major in Theory of Sport

1996 – Master Certification in Coaching Judo

2001 –Judo Coaching Course at Institute of Sports in Malaga

2001 –the first place winner in the competition for the best scientific work on judo organized in Munich by International Judo Federation

2003 –Awarded Professorship in Physical Culture

Professor Stanisław Sterkowicz (Full Professor Rank) has, among the others, the 5th Dan hapkido grading. He is a specialist in the theory and practice of martial arts and combat sports (master grading in judo, ju-jitsu, karate, hapkido).

Research problems

He deals in a multilateral way with scientific identification of factors determining success in martial arts and combat sports. He came second in the world ranking list of the most creative scientists composed according to Web of Science criteria. He achieved the position for significant papers concerning judo in the decade of 2001-2010.

* * *

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ENERGY SYSTEM CONTRIBUTION TO SPECIAL JUDO FITNESS TEST: EFFECTS OF THROWING METHOD

Key words: Skill related fitness, energy expenditures, judo exercise load

Introduction and Aim. The most recent literature shows that the Special Judo Fitness Test (SJFT) has been exceptionally popular among fitness tests [Detanico, dos Santos 2012]. The aim of the study is to compare the effects of the methods of throwing on performance and physiological and metabolic response of judo athletes.

Methods. Seven judo athletes (21 ± 3 years old, 79 ± 15 kg, 178 ± 7 cm, 10 ± 3 years of judo experience, 13 ± 3 training hours a week) participated in an experimental procedure on two consecutive days. They performed SJFT in Nage-komi (RT - repetitive throws) and Tandoku-renshu (TR - solo throws), using Seoi-nage (one shoulder throw).

Heart rate and oxygen uptake (Meta Max 3B device, Germany) were measured simultaneously during and after the effort. Blood lactate (Biosen S-line, Germany) was measured before, in 4th and in 8th minutes after two different variants of SJFT performed using the time structure as proposed by the Sterkowicz's protocol [2; Franchini, del Vecchio, Sterkowicz 2009]. Both variants of performance (RT and TR) were videotaped and the throws performed were counted. Energy systems contributions were assessed according to common principles used before [Franchini *et al.* 2011]. ANOVA with repeated measurements and the Fisher test were carried out using Origin 9.1 software. Significance level was set at 0.05. In addition, a case study was presented.

Results. A statistically significant increase in the number of throws in TR was found compared to RT, whereas HRs after RT and TR were similar. HR after one minute of recovery was significantly lower in TR than in RT. The SJFT index was lower (better) in TR than in RT. Total energy expenditures were similar (RT = 250.5 ± 30.6 kJ vs. TR = 234.5 ± 21.3 kJ and comparable to [Franchini *et al.* 2011]), but the relative energy expenditure for one throw was higher in RT than in TR. In SJFT RT variant, the alactic system dominated and contributed significantly higher than in SJFT TR variant. During RT variant, the lactic energy system contribution was significantly lower than both alactic and aerobic energy system contributions. During TR variant, alactic energy system contribution was lower than the contribution of the aerobic system, but higher than the contribution of the lactic energy systems. Lactic energy system contribution was significantly lower compared to the aerobic energy system.

Conclusions. Higher Index and anaerobic alactic system dominance was noticed in SJFT with Nage-komi performance. The aerobic system was the main energy contributor during Tandoku-renshu performance. The lactic system was third contributor in both performances of SJFT. The other test proposal as well as training exercises should be evaluated in the same methods for betterment of training effects control and planning.

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4. Wojciech J. CYNARSKI

He is a Professor at Rzeszowski University, and Head of the Chair of Cultural Foundations for Physical Education, Tourism and Recreation in the Faculty of Physical Education (Rzeszów, Poland). He has a Master's degrees in sociology and technical sciences, he has carried out post-graduate studies in pedagogy, and doctorate and qualifications (habilitation) in sciences of physical culture (J. Pilsudski University of Physical Education in Warsaw). He is the founder and President (since 1993) of the Idōkan Poland Association and the editor-in-chief (since 2000) of the *Ido Movement for Culture. Journal of Martial Arts Anthropology*. The first President (since 2010) of the IMACSSS – International Martial Arts and Combat Sports Scientific Society.

He also holds the office of Deputy Dean of the Faculty for Science and International Relations (2012-2016). He is a doctor habilitated (Associate Professor) of physical culture sciences and a sociologist of culture and sport, researcher and master-teacher of *Budo*. Moreover, the Supervisor for Doctoral Studies. He promoted a few doctors in physical culture sciences. His major scientific interests concern martial arts, sociology (of culture, tourism and sport) and pedagogy (of sport and physical education).

Currently, he holds the title *KaidenShihan* (Master Teacher) in the school *IdōkanYōshin-ryū*, and also, among other things, 8 danjūjutsu and 7 dan karate.

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MORAL VALUES OF THE NOBLE WAY OF MARTIAL ARTS

Introduction

From the perspective of the humanistic theory of martial arts and the anthropology of the warrior's way we shall undertake a discussion of the moral values of martial arts, in the past and now. We shall begin with historiosophical considerations and the theory of civilization. The issues of ethics, especially the chivalric ethos, will be the "common denominator" for further discussion. Subsequent fragments will be dedicated to the ancient traditions of martial arts, Christian influences in the area and the question of how the contemporary ethos preserves these and other values.

If for the purpose of interpreting the complex, contemporary socio-cultural reality a multidimensional anthropological, ethical and educational perspective is assumed [Szmyd 2011], the same should apply to this interpretation of current codes of chivalry and their derivatives [cf. Kim, Bäck 2000].

The knightly tradition of courage, honour and other virtues began in Europe with the Normans. A knight was an armed rider, who in contrast to warriors in other cultures, fought in the name of higher values. The ethos of chivalry grew out of Western Christianity while the fame of the legendary heroes of the European Middle Ages comes especially from the Crusades, the chivalric orders (the Templars, the Knights of Malta, the Order of Saint John), victorious battles and tournaments. It was also an ethos of steadfast loyalty and opposition to evil.

Aim and method

The aim of this study is to conduct a critical analysis of the ethics functioning in selected systems of martial arts. The theoretical perspective is based on the humanistic theory of martial arts, and the sociology and anthropology of martial arts [Cynarski 2004, 2012; Obodyński 2009].

The main method of research is a content analysis of documents and specialised literature, which is complemented by a qualitative method i.e. the author's long-time participant observation of the international martial arts environment.

Results and conclusions

In terms of a diachronic and synchronic approach, old traditions of martial arts, Christian influences in the area and the question of what their ethos looks like today are consecutively analysed.

Thanks to Christian axiology [John Paul II 2005; Van Engen, Whiteman, Woodberry 2008] the ethos of chivalry seems to be a unique achievement among different cultures of warriors, due according to the author, to its most perfect normative ethics. Respect for others, reverence for women, recognition of the special value of human life, protection of the weak, truthfulness, faithfulness and honesty, courage and honour are what are often lacking today.

Humanized *budō* includes an axiological canon, which today however manifests itself in various ways. These include forms of harmony of movement in *aikidō*, *kyūdō* rituals, and forms of sport (including power and contact, or highly conventionalized sports) practised for other purposes. On the other hand, the martial arts of other countries are sometimes similar to their educational systems, or they focus only on teaching the technical and tactical side. The philosophies of schools are often the philosophies of the lives of their main masters.

Interestingly the philosophy of *idō* presents itself as a result of a dialogue of cultures, the exchange of values between East Asian martial arts and European knights.

Moral values are here presented as if they are the implementation of Nitobe's idea of the relationship of the warrior's way with Christianity [Nitobe 1900; Nowak 2007; Cynarski 2014]. The noble man should follow the humanistic pathway of virtue in a radical way.

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ABSTRACTS

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THE FOOT STRUCTURE OF CONTESTANTS IN FIGHTING SPORTS

Key words: fighting sports, angles and arches of foot

Introduction

Through evolution, human beings acquired the characteristic ability of bipedal upright movement [Coyne 2009]. Bipedal movement allows for efficient locomotion and better use of living space, but the complex structure of feet, when subject to excessive loads, can suffer permanent, pathological changes. The size of the longitudinal arch determines the ability of the feet to stabilize the body and support the entire body's mass [Puszczalowska-Lizis 2011]. The practice of competitive sports, which is associated with increased shock absorption, requires constant monitoring of the state of the feet. Through consistent diagnosis and prevention, it is possible to maintain the condition of contestant's feet, allowing them to perform their function despite being overburdened with physical exertion.

The aim of this work is to assess the male foot structure in relation to sport discipline. This was verified using various features of feet including the longitudinal and transverse arches, the angles of the first and fifth toes, and the angle of the heel. In addition, the contestant's height and body mass, and the breadth and length of their feet, were recorded and used to calculate the BMI and Wejsflog Index.

Data comprised of measurements of two groups of contestants of judo and karate. Judo's contestants: N=70, age= 17±1.7, practice= 8.4±2.4; Karate's contestants: N=30, age= 19.9±3.7, practice= 9.4±1.9.

Methods

Anthropometric measurements were done with a measurement technique proposed by Martin [1957]. Somatic characteristics were measured using standard anthropometric equipment. Body height was measured with an anthropometer to an accuracy of 1 mm. An electronic scale (standardized regularly) was used to determine body weight to an accuracy of 0.1 kg. Parametric assessment of the feet was made using the Podoscope [Śliwa *et al.* 2005]. The device allows for taking a photo of the plantar part of a foot using a digital camera. The image is transferred to a computer, where, using appropriate software, an analysis of the foot is made (the arch, position of toes). The work analyzed the Clarke's angle indicating the longitudinal arch of the foot, Alpha angle describing the position of the big toe, Beta angle evaluating the position of the fifth toe, and the Gamma angle, also called the "heel angle". The longitudinal arch was rated on the basis of the value of the Clarke's angle [Kasperczyk 2002]. The aforementioned author gave a threshold of 42° as the appropriate value [Bąk 1965; Lebioda 1965; Zeyland-Malwka 2003]. The work uses a classification based on the value of the angle given by the Podoscope software, where the range below 28° corresponds to a flat foot; 28–39.5° – a lowered foot; 40–52° – an appropriate foot; and values above 51° indicate an overly arched foot. Bieniek [1967] and Ignasiak [1984] have applied a similar division. The alpha angle, describing the difference between the big toe and the foot axis is also referred to as the big toe valgus angle. According to Wejsflog [1963], the range of the big toe valgus angle is 0–9°; increasing the angle causes

the pathological offset of the first metatarsal bone, along with the first toe of the foot. This dysfunction causes pain that may impede an individual from playing sports or even exclude a player from professional sport. The gamma angle, defined as the heel angle, describes the height of the transverse arch. According to Wejsflog's classification, the standard is 15–18°. Using this classification, the following foot types can be distinguished: transverse – hollowed for values lower than 15°; correct for values between 15° and 18°; and transverse–flattened for values exceeding 18° [Puszczałowska-Lizis 2011].

Results

The Clarke's angle, indicative of the longitudinal arch is normal in both groups. In karate fighters, higher values of Clarke's angle and lower values of body weight were obtained. Differences between the right and left foot were observed, and correlations were found between foot breadth and length, and between Alfa and Clarke's angles.

Discussion

Athletes with extensive training experience are subject to a strong selection pressure, which eliminates people prone to injuries from competition. According to selected authors [Demczuk-Włodarczyk 2003, Andrzejewska *et al.* 2010], sport may be eliminating in character: it is probable that only individuals who represent a fitter and more resistant phenotype remain in competitive sports. This statement is reflected in the work of Canseco *et al.* [2012], who claimed that the deepened valgus angle of the great toe changes the quality of gait, provoking the appearance of pain. Firak *et al.* [2005] claim, in turn, that certain sports disciplines (acrobatics) may have a positive influence on the morphology of feet and even improve their functionality.

Conclusions

1. All men studied had normal values of the Clarke's angle.
2. Karate contestants had better podometric features than judo players.

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VIEWS ON TEACHING AND LEARNING COMBATIVE SKILLS IN PRIMARY SCHOOLS DURING PHYSICAL EDUCATION CLASSES

Key words: combative skills, pupils, physical education and sport

Introduction

Grappling technique at present meet the aims and tasks of Physical education (PE) and sport, contributing to the harmonious development of the individual and knowledge of general improvement and professional skills and habits, preparing citizens also self-defense and are a suitable means for recreational physical activity. Contain physical activities cyclic, acyclic and combined nature which contribute to the development of motor skills, enabling you to learn vital exercise habits, skills, specific knowledge and increase the overall level of functional possibilities of the organism [Durech 2003; Reguli 2005; Reguli *et al.* 2007].

Methods

The aim of our research was to ascertain the views of teachers and pupils to contact exercises and teaching combative skills, during PE classes. The research was done in 2013/2014 in Žilina region. The sample included 29 teachers, of whom 21 were women (72.41%) and 8 men (27.59%). Those teachers taught for 14 urban and rural primary schools in the region of Zilina. Research were involved 251 primary school students, 141 were boys (56.18%) and 110 girls (43.82%). The main research method was the questionnaire. The questionnaire was used to determine the views of teachers and pupils of primary schools in the region Zilina to teaching combatives within PE classes.

Results

Most teachers gained experience in combatives while studying at college. 7 (24.14 %) only at the theoretical level, 13 (44.83 %) also in practical form. Another possible way to obtain knowledge about teaching combatives is to take the training or workshops, which was attended, however, only 6 (20.69 %) teachers. The above data indicate low awareness of the problems of teachers teaching combatives in Physical education. Teachers enrolled in Physical education classes all kinds of preparatory combatives, one teacher stated the elements of self-defense. Were most often clustered martial drag and martial games. Specific name of the martial arts training or combative games has provided no teacher. On one school (7.14 %) is grappling techniques taught at all and a total of 5 teachers (17.24 %) is not included in the content of Physical education or exercise any martial arts game. The latter was the rate of placement combatives in Physical education in schools in our sample around the average level. How reasonable it said 20.69 % of teachers, insufficient it as 31,03 % of teachers. Comparative analysis, we found that the level of teaching combatives at rural primary schools is at a lower level than at the primary schools in the city. The appropriateness of enrolling combatives in Physical education is clearly expressed in the affirmative 22 respondents (75.86 %). Clearly negative response was only one (3.45 %). 24 respondents believe that fighting exercises are interesting for pupils. Opinions teachers indicate suitability and attractiveness of combatives for students. Interested in acquiring new knowledge and experience in teaching combatives by training and seminar expressed, however, only 14 teachers (48.27 %). This finding struck us because of our previous data suggest largely positive perception of combatives.

Boys and girls in our study agreed that they are easy, fun, simple, competitive. About combatives think that they provide many beneficial for physical and mental health, to acquire social skills and practical experience available in different life situations. Considered negative for some pupils particularly certain properties combatives arising from their martial nature. In popularity enjoyed martial exercises in pairs, martial games students largely did not know, despite the fact that their teachers reported the most common mapping. When practicing combatives experiencing significant majority of pupils positive emotions and feelings. Grappling techniques are pupils received very positively, it proves the fact that the inclusion combatives significantly increases the positive attitude of students to these exercises. The great popularity combatives pupils demonstrated by the high interest of boys and girls in the city and rural areas to increase the volume combatives content in their Physical education classes.

Discussion and conclusion

The vast majority of pupils have a positive attitude towards learning combative skills. The results of our research confirm the views of experts in learning combatives skills [Durech 2003 Reguli 2005 Reguli *et al.* 2007], that grappling techniques are very popular among students and are well accepted by boys and girls.

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SCIENTIFIC AND FUNDAMENTAL ANALYSIS OF MUSCLES WHICH ARE INVOLVED IN KEY STRIKES IN MARTIAL ARTS (WITH HELP OF ANATOMY AND KINESIOLOGY SCIENCE)

Key words: martial arts, anatomy, kinesiology, strikes

Scientific improvements and researches on various sport sciences have been increased considerably. Paying attention to this information has led to increasing improvement and getting raise in sports records especially champion sport, and in addition to achieving proper results in sports fields, has helped the human knowledge fantastically (1). On the other hand, attention to the scientific principal would cause athletic to gain better result and regardless of repeated hurts continue his sport activities with healthy body and psychological convenience, and would be able to regain his proper fitness during various competition gaps rapidly. Undoubtedly, in every field, it is essential to have scientific principals and rules for getting success and it is inevitable on sport and specially, champion sport. In recent decade, at least, many subjects and books have been written on theoretical and practical issues of sport sciences, specially, anatomy and kinesiology, which have been effective for athletics educations for their plenty of abilities. But we are watching less subjects and researches which have studied fundamental analysis of involved muscles in performance of effective hand strike, foot strike, throws in martial art (3).

In present research, the researches want to study scientific analysis about main and key muscles and their operation on techniques and hand strike that are so important in martial arts (like karate, judo, Taekwondo, Hapkido, Aikido, jujitsu, Kendo, Wushu, Kung fu, Muay Thai ...) (2), and Regarding to the important science of kinesiology, they have studied key dynamic muscles, key static muscles and main and primary

kinetic changes in each technique (by picture presentation) and have presented a series of fundamental body building movements special for martial arts to increase volume of involved muscle in each technique.

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SCIENTIFIC AND FUNDAMENTAL ANALYSIS OF MUSCLES WHICH ARE INVOLVED IN KEY KICKS OR MARTIAL ARTS (WITH REGARDS OF ANATOMY AND KINESIOLOGY)

Keywords: Martial Arts, Anatomy, Kinesiology, Kicks

In recent years, by the escalation of sport competition and extension of champion sports culture at various national and international levels, usage of facilities, sport methods and scientific principals, in gamut of physical education and sport sciences, have caused researchers of this field to research and investigate more accurately. Nowadays, in order to success in national competitions, international competitions and intercontinental competitions, world competitions and Olympic Games, athletics must be at peak of fitness in every characteristics (physical, psychological, skill), to introduce themselves and their country to other people of the world (1). For this purpose, along with improving sciences and technology, physical education and sport sciences also have been achieved considerable improvements by widespread researches. Along the physical education and champion treatment, physiology science, biology, psychology, nutrition, bio mechanic and training science have been at athletics and coaches service. In recent decades, athletes, by practicing various training methods, have succeeded to break records and present skills and special techniques. Because science and sport knowledge and practice methodology transition have led to draw the way plan and reach the champion tops. Anatomy and kinesiology science is the basic and principal of combat sports. Accurate and scientific recognition of the muscles and bones, nerve systems and blood circulation, breathing and internal glands and (3) are the scientific basic and infrastructure of combat sports which in them, various sciences such as anatomy, sport physiology, bio mechanic, medical science and... are involved. In the present research, investigators want to analyze scientifically the key and principal muscles and their operation in kicks and techniques, which are very important and principal in martial arts (like karate, taekwondo, wushu, kung fu, Muay Thai, ...) (2). Regarding to the important science of sport kinesiology, analyze the key dynamic muscles, key static muscles and primary kinetic chains (in each technique) with pictures presentation, and present a series of fundamental bodybuilding training special for martial arts to increase volume of muscles involved in each techniques.

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“INSIDE BRAWL” —*NIGHTCLUBS, CONCERTS AND FESTIVALS*—, VIOLENCES PREVENTION AND SOLVING

Key words: pugilistic practices, brawl, ritualization of violence, self protection, nightclubs

This presentation is an extract of a Sociology phd research coming under the topic “*Martial imaginary, uses of violences, and security professions ; the case of closed spaces with exclusive exit —Nightclubs, concerts, festivals and stadiums.*”¹, beard by the VIP&S Laboratory². This study received benefits of preliminary fields, on the one hand on the martial ground, by sessions of vietnamese martial arts —*Vo co truyen*— learning as an apprentice in Vietnam, from 2008 to 2012, and on the second hand on the security ground, working as a bouncer in “night community” from 2008 to 2011. This research continue today in an immersive way, as a bouncer, and as a fighter, a sensitivity wich drives us on a way as sociological as ethnographic (WACQUANT, 2009). A presentation of ours in Toulon³, on April, bringing to a question at the appreciation of every fighter “*if martial practices influe on night-clubs brawl, wich are the retroaction of brawl on martial practices?*”, led us to the actual matter :

Showing an analytic model for a sociology of brawl, usefull for sociologists as well as for agents and fighters.

So, considering fourty brawl where we were witness and/or party⁴, we came to the realisation of an ideal-type (WEBER 2003) in a Weberian way of understanding. This analyses considere the *night-clubs brawl* as a “close place” fight having it own codes and showing a primary standardisation (GAUDIN 2009). On those places would brawl respond to a double “arbitrage” of the community and the security agent. So is this proposition will double. On a first stage, the sociological one, comes the will of showing a situation, “déconstruire et reconstruire”, showing a complexe observation analyse model. On a second stage, the professional one, is the will to present a synthetic “inside brawl” model intended to prevent and smother conflicts factors. Those two stages seems to be in interest with fighters and martial artists aspirations, under one of the bases of pugilistic practices : how to get out a trouble in a better condition than his sopponent, on physical and social points. A paradigm that we usually call victory.

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¹ Inscription Autumn 2013, directed by Stéphane Héas (Sociologist, senior lecturer) and co-directed by Éric Péchillon (Jurist, senior lecturer).

² VIP&S Laboratory : *Violence, identity, politics, and sport*. UFR APS (Searching unit —Physic and sport activities), Université de haute Bretagne. Website : <http://www.sites.univ-rennes2.fr/violences-identites-politiques-sports/>

³ 12th Jorrescam of Toulon, 15-16 April 2014, Topic: «Martial arts, fight-sports, and Health». Présentation: Jonathan Bresson, «From Pugilistic practices to Brawl; *destroy the other's corporeality and protect his own, primary standardization of the conflict.*”

⁴ Data collection context: Rennes city, Bretagne, North west of France, 240th people. On the ground of two nihtclubs, a concert place and two festivals. 30 Brawl on the inside, 10 on the near outside, Each brawl including physical damage. 7 brawl including women. 4 brawl including more than 10 direct active people.

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GENERAL THEORY OF COMBAT LOGIC – IMPLEMENTATION OF TRAINING METHODS –

Key words: concept, principles, theory of attack and defence, skills, abilities, strategy, tactic technique

Based on last year's presentation about the general concept of Combat logic⁵ in Tsukuba, which demonstrated a hierarchical vertical structure of all possible levels of theoretical planning (strategies, tactics, down to techniques)⁶, the authors suggest a possibility to apply this concept more practically. Due to the understanding of the connecting element; the relation between the purpose, objective and the means of a martial arts, it is possible to identify the necessary method to attain those means.

Embedded in two steps, the author uses a WingTsun training method⁷ exemplarily to show the possible implementation of training methods generally into the theoretical architecture of Combat Logic. The first step is to identify the application of the training method in the process of fighting and to arrange it in the order of relevance.

The main focus of this presentation is the second step in which the author captures the five levels of the vertical structure of Combat Logic and applies them on the exemplary training method to show, that the realization changes in accordance with performance requirements. This is important for all instructors and trainers, because they will understand that they can use the training method for different purposes – and it is them, who have to decide it. For this, they require an overview of all possibilities and this is the reason for this presentation.

On the other hand, a scientific constructive view on the practiced Martial Arts, the concept gives the instructors the opportunity, if necessary, to create new training. This is in place, just in certain circumstances where certain abilities are not developed sufficiently in the existing methods.

Thus, the theoretical understanding of the model of the architecture will help to optimize trainings session in future for every Martial Art.

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⁵ There will be soon an article about that subject in IDO Movement for culture – Journal of Martial Arts Anthropology

⁶ The phd research of the author is about the understanding of this vertical and horizontal connection in the international politics, basing on concepts of military strategists like CLAUSEWITZ (1999) and LUTTWAK (2001).

⁷ Just to be clear, that every trainings method of every Martial Art can be used. The author refers here to the training method *ChiSao* from WingTsun, which refers to similar ideas in other styles, like Push(ing) hands in TaiChi or Aikido, Rou Shou in Pakua, or equivalent methods in Goju-Karate, Pentjak-Silat, Sumo, Wrestling, Judo, and so on.

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SELF-DEFENCE EVALUATION IN EMERGENCY MEDICAL SERVICE

Key words: medical staff, conflict cycle, training of medical staff, specific fitness exercises

Introduction

The increasing aggressiveness in health care is a current problem not only in the Czech Republic but also in the world. Medical staff is becoming a risk group. This study refers to the analysis and evaluation of self-defence for the EMS (Emergency Medical Service) medical staff.

Methods and material

The design of the research is descriptive, qualitative and quantitative. The research sample was chosen deliberately. Interested and indirect observation in a period of five months was applied in the data collection methods. Furthermore, there was application of questionnaires which investigated the relations of profession to self-defence. At the end of the training unstructured interviews were conducted. In the qualitative part of the research the evidence were analysed by a three-step encoding method. The quantitative part was focused on mapping the threats, risks, general information and circumstances of the attack. Gathered findings were statistically evaluated.

Results

They are twofold results: theoretical and practical. The theoretical results reflect creating an actual concept of EMS training, interest in education and training in self-defence and indirect support from the employer. The practical results include specific findings and recommendations for practice. Self-defence for EMS is beneficial to EMS education. Self-defence for EMS can increase the efficiency of education through EMS management support. The most important thing is to include self-defence training in the current profile of EMS.

Conclusions

Thanks to the results the gathered findings could be incorporated in the educational process of the “Paramedic” field of study at the Faculty of Medicine at Masaryk University. For now on, we can give a lot of examples of best practices in self-defence for EMS. Furthermore, the created concept is used in the field of education by health care institutions in Hradec Králové, České Budějovice and by the Police of the Czech Republic.

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COMBAT SPORTS – THE ATHLETES’ BODY BUILD AND PROPORTION⁸

Key words: somatotype, judo, jiu-jitsu, karate, taekwondo, greco-roman wrestling

Introduction. The body build is one of the factors conditioning the high achievements in sport [Franchini *et al.* 2001]. As a result, there is a wide interest in body build of the athletes and its connection with various elements of the physical endurance and fitness [Sterkowicz-Przybycień 2010]. A typological assessment, complemented with information about body proportions (e.g. length ratios of body segments), can be important from the point of view of biomechanics [Fernandes *et al.* 2011]. The aim of the paper is to show the morphological differentiation in combat sports’ athletes.

Methods. There were measured 342 athletes training in the academic sport clubs in Wrocław: judo (n = 85), jiu-jitsu (n = 83), karate (n = 74), taekwondo (n=70) and greco-roman wrestling (n=30). There were considered: body mass, stature, sitting height, leg length (measured to *trochanterion*), upper extremities length, circumferences (chest, hips, arm, forearm, thigh, calf). The somatic features allowed the researchers to count the ratios of body proportions. The somatic build was estimated by Heath-Carter method. There was use an analysis of variance of somatic features, proportion ratios and body build components. Moreover, the Tukey’s test for various N was used.

Results. Greco-roman wrestlers have the longest trunk with reference to body height. Then, jiu-jitsu players dominate with the relative length of upper and lower extremities compared with judoists, karate and greco-roman wrestlers. Judoists and jiu-jitsukas have the most massive body build. Moreover, they have very muscular arm in reference to the length of upper extremities. The relative size of forearm circumference is significantly bigger in judoists. The most massive thighs in relation to the length of lower extremities were observed in judoists and greco-roman wrestlers. The analogous ratio for calf shows significant domination of judoists. The examined groups present statistically significant differences in somatic build ($F=9.8$, $p<0.001$). The endomorphy is characterised by similar level of development in all these groups. Mesomorphy reaches the highest values in judoists and jiu-jitsu players. The highest level of ectomorphy was noted in karate and taekwondo athletes.

Discussion and conclusion. The examined players represent disciplines in which strikes dominate (karate, taekwondo) as well as grips (judo, BJJ, greco-roman wrestling). The differences in the techniques of fight in players are reflected in their body build and proportions. The morphological identity were significant especially in karate and taekwondo players who involve the whole body during fight (Koropanovski *et al.* 2011).

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**THE MILITARY SLOPE FESTIVAL: ANCIENT MILITARY CULTURE
IN HAINAN OF CHINA**

In the paper, the authors analyze and summarize the particular cultural forms of Hainan through years of observation and research, besides the authors describe the ceremony of celebrating the Military Slope Festival with the ways of fact, history and legend and so on, which Show the various rituals before the march to war in ancient China and point out the important role of Chinese Taoism in the military ceremony.

Hainan province lies in the south most of China, completely isolated from the mainland with the Qiongzhou Strait. Because of inconvenient traffic, the cultural development of Hainan lagged behind the mainland in ancient China, which Make some special local cultural forms can be well preserved and heritage. The Military Slope Festival is a typical representative of the traditional culture of Hainan.

The Military Slope Festival is a reproduction of the ancient march ceremony, which mainly commemorate a very outstanding woman--Madame Xian. There are many celebration activities in areas of Hainan, just slightly difference in the scale and timing. It has more than 1300 years history from the earliest military slope activities, and now has become a non-material cultural heritage of Hainan province.

According to “Qiongzhou county annals” records, during the Military Slope Festival, “On the day, Prayers flock in hundreds of miles, who come from different places, the slope almost has no unoccupied gap.” At present the Military Slope Festival mainly has three activities: Treat, Sacrifice and Playact. The treat is that during the Military Slope Festival, the villagers all have a large banquet to invite friends over dinner to show their family contacts prosperity. The sacrifice is that before the village worships the gods, villagers need to worship their own ancestor firstly. Paternal relatives have gathered at this time and led by patriarch, put incense burner and table to bow ancestors, praying for ancestors’ bliss. The next day there has a “in table”, referring to list their own family male names in the paper, then Taoist pray to ancestors to inform the ancestors to bless their own posterity. The playact is a grand army review ceremony that thousands of people dressed in soldier’s clothes, followed by “Madame Xian” to patrol and expedition, and make lots of performances in the middle, but also play Hainan opera.

Now the Military Slope Festival has become a iconic symbol of Hainan universal festival, and become an important feature of the local culture.

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A RELATIONSHIP OF THE FOURTH RAPID DEPLOYMENT BRIGADE SOLDIERS IN THE ARMY OF THE CZECH REPUBLIC AND COMBAT SPORTS OR MARTIAL ARTS

Key words: military training, special forces, combat training

Introduction

To be ready for defending the country is one of the main goals of every national army. The aim of the paper is to find out what is the relationship of the fourth Rapid Deployment Brigade soldiers in the Army of the Czech Republic and combat sports or martial arts. In the theory, even professional self-defence comes from applied martial arts and combat sports [Reguli 2005; Reguli *et al.* 2007].

Methods

234 soldiers took part in the research by short questionnaire. All probands were male in the age of 18 - 40, most of probands were in the age of 25 - 35. Their experience in The Army of the Czech Republic is mostly 1-9 years (74 probands 1-4 years, 97 probands 4-9 years).

Results and Discussion

67% of the fourth Rapid Deployment Brigade soldiers in the Army of the Czech Republic are doing combat sport, martial art or self-defence system in their civil sphere as well (mostly box, MMA, Thai box and others). Very often they mentioned lag of time for doing any combative activity in their free time. Most of the soldiers are travelling to work every day, or they spend working week in other town then their families are. Then at the weekend they want to spend as much time as possible with their children, that is why they gave up combative activities in their free time. 42% of soldiers are doing martial art or combat sport 3-4 times a week.

Most of the probands agree that combat sport should be part of soldiers' identity and they are familiar with the idea to add one more combative activity to their soldiers training. Those, who do some combat activity in their free time confirm, that the knowledge of combat activity helped them to do well the professional soldier training.

Conclusion

We can conclude, that soldiers of The Army of the Czech Republic is familiar with martial arts and combat sports and they would welcome more combative activities in their working time.

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ROUGH-AND-TUMBLE PLAY TO COPE WITH PHYSICAL AGGRESSION IN PARTICULAR SETTINGS: AN EXPLORATORY STUDY WITH YOUNG ADOLESCENTS

Key words: rough-and-tumble play, young adolescents, aggressive behavior, community center.

Background

Despite the fact that aggressive behaviors in young adolescents have received considerable attention, the research for strategies aimed at reducing aggressiveness is still a crucial question. Rough-and-tumble play (R&T) could provide a functional-adaptive account to cope with aggressive behaviors (Carraro, Mauro & Ventura, 2006; Steyn & Roux, 2009; Carraro, Gobbi & Moè, submitted). The purpose of the present study was to analyze the effect of R&T in reducing aggressiveness in a group of young adolescents with behavioral problems.

Method

The study was carried out in 3 community centers (CC1, CC2 & CC3) for young adolescents. In order to be admitted to a CC, adolescents must be indicated by school teachers as having behavioral problems. Fifty-four young adolescents (CC1=23, CC2=15, CC3=16; mean age=13.3±1.01) were invited to take part in the study. Some of them dropped out or refused to take part in the activities. In the end, 37 adolescents completed the study (CC1=19, CC2=9, CC3=9). Seven participants were Italian, the others were from immigrant backgrounds. This second group exhibited considerable difficulties with the Italian language. Participants filled in the short version of the Buss & Perry Aggression Questionnaire (AQ12; Bryant & Smith, 2001) both pre- and post-intervention, which includes 4 subscales: Physical Aggressiveness (PA), Verbal Aggressiveness (VA), Anger (AN) and Hostility (HO).

In CC1 participants were invited to take part in R&T, consisting in games based on chasing and wrestling. Participation was on a voluntary basis, so 8 adolescents participated, while 11 spent their time in free play. In CC2 adolescents were required to participate in role playing and discussions aimed at reducing aggressiveness, which required no physical contact. All activities were proposed once a week for 6 consecutive weeks. In CC3 no extra activities were proposed. Adolescents spent their time in free play.

Results

Cronbach's Alpha was acceptable for the PA and HO subscales (.62 and .68 respectively) and not acceptable for VA (.45) and AN (.59). We decided to analyze the PA subscale due to its stronger link to R&T play. Independent sample t-test revealed no significant differences in the 4 subscales at the pre-test between the CCs. Paired sample t-test did not report any significant variation. However, between pre- and post-test a reduction in PA was observed in the adolescents of CC1 attending R&T (-14.2%; $p=.20$), of CC2 (-17.0%; $p=.31$) and of CC3 (-16.3%; $p=.08$). Only adolescents attending CC1 but not involved in R&T increased their PA level (+7.5%; $p=.28$).

Conclusion

Results do not allow for a firm conclusion concerning the effect of a short-term R&T program or of other traditional activities in reducing self-perceived aggressiveness. Nonetheless, analysis of limitations can help to better plan further studies.

Statistically significant results have been obtained with studies with a longer experimental time (Palermo, 2006). We may suppose that 6 classes are insufficient to have a significant impact on aggressiveness. The AQ12 reported low Cronbach's Alphas in two subscales, probably because it was difficult for most of the foreign participants to fully understand the items. Moreover, the great number of adolescents who dropped

out as well as low motivation to take part in proposed activities were limitations. Furthermore, Raine et al. (2006) individuated a link between aggressive behavior and poor motivation. In conclusion, it seems possible to manage R&T in a setting such as CCs. However, limitations linked to drop-out, evaluation instruments, motivation and length of intervention should be carefully considered in further studies.

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DOES RANKING POSITION PREDICTS THE MATCH OUTCOME IN YOUNG JUDO ATHLETES?

Key words: judo, competition context, sport performance

Introduction

The study of situational variables provides useful information about how the competition context affects on sport performance [Gómez *et al.* 2013; Ferreira *et al.* 2013]. Recently researches have observed that ranking position could be an accurate predictor of medal winning in Olympic Games judo competitors [Daniel, Daniel 2013]. However, information on how ranking position determine victory in young judo athletes is scarce. Thus, this study aimed on analysing the influence of ranking position on the likelihood of winning in U-17 judo competitors.

Method

The sample was composed of the 354 combats from Spain 2014 U-17 Judo National Championship (male=189; female=165) for all weight categories. Athletes were classified regarding their ranking position before the Championship. Then, a dichotomous variable was calculated distinguishing whereas the combat victory goes to a higher or lower-ranked combatant. The Championship stage of each combat was considered (eliminary, playoff, bronze medal, and finals). Chi-Square test for independence was calculated for ranking position and weight categories. A Logistic Regression mixed-model was conducted, considering the fixed effects (i.e., predictors) of ranking position and championship stages, and random effects (i.e., component of variability) among the combats.

Results

Chi-Square showed independency of ranking position and weight categories in males ($X^2(7)=4.84$; $p=0.68$) and females ($X^2(7)=3.75$; $p=0.81$). In overall, victories from higher-ranked combatants accounted for a slight majority of the total (male=58.7%; female= 64.8%). Moreover, lower-ranked athletes won the gold medal in almost the half of the cases (male=60.0%; female=50.0%). More specifically, logistic regression mixed-model revealed that only higher-ranked female combatants increased a 30% their chances for winning in first eliminatory stage (OR = 1.30; 95%-CI = 1.01-1.68; $p = 0.05$). Conversely, no significant influences were found in males (OR = 1.41; 95%-CI = 0.78-2.53; $p = 0.26$).

Conclusions

Current data do not wholly support previous findings on Olympic Games judo competitors [Daniel, Daniel 2013]. Indeed, ranking position might be a good predictor of match outcome in young judo combatants only for first eliminatory stages. However, the increment on the level of competitors in following stages makes not possible to predict the victory regarding their ranking position. Furthermore, gender comparison suggested least differences between higher and lower-ranked male combatants. Current results revealed greater equality in young judo championships, suggesting similar fighting skills in top-15 combatants. Thus, psychological and physical aspect might account for this sameness, especially after passing first championship stages.

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IMPACT OF ACUTE MODERATE BOXING DRILLS ON COGNITIVE PERFORMANCE & COORDINATION ABILITIES IN IRISH BOXERS

Key words: combat sports, boxing, cognitive performance, coordination abilities

Introduction

The present study aims to identify the impact of moderate Boxing drills (MBD) on cognitive performance and coordination abilities in Irish boxers. The study aims to measure the impact of the independent variable 'MBD' on the dependent variables 'cognitive performance & coordination abilities' on one experimental group of boxers

Methodology

We employed an experiment (pre-post intervention design) conducted on a sample of eighteen Elite boxers (14 male – 4 female) enrolled in the Irish Boxing Clubs in Limerick, Ireland. Cognitive performance parameters were been measured by Sternberg's Memory Scanning test, which consists of presenting a sequence of 1 to 6 digits among all digits between 1 and 9. Participants are instructed to memorize the sequence. After a signal, a test digit is presented and the participant has to decide whether or not the digit had occurred in

the memory set. Then, to verify that the participants memorized the sequence, they are asked to recall the digits in their order of presentation.

Additionally, coordination abilities were been measured using BATAK Pro equipment which specifically designed to improve and measure reaction, hand eye co-ordination and stamina. BATAK Pro is equipment which includes 32 exercise programs tests, intended to measure all aspects of physical fitness, reaction, co-ordination, and stamina through specific work-out conditions, simultaneously, in addition to supplying a competition ambience that might not exists in other measurements. Twelve visual bright LED cluster objects are numbered and set in a 'maximum stretch' form arrangement and controlled by a dedicated microcomputer. The objects may be lit up randomly or in a repetitive way. The authors selected only 4 BATAK tests to measure the more related coordination abilities to boxers (e.g. random Targets lasting for 30 seconds; random Targets lasting for 60 seconds; 100 Corner only Targets illuminate at random and remain on for 1 second; random Targets lasting for 180 seconds).

Statistical Treatment

Statistical analysis utilized by SPSS v16.0 software (SPSS Inc, Chicago). Data capture sheets attained from participants was gathered, cleaned and computer entered into SPSS. Statistical analyses determined whether there were significant differences among pre and post tests, as well as among males and females (paired sample t-test; independent t-test). Significance level was set at $p < .05$

Results

The results showed statistically positive significant differences for the MBD on both cognitive performance (e.g. latency, decreased from 883 to 755 ms, $p=.025$) and Coordination Abilities (e.g. 100 Corner only Targets illuminate at random and remain on for 1 second, increased from 64.25 to 76.1 touches, $p=.004$) parameters. Also results showed significant differences between the pre-post tests for both males and females. Additionally, results didn't find any significant differences between males and females in the selected variables either in pre or post tests.

Conclusion

Finally, we can conclude that MBD might have a positive effect to improve both cognitive performance and coordination abilities for both male and female elite boxers. Even though boxing workouts and its influence on cognitive performance and coordination abilities had not been investigated previous to the recent study, it appeared reasonable that constructive effects in cognitive performance and coordination abilities could also be a consequence of MBD, especially when the combative characteristic of boxing was dismissed.

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GLOBAL FIGHTING KNOWLEDGE AND PRACTICE IN MARTIAL ARTS AND COMBAT SPORTS CURRICULUM DESIGNS IN INSTITUTIONS OF HIGHER EDUCATION – DEVELOPMENTAL APPROACH

Key words: pedagogy; didactics; physical education; sport; coach education; pedagogical intention

Introduction

Even if we understand that designs of physical education teachers and sport coaches certification programs vary according to institutional contexts, nations and even sport or physical education characteristics, there are an understandable conclusion that sport federations tend to lead in “sport specific certification courses” and “institutions of higher education tend to focus their curricula on more universal topics such as sport science, coaching methods and theory, with varying degrees of sport specificity” (ICCE & ASOIF 2012: 35).

This presentation examines the presence of Martial Arts and Combat Sports (MA&CS) on the curriculum design in Institutions of Higher Education (IHE) connected with Physical Education and Sports Science (PE&SS) degrees offered in Spanish and Portuguese IHE in relation with the presence of MA&CS in Physical Education classes (PE) curricula introducing global fighting knowledge (GFK) as a methodological balance between early specialization / diversification poles.

State of Art

Gomes & Avelar-Rosa (2012) observed the study plans of all universities in France, Portugal and Spain with PESS degrees. Results showed us that French universities include MA&CS in all the analyzed degree programs, with Judo, “General Approach” (general designation such as “Martial Arts” or “Combat Sports”), and Boxing/French Boxing as the thematic sports commonly taught. Most Spanish universities offered MA&CS in PESS degree, with Judo as a more commonly sport used. In contrast, less than half of the Portuguese universities offered MA&CS on their curricular proposals with Judo or “General Approaches”.

Theeboom & Knop (1999), analyzed the presence of MA&CS in several PE curricula of European countries. Results showed a different approach between analyzed countries (Belgium, Czechia, England, France, Germany, Luxemburg and Netherlands). This study also showed Judo as the most common MA&CS in European PE curricula (Judo appears in every country), while is it also possible to find Karate (Czechia, England, Germany, Luxemburg and Netherlands), Self-Defense (Belgium, England, Germany and Netherlands), Aikido (Czechia), Boxing (England and Netherlands), Wrestling (France and Germany), Taekwondo (Germany), Fencing (Luxemburg) and Savate (France and Luxemburg).

Observing the results of both studies, we can conclude the inexistence of an academic pattern in IHE and the inexistence of a curricula pattern in PE school context, and even in sport performance contexts, early specialization linked with results should be balanced with early diversification approaches methodologies as well (Baker 2003: 92), and balance between sport specificities and diversification can be achieved in multitasks variation in sport context groups such as MA&CS.

New Perspectives

Observed on International Sport Coaching Framework provided by International Council for Coaching Excellence (ICCE) and Association of Summer Olympic International Federations (ASOIF), two main domains are used for coaching education purposes: participation domain (children, adolescent and adults) and performance domain (emerging, performance and elite) (ICCE & ASOIF 2012: 15).

Based on developmental models such as LTAD (Balyi, Hamilton 1995) and on DMSP (Côté 1999), earlier phases on a specific sport specialization propose to achieve evidence after 16 years old. Mainly on physical

literacy and sampling phases (until 12 years old) in both sport domains and mainly in physical education classes, pedagogical aspects of MA&CS should be considered not only for each sport specialization but also balanced with a group sport approach as Global Fighting Knowledge and Practice.

Conclusions

Global Fighting Knowledge is presented in a way the students of sport coach education and PE teacher education programs in IHE should understand didactical and pedagogical intentional interventions on earlier phases such as physical literacy phases (Balyi, Hamilton 1995) and sampling phases (Côté 1999), but also on a complex whole coherence (Figueiredo 2009). Teachers and coaches should develop didactical and pedagogical competences on dual opposition tasks coherent with various possibilities of MA&CS as a specific group of general approaches balanced with a general group of specific approaches.

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CHASING THE TACTICAL EDGE: A PERFORMANCE ANALYSIS OF TECHNIQUES AND SCORING OUTCOMES IN KARATE POINT SPARRING.

Key words: martial arts, scoring efficacy, kumite

Introduction

The aim of the current study was to identify the most prolific scoring techniques in Karate point sparring (KPS) and whether there were identifiable patterns to the techniques that achieved a score. KPS is a semi-contact free form of combat, where victory is measured by cumulative point values within a specific framework of rules and regulations [Chaabène *et al.* 2012]. Points are awarded for techniques (kicks and punches) that achieve unobstructed contact against the opponent without the use of excessive force [Tan 2004]. Coaches and athletes are constantly searching for the “edge” in competition. That is, ways to improve their own point scoring, but without providing scoring opportunities for the opponent. Performance analysis research can help develop strategic approaches that can provide this edge and improve a fighter’s efficacy [Garganta 2009].

Methods

Thirty-six videos of KPS bouts from the World Karate Federation (WKF) Championships were sourced and analysed for techniques and scoring outcomes. In an attempt to standardise coding, all bouts were analysed to approximately the 4-minute mark of the bout. A total of 72 fighters were coded, 26 female and 46 male. Footage was coded by examining technique events (TE) within bouts where fighters performed any actions against the opponent with visible intent. All TEs included a time sequence (measured in seconds) relative to the start time of the bout. The complex multi-planar nature of Karate techniques, meant TEs were separated into several key components, each with their own variables. These included *attack type* (offensive, counter-offensive), *attack side* (left, right), *launch side* (thrown from front or rear foot position), *limb type* (arm, leg, use of full body), *technique type* (kicks, knees, sweeps and throws, punches, elbow strikes, open hand strikes), *plane of movement* (sagittal, transverse, frontal), *action attempt* (fake, partial, contact, damage, takedown). TE outcomes were classified as either *scoring* or *non-scoring*. Scoring TEs were identified as those that were either awarded points from judges during the event, or were identified as a scoring technique in a post hoc analysis of the bout. For the latter TEs, a fully qualified and experienced judge examined the video footage of the bouts to identify any TEs that were not awarded by the judges, but were nevertheless worthy of a score. Due to the combative nature of point sparring, TEs were analysed during exchanges between fighters (defined as “clusters”). Clusters were analysed using both temporal and outcome-based methods. Standard residuals (Std.R) were obtained for all simple combinations of TE components using Chi Squared analyses.

Results

A total of 2701 TEs were recorded with mean TE and bout duration of 75 ± 23 TE and 125 ± 73 s, respectively. Of the 2701 TE recorded, 80% were classified as offensive (2178 TE) and 20% as counter offensive (523 TE). Due to the nature of KPS, no open handed strikes were recorded, therefore all recorded arm TEs were punches (74% of all TEs). Only a slight difference was found when comparing frequencies for left ($n = 1334$) and right ($n = 1367$) attack sides while a little over 63% of all TE's were initiated from the front foot position. Techniques predominantly moved through the sagittal plane ($n = 72\%$), with the remaining percentage divided between the transverse (22%) and frontal (2%) planes of movement. An action attempt of *contact* made up 48% of the total TE with *fakes & partials* accounting for another 46%. Forty-one percent of total TEs were aimed at the *head/neck* region, 30% were *out of range*, and 19% targeted the *chest* and *abdomen* (14 and 5% respectively). The remaining 10% were targeted toward the legs. *Judges scores* (4%) and *missed scores* (7%) accounted for 298 of the total 2701 recorded techniques. Counter offensive TE and a *scoring* outcome had a very high probability relationship (Std.R=8.1) while offensive TE and *scoring* had a low probability relationship (Std.R=-4.3). Strong relationships were found between *head/neck* and *abdomen* target areas with *scoring* outcome (Std.R=5.3 and Std.R=2.4). The vast majority of TEs (2344) were found to occur in clusters, with cluster sizes including from 2 to 16 TEs ($M = 4$). Mean cluster duration was 0.9 s with TEs within clusters separated by no more than 1 s. Seventy-two percent of *scoring* TEs were recorded in clusters. Data indicate that a cluster size of 2 to 5 is optimal for point scoring with the majority of scores occurring in the latter parts of the exchange.

Discussion and Conclusion

The data showed that despite offensive techniques dominating the TE count, the most effective scoring techniques were counter offensives. Punching techniques, techniques that targeted the *head/neck* region, and those moving in the sagittal plane, represented the majority of TEs. Overall, counter offensive straight punches to the head were the most successful scoring techniques in this form of Karate. KPS bouts are composed of a combination of short, single event attacks and multiphase clustered attacks. The majority of scoring TEs occurred in clusters containing less than 6 TEs, with scoring occurring in the latter parts of the exchanges. This cluster size may be the result of either a deliberate strategy employed by fighters, or due to the destabilisation of opponents in the rapid burst-like clusters, or combinations of both. In conclusion, the most prolific scoring techniques are punches aimed at the head from a counter offensive attack. This research

suggests that to have a competitive “edge” in KPS, the focus should be on short, rapid bursts of techniques in exchanges, with the aim of creating scoring opportunities for counter offensive attacks towards the latter end of a given cluster. This notion is consistent with research highlighting the importance of creating practice opportunities that better represent the demands of the typical performance setting [see Pinder *et al.* 2011].

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MULTIDIMENSIONAL STUDY OF YOUTH PORTUGUESE JUDO ATHLETES

Key words: somatic maturation, combat sports, adolescent athletes, functional capacity, perceived motivational climate.

Introduction

The aim of this study is evaluating the processes of growth and maturation of young Portuguese judo athletes, as well as their functional capacity and perceived motivational climate produced by coaches, relating them to chronological age, weight category and competitive level.

Studies have been conducted on the influence of the processes of growth and maturation on sporting performance of young athletes [Malina *et al.* 2010] as well as the role that the motivational climate produced by significant adults has on adherence, performance and continuity of young people in sports [Ommundsen *et al.* 2005]. However, few have focused their attention in the combat sports' young athletes and are even more scarce studies that seek to associate biological characteristics, such as growth and maturation, with behavioral characteristics, as perceived motivational climate [Figueiredo *et al.* 2009a], whether in team sports, whether in combat sports.

Method

The sample consists of 76 youth Portuguese judo athletes (age 10-14 years) who underwent anthropometric measurements and physical performance tests: PACER for aerobic performance; line drill test for anaerobic performance; 10 x 5 m shuttle for agility; horizontal jump for low body strength; and overhead medicine ball throw (2 kg) for upper body strength. The maturation was estimate through the percent predicted adult stature and maturity offset. The perceived motivational climate was verified through the Portuguese version of the Perceived Motivational Climate in Sport Questionnaire-2. ANOVA will be used to compare characteristics of athletes across the groups.

Results

This study is part of the Branch Sports Training in Sports Science PhD's Course, Faculty of Sport Sciences and Physical Education, University of Coimbra. The collecting of data was completed in June this year, preventing the presentation and discussion of results in the submission of this paper. It is intended at the time of the event already present them with further discussion.

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BJJ BLACK BELTS IN MMA- FROM FIGHTERS AND COACHES PERSPECTIVE

Key words: MMA, martial arts, Brazilian Jiu-Jitsu

The origins of Mixed Martial Arts (then: MMA) in Poland, likewise in the world, are connected with Brazilian Jiu-Jitsu (then: BJJ). First records from the Ultimate Fighting Championship (UFC) fell into Karol Matuszczak's (instructor of Aikido from Poznań) hands in 1996. The material aroused his interest very much, therefore he got in touch with journalist Steven Neklia – the specialist of martial arts. With the passing of time Neklia was sending the materials of BJJ to Matuszczak, afterwards during his few days stay in Poland, he conveyed principles of the martial art. The fact is seen as the beginnings of martial arts in Poland.

The aim of the paper is to make an analysis of BJJ influence on fight's level in MMA. BJJ skills are very important in every MMA fighter's career. Techniques finishing fight through opponent's submission are mostly borrowed from BJJ. It is also said that having a black belt in BJJ is not equal to achieving success in MMA, because many other factors are taken into account as well. On the other hand, many competitors who achieve success in MMA owe it to skills from BJJ.

Amongst research methods used in order to present the problem, one should mention interviews conducted directly with competitors and coaches, who are the owners of black belts in BJJ. With the aim of collecting data, the author formulated the following research questions:

1. Do you, as the coach with the black belt, focus on BJJ techniques during fight led in MMA?
2. Which group of techniques is the most difficult to learn?
3. Do competitors of BJJ, fighting in MMA at present, have advantage over those, who have different base style?
4. "Standing position" or "takedown" – according to you - which fight surface is more difficult to learn and why?
5. What kind of skills are more valuable in MMA – wrestling or BJJ?
6. Do you have any favourite BJJ techniques?

Research results make it possible to answer the problem questions above. The information collected by the author depict the importance of “grappling” skills in MMA. Every trainer or competitor underline the importance of these abilities. Simultaneously, the respondents do not claim that the skills are success guarantee in MMA. The interlocutors describe their favourite finishing techniques giving to the reader a picture of technique and its performance.

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**I AM THE GREATEST BOXER: CHINESE FESTIVAL DRAMA
AS MARTIAL HISTORY**

Key words: folk drama, boxers, boxing exhibitions

In Zhuzhai Village (Henan, China) during Lantern Festival, the day of the full moon that concludes Lunar New Year celebrations, practitioners of *Meihuaquan* (“Plum Blossom Boxing”), a vernacular martial art dating to the Ming Dynasty (ca.1644) hold *Liangquan* (“show boxing”). Zhuzhai Village is regarded as one of the cradles of the art throughout Northern China. More than merely showing boxing, other distinct performances accompany the boxing displays. Representational genres include: “muscular theatre” (choreographed boxing exhibitions), dance, traditional opera, and folk drama (a mock [-ing] combat). Narrative becomes especially important at this time, also, especially the legendary accounts of the origins of Mei Boxing and stories about Zhuzhai’s own famous master Gao Yuting who, according to folk history, actively spread Mei Boxing throughout the region at the turn of the 20th century. This paper focuses primarily on the folk drama, especially as it provides a counterpoint to the boxing exhibitions. The boxing exhibitions of Liangquan are scripted. They are a genre of muscular theatre in which the exhibition of prowess is an end in itself as distinct from a contest in which prowess is the means to defeat an opponent. Boxing displays begin on Lantern Festival as sequential exhibitions by the various groups (usually village coalitions) attending. This rapidly gives way to multiple simultaneous performances by groups after their turns on “center stage.” Occasionally, demonstrations devolve into real fights, but other boxers quickly separate the opponents, supporting our contention that the bouts are not sport, but muscular theatre. These serious displays contrast to the folk drama we have labeled, *I Am the Greatest Boxer*. The script consists of boasts and challenges delivered by a pair of boxers, one in the role of a Mei Boxer and the other portraying a practitioner of a different art. The actors assume exaggerated boxing postures and demonstrate parodies of orthodox tactics.

The play culminates in a comic battle between the two. The comic parody seems at odds with the serious martial pursuit of Mei Boxing, a deadly art with religious overtones.

We contend, however, that the drama symbolically mirrors the history of Mei Boxing which competed at the local level with other martial arts schools for followers and the continuing rivalry that exists between these arts. This is reflected in dialogue such as, Boxer A: “Huangyin [Zhao Huangyin, the founder of Hong Boxing] was a good Hong Boxer.” B replies, “[But] the founder of Mei Boxing was better.” This play, which is never performed before competing schools, serves the bonding and boundary marking functions that are at the heart of festival. Beyond the intrinsic value of analyzing ... *Greatest Boxer*, mock combats are documented as elements of seasonal festival dramas elsewhere. In these plays it is common for representatives of the performing group to defeat “outsiders,” King George versus the Turkish Knight in the English mummers plays, serves as an example. Therefore, the Liangquan folk play also offers an intriguing example for cross-cultural comparison.

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THE SOCIAL FOUNDATION OF MEIHUAQUAN

Key words: vernacular martial art; identity; function; China

The label *meihua* (“Plum Blossom”) has been widely applied to boxing systems in China. According to traditional history, the form of Meihuaquan (“Plum Blossom Boxing”) on which the current paper focuses originated in the northeastern provinces near the end of the Ming Dynasty (1368-1664). Although various forms of Meihuaquan have been taught in formal settings and even distributed via dvd, we confine our remarks to the vernacular form as practiced in village settings in Henan, Hebei, and Shandong province (Zhang and Green 2010). The art has survived the impact of social and political upheavals such as the change of dynasties from the Ming through the Qing, the Boxer Rebellion, the Republican Period and into the People’s Republic, the Anti-Japanese War (1937-1945), the Great Proletarian Cultural Revolution (1966-1976), and most recently the vast population relocation from rural to urban settings. Just as an old tree in its last stage of life can experience a renaissance if its root remains alive, the root of Meihuaquan has retained vitality and the art is undergoing revitalization. In this paper, we explore the source of this vitality and its current revival. Based on four years fieldwork in the central area of vernacular Meihuaquan, we suggest that its primary function in contemporary society has shifted from the martial to the creation of social identity.

Our research is based in anthropological methodology: participant-observation fieldwork semi-structured interviews, and questionnaires. During the early stages of our fieldwork, our methodology remained qualitative (Geertz 1973). This initial research convinced us that Meihuaquan enjoys a revival following its inclusion on the list of Intangible Cultural Heritage items developed by the State Council of China in 2006. The contemporary benign policies of the Chinese official agencies represent a marked contrast to earlier agendas. For example, our interviews establish that Meihuaquan persisted as a clandestine practice during the Cultural

Revolution which branded vernacular martial arts, among other traditional cultural practices, as vestiges on feudalism and targeted them for extermination. Clearly, from 2006 the political environment has nurtured Meihuaquan's survival and development. This external factor, alone, does not explain why the art endures. What internal factors complete the formula for its preservation? In order to answer this question, the second stage of our fieldwork from September 2012 to February 2014 explored the mindset focused in the practice of Meihuaquan as a point of folk identity (El-Shamy 2011, Green 2006). We added questionnaires to collect quantitative data both to supplement and test the previously collected qualitative data.

This questionnaire includes forty-one questions: Twelve of which seek to determine local populations' knowledge about Meihuaquan(KM), their social cognition; ten of them focus on respondents' affection needs satisfied by Meihuaquan(NAM); eight assess their needs of participation(NPM); five deal with social relationships established through Meihuaquan(SRM), and six explore relationships between their religion and Meihuaquan(RM). We distributed 110 questionnaires in ten different villages randomly and recovered one hundred of them. Two that were determined to be invalid were deleted from the sample, leaving a total of ninety-eight. The effective rate of this questionnaire is 89.09%. Our analysis tool is Statistical Package for the Social Sciences (SPSS) 15.0, and the Cronbach's Alpha of this questionnaire is 0.957.

According to these instruments, the target population has high score on all of the five features measured (KM=94.08%, NAM=95.82%, NPM=95.73%, SRM=94.80%, RM=96.10%), Thus proving that Meihuaquan is a central focus of local life. They are both highly knowledgeable about and deeply attached to Meihuaquan. Moreover, Meihuaquan helps local people satisfy their need for social participation, expand their social networks, and fulfill their religious needs. Females score lower than males on the five dimensions (KM: F=90.45%, M=95.15%; NAM: F=93.36%, M=96.50%; NPM: F=93.18%, M=96.35%; SRM: F=90.91%, M=95.95%; RM: F=94.55%, M=96.49%). As age increases, scores become higher (KM: Y=93.26%, M=93.62%, O=98.89%; NAM: Y=94.31%, M=96.93%, O=97.50%; NPM: Y=94.78%, M=95.49%, O=99.38%; SRM: Y=93.78%, M=95.12%, O=97.67%; RM: Y=95.56%, M=95.94%, O=98.33%), but overall the score of the oldest age group is higher than that of the other two groups. Considering the educational level of the samples, the highest score is attained by the group that has the lowest educational level (Level 1) followed by Level 2 which has good performance on NAM, SRM and RM. Maybe the result is influenced by their age (Mean Age: Level 1= 45.17, Level 2= 53.50). But the group of Level 5 has higher scores than Level 3 and Level 4's on KM, NPM and RM.

Overall, the quantitative analysis supports our initial qualitative assessment.

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AN ASSESSMENT OF LINKS BETWEEN THE MAXIMUM FORCE OF LOWER LIMBS AND THEIR FORCE ACCURACY

Key words: maximum force, force accuracy, kinaesthetic differentiation

Objective of the study: The objective of the study was to assess the link between the maximum force generated by the lower limbs (separately) and the level of their force accuracy.

The authors assumed that a higher maximum force generated by a limb was accompanied by a higher level of kinaesthetic differentiation with regard to force accuracy. In order to verify this hypothesis, they carried out tests on judokas as well as students of the Academy of Physical Education in Wrocław.

The researchers analysed the level of maximum force generated by each lower limb separately, using a specialist device (characterograph) for measuring muscle strength of limbs, at the same time analysing the ability to generate from memory (without the help of visual analysis) a given force value, i.e. 50% of the maximum value. Having obtained their results, the researchers then analysed the kinaesthetic differentiation in the subjects. The first step in was to determine in one attempt (with visual analysis) the 50% value of the force generated (the so-called standard), followed by five attempts to recreate it from memory (without visual analysis) for the right and left limbs separately.

The material thus collected was analysed by means of common methods of descriptive statistics. The basic elements included calculation of arithmetic averages, standard deviations, variation coefficients as well as minimum and maximum values. In order to assess the differences between the average values of the various parameters, the researchers applied a multi-factor analysis of variance with repetitions, using Tukey's HSD post-hoc test.

Conclusions

The researchers have established that people whose limbs generate higher maximum force also have higher levels of force accuracy. It can, therefore, be assumed that raising the maximum level of limb strength through appropriate training leads to a higher level of kinaesthetic differentiation of movements, which in turn translates into a higher and more efficient level of movement control.

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THE LEVEL OF MUSCLE STRENGTH DEVELOPMENT IN COMBAT SPORTS AND POWER SPORTS ATHLETES WITH REGARD TO THE VARIATION OF THE MORPHOLOGICAL STRUCTURE

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DOES LEG POWER AFFECT AGILITY IN COMBAT SPORT ATHLETES?

Key words: combat sport, motor ability, training

Introduction

One of the essential motor components in sports is agility. Agility is defined as a rapid whole-body movement with change of velocity or direction in response to a stimulus. Another definition of agility is the execution of a skill rapidly. Agility has relationships with motor abilities such as power, speed and technique. Additional information is required to determine the relationship between agility and leg power performance. The aim of the study was to assess the relationship between leg muscular power and agility in children practicing combat sports.

Material and Methods

Sixteen combat sports practicing boys aged 11.9 ± 2.4 years participated in the study. Children performed standing long jump for leg muscular power and 10x5m tests for agility. The correlation between leg muscular power and agility was determined by Pearson correlation coefficient ($p < 0.05$).

Results

There were significant and inverse relationships between the agility and standing long jump performances ($r = -.804$; $p < 0.001$).

Conclusions

Combat sports require some motoric abilities. Agility and leg power are some of the important motor abilities for combat sports and many sports as some other important abilities too (Sheppard and Young 2006; Krstulovic et al. 2010; Vescovi and McGuigan 2008; Cronin and Sleivert 2005).

Power as a main motor ability has an effect on agility performance (Cronin and Sleivert 2005). Our results also support the effect of muscular power on agility. Therefore jump measurements may also be considered as possible predictor factor of agility in combat sports.

To provide improvements on agility demands on improvement on leg muscular power. This may be taken into consideration when planning the training sessions of the athletes in combat sports.

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SOME MOTORIC ABILITIES OF CHILDREN PRACTICING QWAN KI DO SPORT

Key words: Combat sport, agility, muscular power.

Introduction

Qwan ki do is a type of combat sports whose techniques are complex and require some level of motoric abilities. Unfortunately there are very limited studies in the literature about this combat sport. The aim of the present study was to assess the leg power, strength and endurance of the abdominals and hip-flexor muscles and agility of children practicing Qwan Ki Do sport.

Material and Methods

Total of Twenty-seven (Twenty boys, seven girls) Qwan ki do practicing children (boys aged 7.9 ± 1.4 ; girls aged 9.57 ± 1.61 years) participated in the study. Children performed standing long jump, sit up and 10x5m agility tests. The means and sd values were calculated for variables.

Results

The boys had height 1.28 ± 0.2 m, weight 27.16 ± 11.2 kg and girls had height 1.46 ± 1.2 cm, weight 42 ± 3.5 kg. The motor tests and results of children were as standing long jump 1.25 ± 0.2 m, sit up 18.25 ± 3.7 , and 10x5m 18.25 ± 3.7 sec for boys and 1.35 ± 0.2 m, 19.0 ± 3.8 and 23.22 ± 1.7 sec for girls respectively.

Conclusions

Qwan ki do is a combat sport requiring some motoric abilities. Agility and leg muscular power are some of the important motor abilities for many sport type as some other important abilities too (Sheppard and Young 2006; Krstulovic et al. 2010). Our results find out some assessment values of motoric abilities of the children practicing this sport.

There is a lack of data related to this sport therefore this type of tests and studies will be some reference points related to this sport in the future. There may be some other tests with other age groups to determine better the motor abilities of practicing athletes of Qwan ki do. Therefore these studies will help to recognize the specific demands of this combat sport on motoric abilities of the practicing children.

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THE CHANGES OF JIGORO KANO'S EVALUATION TOWARDS BOXING AND ITS BACKGROUND: EXAMINING THE TRANSFORMATION PROCESS OF "BOXING VS. JUDO BOUT" OF KENJI KANO

Key words: ju-ken-kogyo, atemi, ishu kakutogi sen, seiryoku-zenyo kokumin taiiku

Introduction

Throughout his life, Jigoro Kano studied various kinds of martial arts and combative sports with the intention to improve Judo as a comprehensive martial art that includes punching, kicking, and submission skills. According to Shishida (1979), Kano's strong interest in boxing could be traced back as early as the final years of Meiji era, and he also recognized a boxer as an expert in performing a blow. However, when we reexamined "Seiryoku-zenyo Kokumin Taiiku (National Physical Education According to the Principles of Best Use of Energy)" that Kano published in 1930, we can find that the skill of a blow was adopted not from boxing but from Karate. This suggests that Kano might have lost interest in boxing in his later life.

The purposes of this study are to clarify (1) the background and reasons that attribute to the changes of Kano's evaluation towards boxing; and (2) Kano's thoughts and attitude towards *Ishu Kakutogi Sen* (heterogeneous combat sports bouts) by the survey of Kano Jigoro's discourses (KANO1889, 1920a, 1920b, 1930). These arguments are discussed through the history of *Ju-ken-Kogyo*. *Ju-ken-Kogyo* means a series of bouts between Judoka and boxers. These bouts were held at Asakusa in Tokyo and Sinkaichi in Kobe since the middle of the Taisho era (1912-1926) to the early days of the Showa era (1926-1989). The promoter of these bouts was Kenji Kano, who was a nephew of Jigoro Kano. *Ju-ken-Kogyo* aimed originally to revive Judo as a kind of mixed martial art through fighting against boxers, but yet the objective of these bouts also had been changing gradually, and then turned purely into a "show" by the end. Through examining the changing position of boxing in "*Ju (Judo)-ken (Boxing)*", this study attempts to find the cause and the background of Jigoro Kano's changing interest

Method

This is a historical study based on primary sources and related sources like *Fuzoku gaho* (Illustrated magazine of Japanese life) and Jigoro Kano's discourses (KANO1889, 1920a, 1920b, 1930). This research was made in reference to large number of newspapers that were published mainly in Kansai region: *Kobe Shinbun*, *Jiji Sinpo*, *Osaka Asahi Sinbun (Kobe ban)*, *Tokyo Asahi Sinbun*, *Yomiuri Sinbun*, *Osaka Mainiti Sinbun*, *Yushin Nippo* and so on. Its time range covers the period when the entertainment bouts were carried out.

Results

The history of the *Ju-ken Kogyo* can be divided into three periods based on its purposes and styles. In the first period (October 1919 to April 1920), the purpose of bouts in this *Ju-ken Kogyo* was to develop defensive skill for Judoka in case he fights against the blow of the boxer. The opponents were thus mainly boxers.

In the middle period (May 1920 to March 1925), after the bouts that several Judoka fought with an American wrestler, named Ad Santel in 1921, the Kodokan prohibited its members from participating in such bouts. *Ju-ken Kogyo* had no option but to change its purpose. As a result, the bout of *Ju-ken Kogyo* transformed into a kind of the spectator sports, which is purely for entertainment.

By the third period (May 1925 to August 1931), a point system was introduced in the bouts in favor of Judoka, they thus took a very advantageous position in bouts. Hence we could say *Ju-ken Kogyo* was already turned into a "Show", because, to certain extent, the result of a bout had been fixed to ensure the triumph of Judoka.

Discussion and Conclusion

This study finds the reasons and background that caused Jigoro Kano lost interests in boxing.

- 1. The Kodokan prohibited its members from participating in any mixed martial arts bouts from 1921, but yet Kano had a strong will that Judo should be the best way of training martial arts.
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THE INFLUENCE OF *KARATEKA* GICHIN FUNAKOSHI
ON JIGORO KANO AND TAEKWONDO LEADERS

Key words: Katate, Taekwondo, *seiryoku zen’yō kokumin taiiku*

Introduction

The purpose of this study is to examine the direct influence of *karateka* (karate practitioner) Gichin Funakoshi on Jigoro Kano, the founder of judo, and the founders of Korea’s national sport, taekwondo, especially Won Kuk Lee and Byung Jick Ro. Kano founded *Seiryoku zen’yō Kokumin Taiiku* (National Physical Education According to the Principle of Best Use of Energy) in 1930, but the movements seemed to have been greatly influenced by karate [Kodokan 1943:19-21].

This study takes up two questions:

(1) Kano had interactions with the Okinawa *karateka*, Gichin Funakoshi. How was Kano influenced by Gichin Funakoshi? Meanwhile, it is known that Lee and Ro learned karate under the tutelage of Gichin Funakoshi [WonKuk Lee 1969: 34].

(2) How did Funakoshi’s karate practice influence the foundation of taekwondo? Moreover, this study examines the objectives and training methods of early taekwondo leaders, who came back to Korea after learning from Funakoshi, in teaching taekwondo, as well as the significance of the above.

Method

This study is historical research analyzing previous studies to answer question 1. As for question 2, literature and newspaper articles about karate and taekwondo from Korea and Japan have been analyzed to investigate the motivations, objectives, and beliefs of Funakoshi and early Korean taekwondo leaders for their martial arts practice.

Results

(1) Funakoshi’s *kihon* (basics or fundamentals), *kata* (forms), and *kumite* (sparring) style and Kano’s *seiryoku zen’yō kokumin taiiku* style shared some similarities, especially in terms of punching, kicking and open hand techniques (hand blade). While karate is practiced using a “horseback riding” stance as a basic posture, the tantoku movements(the movements which are practiced alone) of Kano’s *seiryoku zen’yō kokumin taiiku* are all done in a basic or conventional stance, with a few differences from the karate movements, especially in the upward and downward punching movements.

(2) Lee and Ro practiced karate at Funakoshi’s Shotōkan while they were studying in Japan. They were influenced by Funakoshi’s training method, philosophy, and experience in karate performance, which led them to found the first taekwondo gym in Korea around the time of Korea’s liberation in 1945. Funakoshi’s influence on early taekwondo gym education can be seen in its training method and kata, philosophy, and rank and belt structure.

Conclusion

Karateka Gichin Funakoshi influenced the tantoku movements of Jigoro Kano’s *seiryoku zen’yō kokumin taiiku*, and also, educationally influenced the leaders of Taekwondo. Especially, this philosophy and method of Funakoshi, which is being succeeded in Taekwondo, can be said to have modern universality.

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SCIENTIFIC AND FUNDAMENTAL ANALYSIS OF MUSCLES WHICH ARE INVOLVED IN KEY THROW TECHNIQUES AND TACTICS IN MARTIAL ARTS AND COMBAT SPORTS (WITH REGARDS OF ANATOMY AND KINESIOLOGY)

Keywords: martial arts, combat sports, anatomy, kinesiology, throw techniques

Because the championship titles and sport records are always changing and the champions don’t feel any security border for their records, then made coaches and sport researchers pay attention to categories which were effective to sport performances and finally for improvement of the champions as fast as possible. In this prospect, the important subject is scientific and fundamental kinesiology and anatomy science, in martial arts [Boostani, Boostani, Khatamsaz 2011].

Undoubtedly, one of athletics targets is reaching the championship levels and standing on championship stage in different sport competitions. Sufficiency and ability of a person in doing sport activities, depends on organs and different body parts performance which are important in technique performance. Now, many people have gotten interest in combat sports so that many people are participating in combat exercises.

Combat sports are for treating individual and physical talent and makes body healthy and is a sport to defense oneself, and so, should be paid more attention in order to efficient improvement of its techniques and tactics [Tondnevis 2000].

In the present research, researchers want to scientifically analyze the main and key muscles and their operation in throw techniques, which are so important in martial arts and combat sports (such as, *judo*, *hapkido*, *aikido*, *jujitsu*, *wushu*, *kung fu* ...) [Link, Chou 2011] and regarding to the important science of kinesiology, they have studied key dynamic muscles, key static muscles and primary kinetic changes in each technique (by picture presentation) and have presented a series of fundamental body building movements special for martial arts to increase volume of involved muscle in each technique.

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SELF-DEFENCE FOR PERSONS WITH VISUAL DISABILITIES

Key words: self-awareness, violence, verbal defence

Introduction

Self-defence is an often discussed theme. However, when it comes to persons with some disability, most of experts on self-defence do not want to spend time with it. This paper is a first step of specific self-defence method evaluation. We check the mental condition of disable people before the course, which is the starting point for the creation of a methodology of self-defence course, which we subsequently evaluate.

Methods

We use the questionnaire to determine the degree of self-confidence in self-defence situations such as verbal conflict, physical assault and in the case of prevention. The questionnaire survey was attended by 9 persons, five of them were sightless and four short sighted. They were given some statements in each section of the questionnaire, with which they agree or not in the scale from 1 to 6.

Results and Discussion

Most of the probands are aware during common situations, but they do not feel confident with their reaction on verbal or physical attack. All of probands are really scared of given situations. In some way, lack of sight abilities can be partially compensated with other senses. Usually in the stressful situations a person use Observe-Orient-Decide-Act loop. In the cause of visual disabilities, person is not able to check what he or she can hear by visual stimulus. This can produce fear from the unknown. The fear is contra-productive to optimal defence solution.

Conclusion

A self-defence course for people with visual disabilities should be focused on the early recognition of coming, verbal defence training and usage of physical contact.

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STATUS AND POSSIBILITIES OF SUPPORTING EDUCATIONAL WORK OF THE PRIMARY SCHOOL TEACHERS IN ŚLĄSK OPOLSKI, WITH THE USE OF JUDO - A MARTIAL ART BASED ON THE BUDO TRADITION

Key words: judo, Budo tradition, education, teachers, trainers 's opinion, test

The inclusion of the use of the martial arts in scientific discourse as an effective tool in assisting primary school teachers to increase the efficiency of educational effects among children is becoming extremely important. The reason is that the interest in practising martial arts and awareness of the benefits resulting from that, among parents, is becoming bigger in recent years, which is undoubtedly related to the fact that the primary schools' offers, both public and private, are constantly broadened and give not only the opportunity to participate in arts classes and sports activities carried out on school playgrounds, but they more often offer the participation in classes within the selected martial arts. In case of Śląsk Opolski, the title martial art of judo is a very common example of including martial arts to the curriculum.

The martial art of judo was created by Professor Jigoro Kano and is described by the three main ideological paradigms, i.e. the giving-in principle, the principle of maximum efficiency in action, and also the principle of doing good to each other [Rusznik, Zieniawa 2006]. Having regard to the above fact and the information that judo was born based on the tradition of Budo, constituting the educational ideal of the warrior, who "does not improve himself to fight but fights to improve himself" [Canto 2013], this fact gives us evidence to make a scientific pedagogical analysis, allowing for presenting how the assumptions of the Budo pedagogy are implemented in educational practice in the Polish primary school.

Referring to the above theory as well as the significant growth of the interest in various martial arts in recent years, among children attending primary schools, the execution of diagnostic tests has been made. The aim of these tests was to: know the opinion of primary school teachers, trainers and judo instructors, concerning the relevance and possibility to use the martial art of judo as a method of supporting the execution of teaching and educational purposes in primary school. The following question was made the main problem of the research: What are the views of the primary school teachers, trainers and judo instructors concerning the relevance and possibility to use the martial art of judo as a method of supporting the execution of teaching and educational purposes in primary school? In order to solve the main problem, the copyright questionnaires, representing 22 questions for teachers as well as 21 questions for trainers/judo instructors were developed. The diagnostic tests were conducted among 61 teachers in five schools, where judo classes are held within the framework of the extra-curricular classes or planned within the physical education hours; and among 9 trainers/judo instructors working in Śląsk Opolski. The results have been developed in the form of percentage outcomes with the graphic development for teachers, and with the quality analysis in case of trainers/judo instructors.

Referring to the most important conclusions of the conducted tests, it should be noted that, according to the surveyed teachers and trainers, the current status of using the martial art of judo in primary schools in Śląsk Opolski in the process of upbringing and education of children is good. However, it requires the development of work programmes of the individual sections of judo that will bring greater benefits in the social and moral development of children. The popularisation of the positive aspects of the martial art of judo among teachers, especially of these institutions where judo classes are conducted, also seems to be crucial. This is important primarily because, according to the assumptions, in particular of the students sport clubs, the judo classes for children are to support a wider range of educational and teaching activities which the teacher – a form tutor designs for his/her students. This in turn leads to the conclusion that the greater awareness of teachers about the benefits of judo classes may result in greater efficiency in supporting children's development at this stage of education.

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A STUDY OF THE *JUJUTSU-WAZA* (WITHOUT CONNECTING TO THE OPPONENT); DERIVED FROM THE *MAKIMONO* OF *YOSHIN-RYU-JUJUTSU*

Keywords: jujutsu, waza-mokuroku

Introduction

The *waza* (techniques) of *Jujutsu* not only include the arts of *katame-waza* (grappling) and *nage-waza* (throwing), but also *atemi-waza* (striking the body). Key components of *atemi* are certain treatments of Chinese medicine, such as pressure points (*tsubo*), rather than *waza*, or to strongly strike (*kobushi-de-kudaku*). Little has been published about *waza* (without connecting to the opponent) in academic papers on the topic of martial arts. Further detailed studies must be made regarding ‘the spirit of *Jujutsuka*’ in order for it to be an effectual, special technique. The aim of the present study is to gain insight into the *waza* aspects of *Jujutsu*. We clarified the *waza* by using the scroll (*makimono*) of *Yoshin-ryu-jujutsu*, which consists of five lines.

Methods

The initial work for the study was derived from the *waza* list, or catalogue (*mokuroku*), within the *makimono*. Furthermore, we clarified the *waza* as meaning ‘without connecting to the opponent’.

Results

These *mokurokus* of *makimono* were relayed to *Yoshin-ryu-jujutsuka* from *Suan Kono* (the 4th *Yoshin-ryu-jujutsu* master). Summarized results are as follows:

1. The 28 skills of *Jujutsu* techniques were described in this *makimono*.
2. *Waza* is comprised of five skills.
3. Also included are noteworthy techniques of jujitsu, such as *Shin-no-kurai*, *Metsuke*, *Zen-koshi*, and *Naga-tachi*.

Discussion and conclusion: We were able to identify the skills required for *Shin-no-kurai*, *Metsuke*, *Zen-koshi*, and *Naga-tachi*, and the techniques of the *Yoshin-ryu-jujutsu*. These skills do not connect to the opponent and are considered ‘a trick to disable the power of the opponent’, or ‘the forwardness of defence’.

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MOTION ANALYSIS SYSTEMS AS OPTIMIZATION TRAINING TOOLS IN COMBAT SPORTS AND MARTIAL ARTS

Key words: optimization training, movement patterns, motion analysis systems, information technology

Many different disciplines use motion analysis systems to capture movement and posture of the human body. Basic scientists seek a better understanding of the mechanisms that are used to translate muscular contractions about articulating joints into functional accomplishment, e.g. walking. Increasingly, researchers endeavor to better appreciate the relationship between the human motor control system and gait dynamics. With respect to sports, athletes and their coaches use motion analysis techniques in a ceaseless quest for improvements in training optimization and performance.

Generally, motion analysis data collection protocols, measurement precision, and data reduction models have been developed to meet the requirements for their specific settings. For example, sport assessments generally require higher data acquisition rates because of increased velocities compared to normal walking. In VR applications, real-time tracking is essential for a realistic experience of the user, so the time lag should be kept to a minimum. Years of technological development has resulted into many systems can be categorized in mechanical, optical, magnetic, acoustic and inertial trackers. The human body is often considered as a system of rigid links connected by joints. Human body parts are not actually rigid structures, but they are customarily treated as such during studies of human motion⁹.

Motion capture is a preeminent analysis method in a wide range of sports applications (research, rehabilitation, physical evaluation, practice). Physical evaluation and movement optimization are of great interest to athletes, coaches, researchers and doctors. Motion tracking techniques allow all of them improve a player's technique for better results in sports practice and it can also be used to learn more about injury mechanisms and prevention¹⁰.

The motion capture technique is very useful in the study of human movements and in the generation of computer 3D animation with digital characters. There are several types of motion capture systems, but the most important categories are magnetic systems (based on magnetic fields, which use aerials as sensors) and optical systems, that use reflective marks putting on sportsman's body and special cameras with some classes of emitter led diodes [Zatsiorsky 1998].

The main disadvantage of magnetic motion capture systems is their fails and distortions when they are working with external noise of other magnetic fields and the small number of marks that we can use. On the other hand, this kind of systems operates better than other systems in real time and interactive environments due to their good behavior at identifying the marks. Optical motion capture systems do not present any limitation about the number of marks, and they are usually applied in a complex movement capture.

Other types of motion capture systems are mechanical trackers and inertial sensors. Mechanical trackers utilize rigid or flexible goniometers which are worn by the user. Goniometers within the skeleton linkages have a general correspondence to the joints of the user. Inertial sensors use the property of bodies to maintain constant translational and rotational velocity, unless disturbed by forces or torques, respectively. The vestibular system, located in the inner ear, is a biological 3D inertial sensor. It can sense angular motion as well as linear acceleration of the head. Practical inertial tracking is made possible by advances in miniaturized and micromachined sensor technologies, particularly in silicon accelerometers and rate sensors¹¹.

Fully objective, quantitative data obtained from motion analysis systems should include the form of joint angles, acceleration, body posture, balance, coordination, and many other parameters to evaluate and

⁹ <http://www.xsens.com/>

¹⁰ <http://www.stt-systems.com/en/products/motion-capture/life-sciences/>

¹¹ <http://www.xsens.com/>

monitor performance. The recorded movements can be viewed from any plane at any speed giving the coach and athlete valuable information about: position in plane, position vs. time, projected points, angular velocity & acceleration, angle (planar or 3d), rotation (6dof), average, median & fir filters, stick figure plot, spline interpolation, time of flight, jump height, maximum concentric and eccentric strength, maximum concentric and eccentric power, concentric and eccentric work, calculated indices, elasticity index, bosco index, coordination index.

Collecting data from the aforementioned motion parameters and information on their changes is of particular importance in combat sports and martial arts. In sports such as karate, boxing, kick boxing, or taekwondo, the ability to properly use the physical parameters from motion of the player's own body, determines victory. The identification of proper relationships between physical quantities of fighters' motion is critical to movement dynamics. The motion precision and dynamics are critical to combat effectiveness.

The advancement of motion capture and computer technologies provides opportunities for developing new training methods and improving the existing ones. The development and mastering of new techniques for measurement of physical quantities provide unique opportunities for verifying the training methods. Precisely measured physical quantities which describe fighter's movements may improve the quality of training process [Cynarski, Wajs, Vences Brito 2014]. This will be especially useful at the follow-up checks of training effects and will allow reaching the expected progress in training of fighters consistent with the goals established by their instructors.

A thorough analysis of movement components, based on the data collected in the database should provide also the input for scientific research. The results of this research should aid the process of sports training in order to optimise the performance of techniques, i.e. its precision (according to the master pattern) and dynamic parameters.

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THE IMPACT OF SELECTED COMBAT SPORTS ON AGGRESSION IN PLAYERS IN COMPARISON WITH THEIR NON-TRAINING PEERS

Key words: martial arts, combat sports, aggression, anger, hostility

Introduction

In contemporary society there is the prevailing opinion that the practice of combat sports and martial arts increases aggression [Pearn 1998; Endersen, Olweus 2005; Cynarski, Litwiniuk 2006; Mroczkowska, Kownacka, Obmiński 2008]. A persons practicing them are often perceived as aggressive and dangerous. Researchers dealing with that subject think that the negative image of analysed sports is disseminated by the media, which brutalise combat sports and martial arts for commercial purposes by separating them from their traditional philosophical, religious and ethical dimension. Strength and violence are still promoted in mass culture, and aggressive behaviours are often rewarded by recipients and become frequently negative

models of behaviour for children and young peoples [Chunlei Lu 2008]. As results of research often present opposite, the aim of this study was to determine aggression of combat sports in comparison with their non-training peers.

Material and methods

The study was conducted on a group of 160 and covered athletes practicing Brazilian ju-jitsu, boxing and shotokan karate. The control group consisted of randomly selected non-training peers. The Buss-Perry Questionnaire was used .

Results

The obtained results of the study show existing discrepancies in the levels of aggression in athletes covered by the study. Among three groups of athletes covered by the analysis, the highest level of aggression was observed in Brazilian ju-jitsu fighters and then in the group of boxers. The lowest level of aggression characterized shotokan karate fighters.

Conclusions

On the basis of results of the study, we can state that the practice of combat sports has a favourable impact on fighters; even though ju-jitsu achieved the highest level of physical and verbal aggression, the general level of their aggression was lower than in the case of non-training persons.

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**ANGER IN ADULT MALE MARTIAL ARTS AND COMBAT SPORTS
PRACTITIONERS: A COMPARATIVE STUDY ACCORDING TO AGE, EXPERIENCE
AND STYLE**

Key words: sport psychology; emotions; trait anger; STAXI-2.

Introduction

Martial Arts & Combat Sports (MA&CS) practitioners employ different sets of potentially dangerous techniques, depending on the MA&CS style, the current contest regulations and their own characteristics [for an overlook of many MA&CS styles, see: Green, Svinth 2010, vol. 1]. The high damage these techniques can inflict to the opponents demand for the practitioners, both in training and in competition, high degrees of self-regulation, respect for the others, and control of negative emotions such as anger, which in the long term is commonly believed to positively build character [Becker 1982; Lakes, Hoyt 2004]. Nevertheless

and in contrast with these popular conceptions, scientific research is not conclusive regarding the effects of martial arts practice. The main purpose of this study was to describe and compare the levels of trait anger in male adults engaged in MA&CS training.

Methods

One hundred ninety-five male MA&CS practitioners aged between 20 and 58 years ($M = 33.55$, $SD = 9.35$) participated in this study. Two age groups were considered: 20 to 29 years ($n = 72$), and 30 years and over ($n = 123$). Their main MA&CS was judo ($n = 35$), Brazilian jiu-jitsu ($n = 35$), mixed martial arts ($n = 34$), aikido ($n = 32$), muay Thai ($n = 35$) and karate ($n = 29$). Participants had between 1 month and 44 years and 2 months of experience in practicing one of these styles ($M = 7.83$ years, $SD = 9.17$). We considered a group of novices (up to 4 years of experience, $n = 99$) and a group of veterans (more than 4 years of experience, $n = 96$). Anger was measured using a Spanish version of the State-Trait Anger Expression Inventory-2 (STAXI-2) [Miguel-Tobal *et al.* 2009]. Practitioners filled out the questionnaire during the first twenty minutes of a regular training session. Descriptive statistics as well as Mann-Whitney and Kruskal-Wallis nonparametric tests were used for the data analysis.

Results

According to age, we found significant differences in AX-O scale ($Z_{M-W} = -2.145$; $p = 0.032$) and a tendency to statistical significance in T-Ang scale ($Z_{M-W} = -1.779$; $p = 0.075$) and T-Ang/T subscale ($Z_{M-W} = -1.952$; $p = 0.051$). With regard to years of experience in practicing his MA&CS style, a tendency to statistical significance was found in T-Ang scale ($Z_{M-W} = -1.722$; $p = 0.085$), AX-I scale ($Z_{M-W} = -1.766$; $p = 0.077$) and AX Index ($Z_{M-W} = -1.683$; $p = 0.092$). For the comparison of the six MA&CS styles, we found significant differences in T-Ang scale and T-Ang/R subscale, while AX-I scale and AX Index showed a tendency to statistical significance. Post-hoc analysis revealed several differences between the practitioners of the styles, with aikido group being globally less prone to anger and, on the other hand, mixed martial arts group achieving the highest global scores.

Discussion and conclusions

Although we found some differences according to age and MA&CS style, most of the anger factors tested did not reveal differences among groups, and there were no differences according to experience. This provides support for Vertonghen and Theeboom [2010], who concluded in their review that the mere martial arts participation does not guarantee the achievement of positive social-psychological outcomes. Nevertheless, the differences found according to MA&CS style suggest that some styles such as aikido attract and/or develop practitioners less prone to anger, while others such as MMA do the contrary. More studies including wider samples are needed to clarify the effects of MA&CS participation on anger.

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TECHNICAL ANALYSIS OF SEIRYOKU ZEN'YŌ KOKUMIN TAIKU SEEN FROM THE PERSPECTIVE OF KARATE AND CHINESE MARTIAL ARTS.

Key words: karate; Chinese martial arts; seiryoku zen'yō kokumin taiiku;

Introduction

This paper aim to analyze the movement of Seiryoku zen'yō Kokumin taiiku from the following aspect: (1)comparing with the movement of Karate. (2)comparing with the Chinese martial arts, which is related to the origin of Karate. (3)reconsider the Kano's thought, based on upper analysis.

The movement of Kano Jigoro's book, Seiryoku zen'yō Kokumin taiiku is divided into two parts, the Tandoku movements (the movements which are practiced alone) and Sotai movements (the movements which are practiced by two people). The Tandoku movements are especially similar to the Karate. The historical research of Karate are not sufficient, while there are one point of view that believes the origin of Karate have closely related to Chinese martial arts [Funakoshi 1922: 2; Arakaki 2011: 21-22]. It is because this author did the series of practical research about Chinese martial arts that this paper aim to reveal the Kano's thought by analyzing the techniques.

Method

This is a historical research based on the related documents and materials. Specifically on the perspective of Karate. This research compared the movements of Seiryoku zen'yō Kokumin taiiku with Goju-ryu and Shotokan-ryu (two main style of Karate). It is said Goju-ryu Karate is influenced by the Chinese martial art and Shotokan-ryu Karate's founder is Funakoshi Gichin, who have direct contact with Kano Jigoro. What is more, this study will also compare the movements of Seiryoku zen'yō Kokumin taiiku with Chinese martial arts.

Results

Tandoku movement is not based on a special style of Karate. It seems more like a basic Karate movement combine with gymnastics.

Two similar point were discovered after compared the movement of Seiryoku zen'yō Kokumin taiiku and the Chinese martial arts. (1)The punch and kick in Tandoku movements were designed to varieties directions, like forward and backward, left and right, up and down. It is similar to the traditional Chinese martial arts that the comprehensive practicability is always considered. (2)In the Tandoku movement and Soutai movement one has to stretching its body to make a bigger and more beautiful pose. Such as the movement named Tsukidashi in Junokata (one of the Soutai movements). The similar thing is emphasized in the competitive Chinese martial art.

Discussion

It is hard to say the the movement of Seiryoku zen'yō Kokumin taiiku refers the specific style of Karate. We believe it is because Kano Jigoro wants to complete the defect of randori of judo, that he ignore the style of Karate intentionally.

In Soutai movement, there are some kansetu waza(joint technique) and attack from a distance. These technique doesn't appear in judo. Kano add these movement into *Seiryoku zen'yō Kokumin taiiku*, which means he wants the judo to be a "ideal sport".

Through the book, Seiryoku zen'yō Kokumin taiiku, we can say some concept are similar with Chinese martial arts, but from the movement, we can't find the similar technique. The Chinese martial arts have various of kind, some are emphasize the "kata", while some other emphasize the "randori" or "kumite". Maybe from Kano's view, Chinese martial arts are too complex. In contrast, the Karate is simpler and suitable to complete the defect of randori of judo.

Conclusion

1. Tandoku movements of Seiryoku zen'yō Kokumin taiiku influenced by the Karate's basic movement.
2. There are no significance common between movements of *Seiryoku zen'yō Kokumin taiiku* and Chinese martial arts in technique, but the general thinking is similar.
3. From the perspective of Karate and Chinese martial arts, we can clearly find that Kano wants to construct a ideal sport.

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THE HISTORY OF FEMALE SABRE FENCING IN POLAND UNTIL 2013

Key words: history of sport, fencing, sabre, women in sport

Although women had wielded a sabre since distant times, it was only in the 80s of the 20th century that they joined sports competitions. Ladies had already been practicing sabre fencing in France, England, Netherlands, Italy, the USA, and the Soviet Union, among other countries. The inclusion of women's sabre fencing, first into the program of the World Championships in 1999 and later into the Olympic Games - individually in 2004 and as team competition in 2008 - made the discipline more popular.

The beginnings of women's sabre fencing date back to the years 1996 and 1997. Female sabre fencers were originally athletes who practiced foil and épée fencing. They were prepared for competitions by coaches and instructors who specialised in working with male sabre fencers.

Female fencers started their trainings in Konin Fencing Club. In 1996 Tadeusz Piguła, who was the coach of the senior national team, started teaching his daughter, Katarzyna Piguła, a foil fencer and an épée fencer, sabre fencing. Soon, sabre fencing was taken up by other female athletes from Konin, then from Warsaw, Łódź, Sosnowiec, Poznań, and Białystok. Gradually, fencing coaches gave up trainings with the use of other weapons, and concentrated on training female and male sabre fencers.

They organised the first competition for female sabre fencers on 14 February in Łódź, and included female sabre fencing - as a new competition in fencing (together with female and male foil fencing, female and male épée fencing) - into the male sabre fencing competition named „The Gold Blade of Dziennik Łódzki”. Aleksandra Socha, representing AZS AWF Warsaw (University Sports Association of Warsaw University of Physical Education), was the winner. Arkadiusz Roszak, the coach of KKSZ Konin (Konin Fencing Club), became the coach of the national team.

In time, fencing sections which also trained female sabre fencers increased in number. There were eight of them in 2002. 10 female fencers participated in the first national competition, and in 2013, there were about 50 female sabre fencers in the Polish Championships.

Training conditions were gradually improving in all sabre fencing sections. The best conditions were provided in the centre in Konin, where female sabre fencers could use a specialist gym with eight fencing strips. The financial situation of the centre was also the most favourable one. There were more and more female sabre fencers each year. The level of training was increasing, and sports successes followed.

This article aims to assess the achievements of Polish female sabre fencers until the year 2013, and to analyse the mechanisms which determine success in this sport. Research methods based on historical sciences were used when preparing the text - inductive and deductive methods, the comparative method and participant observation method.

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OPTIMIZATION OF TRAINING IN THE SCOPE OF SELF-DEFENCE OF POLISH POLICE OFFICERS IN THE CONTEXT OF MOST OFTEN OCCURRING ATTACKS DURING INTERVENTION

Key words: police training, self-defence, attacks on police

Background

The main aim of the study is to determine the method of attacks on police officers while performing official duties. The question to be answered was, what forms of the attack are Polish police officers most often exposed to. Additionally, an analysis was made as to where these attacks occur, what dangerous objects were used by perpetrators, at what time of day these crimes happened most often, how many assailants committed the assault and what injuries were sustained by the police officers

Participants and methods

The study was conducted by analysing source materials in the form of data obtained by information systems from the Domestic Information System (KSIP). One of the main assumptions of the analysis was an aim to optimize the training process of self-defence for police officers. After analysing documentation regarding detailed examinations 3012 events, with the participation of police officers in 2009 in Poland, were assessed (acts categorised as crimes from Art. 222 and Art. 223 of the penal code). Results were drawn up with the help of statistical analyses. Quality data (descriptions of events) was transferred to quantitative level which allowed for counting the attendance and descriptive statistics.

Results

The most common forms of attacks were: hitting with the hand (37.68% of attacks), pulling clothes or body parts (in the 29.33% of attacks), kicking (21.65% of attacks), attack with a sharp tool (3.78 % of attacks), attack with a blunt tool (1.8% of attacks) and hitting with one's head (1.96 % of attacks). Less common attacks in the form of strangling (0.56% of attacks), of biting (2.06 % of attacks), of throwing objects (1.1 % of attacks), deductions by car (1.36 % of attacks) and setting a dog (0.4 % of attacks).

The analysis showed that perpetrators hitting using their hand have most often attacked the head of the police officer, however when kicking the perpetrators have most often kicked in the legs. A fact that is significant to underline is that a knife was the most popular dangerous tool applied.

Conclusions

The study confirmed that police officers on duty are incessantly exposed to attacks which can threaten their health or even life. Above all the study was concerned in determining how the perpetrator operates, the type of the attacks on the police officers and the circumstance of these events. Collected data has applicable value and can be used for recommending changes in self-defence training programs. The optimization of the training process should be based on analysis of actual events involving police officers in order to try to meet the threats police officers face.

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A COMPARISON OF STATIC STRENGTH IN BODYBUILDERS
AND COMBAT SPORTS ATHLETES

Key words: strength training, combat sports, morphological structure, bodybuilding, judo, jujitsu

Introduction

Fitness expressed in terms of muscle strength is a feature of every sport discipline. Its manifestations may vary. The development of this ability is a very important matter at various stages of training. In combat sports, like judo or jujitsu, it is a crucial parameter. The objective of the study was to compare the static strength of bodybuilders, judokas and jujitsu athletes.

Material and methods

The research material was provided by the results of measurements of 120 subjects. The group was made up of 39 bodybuilders, 54 jujitsu athletes and 24 judo athletes. The average age of the subjects was 22 years. Static strength was measured by means of a dynamometer. The researchers tested the grip strength of the right and left hand as well as the strength of the back muscles. The results were analysed by means of basic statistical methods (arithmetic average, standard deviation, variation coefficient).

Results

In the dynamometer-measured strength tests, the best results of the right hand grip strength measurements were those of the bodybuilders (51.2). The score of the jujitsu athletes and the judokas was 48.7 and 49.3, respectively. The results of the grip strength measurements in the left hand were slightly different. In this test the best result was achieved by the judokas (49.4). They were followed by the bodybuilders (47.0) and the jujitsu athletes (46.8). In the back muscle strength test the best result was achieved by the judokas (146.7), with the bodybuilders being ranked second (136.9) and the jujitsu athletes third (127.5).

Conclusions

The results indicate that although bodybuilding and combat sports are very different disciplines, there are no clear differences in strength. This suggests that in combat sports training a lot of attention is paid to the development of strength as an aspect of fitness ability.

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OBSTACLES IN UNDERSTANDING TAEKWONDO AS A RESULT
OF FAULTY HISTORICAL PRESENTATIONS

Key words: taekwondo, karate, martial arts, combat sports, forms, full-contact sparring

Taekwondo is presented in popular historical descriptions as an offspring of various ancient, indigenous Korean martial arts, although there is no evidential connection between early Korean martial arts and taekwondo. Koreans who studied or worked in Japan during the Japanese occupation years were the first to

come into contact with karate. Once they returned to Korea, they started to promote the art. All the founders of the original ‘taekwondo’ schools studied karate, and all but one did so in Japan. Existing early Korean martial arts literature describes, almost exclusively, karate technique, and shows scant influence of any other martial arts. In fact, early taekwondo was, for the most part, Funakoshi Gichin’s *Shōtōkan* karate. During the formative process of the different Korean schools under the name ‘taekwondo’ in the 1950s and 1960s, taekwondo leaders seem to have distorted taekwondo’s history, with Korean nationalism as the driving motivational force.

During the 1950s, full-contact sparring with protective equipment was introduced to Korea. This kind of training was called *bōgu* (protective equipment) sparring in Japanese karate, where it was, however, not mainstream. In fact, many Japanese instructors, most notably Funakoshi, vehemently rejected full-contact engagements, and promoted mostly the traditional *kata* or forms practice. *Bōgu* karate students largely employed kendo equipment, often modified, for use in full-contact karate training. In Korea, athletes from the *Jido Kwan* schools pioneered this kind of training, which did not become widely popular until the introduction of full-contact sparring tournaments during the 1960s. It was only with this trend that taekwondo training, technique, and purpose started to significantly distinguish itself from karate.

As a result, taekwondo split into two entities: on the one hand, the forms/self-defense activities, basically a vestige of traditional Japanese karate; and, on the other hand, the sport/sparring dimension, which evolved into a modern Olympic combat sport, over the past fifty-odd years. Even though these two main, taekwondo components are fundamentally contrary in terms of technique and philosophy, taekwondo leaders continue to insist they are related, compatible, and rooted in Korea’s ancient history.

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EFFECT OF 8 WEEKS OF JUDO PROGRAM ON MUSCULAR ENDURANCE, TRUNK FLEXIBILITY, AND LEG STRENGTH OF MALE COLLEGE STUDENTS

Key words: non-athletes, physical fitness, young adults, physical education

Introduction

Judo is a worldwide sport with the Olympic Games and World Championship for different age categories as the main competition [Franchini *et al.* 2011]. The level of physical fitness, tactical skills and techniques required in judo is high [Franchini *et al.* 2005] as it is a high intensity short exercise done in intervals [Degoutte *et al.* 2003]. Very few studies have been found to know the effects of judo exercises on judo non-athletes. The purpose of the research was to determine the impact of an 8 week judo program on the muscular endurance, trunk flexibility, and body composition of male college students of King Fahd University of Petroleum and Minerals.

Methods

20 students had complete data in the program. Pre and post measurements were measured for standing long jump, sit ups, and sit and reach. The data were tested for normality using the Shapiro-Wilk Test. Pre and post data which were normal were compared with paired t-test, while non-normal data were compared with the Wilcoxon Signed Rank Test.

Results

For all parameters, statistically significant differences were observed, with the following results: 168.1 ± 26.3 vs 183.15 ± 30.5 cm for standing long jump (9.0%, $p = 0.002$), 24 ± 6 vs 28 ± 4 repetitions for sit ups (19.4%, $p = 0.001$), 23 ± 8 vs 28 ± 7 cm for sit and reach (17.5%, $p = 0.004$).

Discussion and Conclusion

The judo program improvements in standing long jump, sit ups, and sit and reach indicate that the body explosive strength, muscular endurance, and flexibility of the students became better, respectively. The improvements in explosive strength shown by long jumps were observed by Demiral [2011]. The judo program improved the flexibility and muscle endurance, which is needed for judo. Even though the participants are not judo athletes, the benefits they got from the program improved some aspects of their fitness levels.

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MOTION ANALYSIS OF THE STANDING TECHNIQUE FOR MEN IN THE WORLD JUDO CHAMPIONSHIP

Key words: Judo standing technique, XMedia Recode, OpenCV, downward velocity

Introduction

The motion of the standing technique for men in the “World Judo Championship” was analyzed by using commercially available video data. The purpose of this study is to examine the motion of an outstanding Judo participant, then learn the motions and train students to improve their techniques by imitating them. Previous studies examining the motion of Judo were miscellaneous. They were not concerned with actual Judo matches.

Iwamura, Hreljac, Escamilla, and Edwards (2006) investigated a three-dimensional analysis of the center of mass for three different Judo throwing techniques where the center of the thrown opponent were investigated for “Harai-goshi”, “Seoi-nage”, “Osoto-gari”.¹⁾ The subjects were four throws and one faller. Motions were analyzed by using a system built by peak performance technologies, Inc., Englewood, Co. This study did not analyze the motion of Judo matches.

Blais, Trilles and Lacouture (2007) described joint dynamics and energy expenditure during the execution of a Judo throwing technique “Morote Seoi Nage”.²⁾ They used an ergometer with two force sensors coupled with two force platforms, and six synchronized infrared cameras. Modeling methods limited to “Morote Seoi Nage” were described, but the solution methods were not described.

Method

Commercially available “World Judo Championship” video data was used to analyze the motion of the standing technique for one outstanding Judo man.

The video data was disassembled into frame data called AVI by using “XMedia Recode” which is a software library that converts video data to AVI. AVI is a file format for storing audio and video information developed by Microsoft Corp. The motions performed by participants while executing the Judo standing technique were analyzed by using a software system implemented by us based on “OpenCV”, which is an open source library for computer vision and image processing developed by Intel Corp. The position of a part of the body was indicated manually and visually onto the AVI pictures based on a “frame by frame playback” technique. Then, the position of the body parts was put into a computer. The compensation of pixel values in the AVI picture to the size of the space occupied by the subjects was performed by using the known length of the “tatami” in the AVI picture.

The downward velocity statistically analyzed was the maximum thrown velocity from the beginning “Kake” stage, to contact with the “tatami”. A unit of velocity was metre per second.

Results and Discussion

One outstanding participant’s motion of “Uchi-mata” was analyzed. The two contenders will hereafter be designated as Blue and White. Blue was wearing a Blue judogi. White was wearing a White judogi.

The sequential motion of “Uchi-mata” was described. “Blue”, while using his upper body, was attempting an “Uchi-mata” attack. At this moment his right leg up into his opponent’s (White) upper left inner thigh. The rising up velocity of White right leg was about 13.5 meters per seconds. After 0.1 seconds, the right leg of Blue went to the horizontal position while his opponent was perched on his right hip. Blue was turning his waist and was raising his right leg. After 0.13 seconds, Blue was turning his body and head while his opponent was on his back and waist. Blue continued stretching his right leg upwards. White has rolled off Blue’s hip. Blue continued to lift White while reducing the velocity. The

velocity became down to about 9.5 meters per seconds. Blue continued to lift White up strongly. After 0.2 seconds, his opponent was airborne. Blue was pitched forward and twisting his upper body to the right while pivoting on the ball of his left foot preparing to flip White under him. At this moment the velocity became about 10 meters per seconds. After 0.2 seconds, Blue has pulled his opponent strongly, and because of this motion, he joins Whites momentum and his pivot leg, which was his left leg loses contact with the “tatami”. The velocity became down to 7.5 meters per seconds. After 0.13 seconds, White was falling toward the “tatami” with his back downward. Blue pulled his left hand strong. Therefore, downward velocity rose up rapidly to 15 meters per seconds.

The total time spent from starting “Uchi-mata” to full contact with the “tatami” was 0.77 seconds.

Conclusions

The outstanding techniques called “Uchi-mata” was analyzed visually by using a “frame by frame playback” technique. The total time spent from starting “Uchi-mata” to full contact with the tatami was 0.77 of a second. We have also understood the sequential motion of legs and upper arms with their velocity. We could measure the time from “Tsukuri” to “Kake” of the standing technique by using “frame by frame playback” technique and synchronized with snap-shot pictures taken. This was a case study of motion analysis of Judo using commercially available video data. An example of an analysis method of Judo from an engineering point of view has been put forward here.

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ANALYSIS OF 60 AND OVER 100 KG JUDO STANDING TECHNIQUES IN THE LONDON OLYMPIC GAMES

Key words: judo, standing technics

The motion of the standing technique for men in the London Olympic Games was analyzed by using available video data. The video data was disassembled into frame data called AVI which is a file format for storing audio and video information developed by Microsoft Corp. The motions performed by participants while using the Judo standing techniques were analyzed by using a software system based on the “Open CV” which is an open source library for computer vision and image processing developed by Intel Corp. The position of a part of the body was indicated manually on to the AVI pictures based on the “frame by frame playback” technique, then, put it into the computer. The compensation of pixel values to the real space size was performed using the length of the “tatami” in the AVI picture. By repeating these, the positions of the body were traced according to the video frame rate.

The compensated positional data of the body was gathered and then disassembled into x direction-time data and y direction-time data to calculate the velocity. In this manner, the velocity of the specified body parts of the subject and the thrown opponent were calculated. Then, the maximum velocities of the subject

and the thrown opponent were calculated. The analyzed motions of 60 and over 100 kilograms participants are compared. The difference in the techniques used was compared.

The number of the games analyzed was 39 for 60 kilograms, and 34 for over 100 kilograms. Examples of these standing techniques are given as snap-shot pictures with descriptions of velocity at those moments. This is a case study of the motion analysis of Judo using All Japan Judo Federation video data. We have given an example of an analysis method of Judo from an engineering point of view.

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MOTIVES OF TAKING PART IN SILAT, KARATE-DO AND TAEKWONDO

Key words: motives, silat, karate-do, taekwondo, martial arts

There are many motives for participating in sports. The present research evaluated the motives that encouraged different martial art to participate in sports, in order to develop sports according to each needs. Three major martial art sports in Malaysia that took part in this study were Karate-Do, Silat and Taekwondo. The sample of this study consisted of 123 athletes, which included Silat (N=57), Taekwondo (N=35) and Karate-Do athletes (N=31). A 46-item questionnaire called Purpose of Sport Questionnaire designed by Duda’s (1989) was used. The result showed that the motive of Silat and Taekwondo athletes were highest in Physically Active Lifestyle. The result of this research also showed that the motive of Karate-Do athletes were highest in Social Status or Getting Ahead. Identifying the range of motives given by different martial art participants will help sports psychologists provide adequate and variety of sport programmes to maintain interest among those martial sport. Focusing and development on those particular motives can encourage more people to involve in those sports.

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LEVEL OF DRUGS USAGE AND SPORT PERFORMANCE IN SILAT

Key words: Silat Melayu, drug usage, sport performance, martial arts.

Drug, as a new ‘threat’ to the ideal of sports has entered into the sport scene lately. The aim of this research is to evaluate the motives of drug usage among Silat athletes. Besides that the aim of this research is to correlate the relationship between the level of drug usage and sport performance among Silat athletes. The sample consisted of 103 Silat athletes, who voluntary participated in this study. The sample was drawn from athletes who competed in Majlis Sukan Universiti Malaysia (MASUM) or Sports between Universities. Drugs Usage Questionnaire was used which comprised for achievement, avoid pain, strength, relax and avoid frustration. Besides that, Sports Performance Questionnaire was used to evaluate the participants

performance in Silat. The results showed that the reason for taking drugs among Malay Silat participants were highest in avoid pain, followed by achievement, strength, relax and reduce frustration and stress. The result showed the existing of positive correlation between the level of drug usage and sport performance. Sport psychologist should play an important role to teach Silat athletes' skills and strategies relating to manage pain and enhance performance without drugs.

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ENCODING AND DECODING MARTIAL ARTS MEDIA CONTENT IN POLAND AND USA

Key words: receivers, contents, information, mass culture, media profiled

Martial arts, fighting sports and combat systems have become one of the many elements of media culture. Their popularity is due to, inter alia, the conviction of consumers of the media of their originality characterizing them, as well as the efficiency and mystery (martial arts), entertainment and competition (fighting sports) and a new approach to fighting tradition (modern combat systems) [Cynarski 2000]. „Martial arts“ media respond to this demand, presenting publications including cultural content (eg image of a warrior).

The influence of the mass media on the perception of martial arts, fighting sports and combat systems, is confirmed by, for example, scientific literature related to research on the effectiveness of the media [Thompson 1995]. This is also confirmed by S.J. Baran and D.K. Davis [2006], for whom, the receiver becomes the consumer using the market products (in this case, the „martial arts“ market). Moreover, this content may be deliberately distorted by the media (eg for marketing purposes) [Gorman, McLean 2009] for specified persons basing on their own authority (eg unreliable „masters“) so that they could achieve certain benefits.

This publication looks at the content of the media belonging to the „martial arts“ genre (profiled because of the subject matter and targeted audience interested in it actively and/or passively) [Pawelec 2011], encoded and decoded by the audience. This is consistent with the theory of Stuart Hall, assuming (in a nutshell) that the receiver does not have to take certain content in accordance with the expectations of broadcasters, but can defy and adopt based on their own approach to this issue [Hall 1980].

In order to determine the content of the tested media the method of qualitative content analysis (with elements of discourse and illustration) was used. Editorial relevant messages addressed to receivers as consumer products were tested. As an attempt research (selected in a logical manner) one of the types of media from Poland and United States were used (but selected thirty websites). The data obtained were put into appropriate categories corresponding to the cultural contents.

The tested media from Poland were: 1) „Martial Arts: magazine for fans of martial arts“ (published by Espadon from Bydgoszcz – tested only half-year due to the collapse of the title), 2) Polish-language version of TV FightKlub (owner of IKO Media Group from Hungary), and 3) Polish-language websites. As to the media from the United States there were: 1) „Black Belt“ (published by Cheryl Angelheart Group Publisher from California), 2) UFC-Ultimate Fighting Championship Television (via the portal Youtube.com) and 3) English-language websites .

The obtained results indicate the occurrence of „illustration“ of cultural content in the form of 1) words, 2) pictures 3) audios or 4) mixed. It is connected with the term of imagery, expressed through the use of appropriate figures of speech, comparisons and descriptions to facilitate the assimilation of the image [Danesi 2009]. Then the images are coded and decoded by the receivers. The consequence of this is the perception of the martial arts, fighting sports and combat systems as a positive, negative or neutral phenomenon (depending on the opinion of those media consumers).

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SOCIAL AND PSYCHOLOGICAL ASPECTS OF PAIN IN MATERIAL ARTS

Key words: pain, culture, combat sport, psychology

Beneficial influence of physical activity on our body is undeniable, but it should be remembered that physical activity is accompanied by the feeling of pain. No matter which sport we analyse, most sportsmen have felt pain (either short-term or long-term one). Sport is beneficial for the efficiency of the body, improves fitness and is a kind of healthy prevention method, but it can also cause the loss of health, disability and may cause feeling pain. Martial arts are often perceived as especially violent activities. Statistics show that due to physical workload such sports are preferred mostly by the young, strong men and the risk to have a face injury causes that they are more rarely chosen by women. Risk of injury, traumatism, need of physical endurance and strength as well as bravery are features which are often pointed out in description of martial arts sportsmen.

Connections of martial arts with psychology and sociology are inevitable in research perspective. The notion connected with empirical tests and the methodology-interpretation level allowed for connection of psychology and sociology. Martial arts (martial sports) “require effort (...) result in big power of active creativity in action” [Cynarski 2009: 117], require physical and psychological strength. Practicing martial arts allows for symmetrical development “both in physical and in psychological sense (high moral level)” [Cynarski 2009: 118]. Many authors, as well as experts in medicine of martial arts, underline that practicing such sports “lets us harmoniously function psychologically, physically, within social, moral and spiritual values. Viewing this in such a way martial arts have significant advantage as they are the locators of harmony-building state in the body so they are improvement of health, also psychological one” [Cynarski 2009: 118].

Sporting incidents accompanied by the feeling of pain are placed in the structure of general and specific needs. Among them we find: the need to compete, need to win, need of high self-esteem, the need to feel important and many other. An important aspect here is the area of perceiving the ideal needs which in comparison with real needs are the reason why the dissonance of needs appears. Locating the pain experience in rich structure of needs of a sportsman shows some interesting mechanisms of mutual influence of pain on the needs and of the needs on pain. Pain as an experience of big discomfort and a very unpleasant one is connected with fear mechanism which can reach different level of intensity – from slight fear to being very scared.

Research on algological aspects in sports is aimed at emphasizing the process of perception, acquiring and dealing with difficult aspect of physical activity which is pain. Such notion was described with the use

of tools constructed and applied in topic range of health psychology (MPQ-SF – Short-Form McGill Pain Questionnaire by Ronald Melzack, PCS - The Pain Catastrophizing Scale, M. Sullivan, CSQ – Coping Strategies Questionnaire, A. C. Rosenstiel and F. J. Keefe, BPCQ – Body Parts Concerns Questionnaire, S. Skevington, ACL –Adjective Check List, Harrison G. Gough, A.B. Heilbrun).

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BIBLIOMETRIC ANALYSIS OF TAEKWONDO ARTICLES PUBLISHED IN WEB OF SCIENCE

Key words: taekwondo, web of science, bibliometrics, scientific literature, review

Introduction

Academics have been developing a progressive and constant research on martial arts, performing comprehensive reviews about several topics such as judo injuries [Pococco *et al.* 2013], scientific literature on judo [Peset *et al.* 2013], the outcomes of martial arts [Vertonghen, Theeboom 2010], or mixed martial arts matches [Del Vecchio *et al.* 2011], for naming a few. Taekwondo is also a main topic of study among martial arts scholars and there exists a great variety of literature about this combat sport and martial art nowadays. Therefore, the aim of the present study was to carry out a bibliometric analysis of the taekwondo articles published in Web of Science until 2013, for drawing an overview of its scientific development.

Methods

Taekwondo articles published in Web of Science (SCI-Expanded, SSCI and A&HCI) were included in the present study. Attending to Pérez-Gutiérrez *et al.* [2011] recommendations, taekwondo, taekwando, tae-kwon-do, tae-kwan-do and taekwon-do terms were used for data mining and they were introduced in the topic field. Data mining was performed on May, 2014. The search was done from 1900 to 2014 for obtaining a comprehensive data retrieval and filtered by document type for including articles and reviews only. Finally, documents were individually consulted for assessing their topic and year of publication (published until 2013). Bibliometric analysis was focused on distribution of articles per year, research area, author, country and journal.

Results

A total of 176 articles were published from 1989 to 2013 in Web of Science, with a considerable increase from 2009 onwards. There are 38 different research areas, being sport sciences the main one (57.3%). A total

of 476 authors have been involved in taekwondo research, highlighting the contribution of Pieter and Chiodo (15 and 8 articles respectively). South Korea, USA and Turkey have supported most of taekwondo research publishing 31, 29 and 20 studies each one. Finally, scientific literature on taekwondo has been published in 83 different journals; authors preferring the *Journal of Strength and Conditioning Research*, which collects a 5.6% of total.

Discussion and Conclusions

From 2003 onwards, the publication of articles shows a progressive increase until present time, but most of them (71%) have been published from 2009 to 2013 in areas such as sport sciences, psychology, rehabilitation and physiology. The inclusion of taekwondo within the Olympic programme, the growth and development of Sport Sciences field and the increase of the number of journals included within Web of Science's master journal list could have triggered the amount of publications.

In relation with authors, it should be highlighted the contribution of Pieter, who has become a reference source with the publication of 15 articles. Taking into consideration the rate of articles and academics (176 vs 476), it should be pointed out that taekwondo research seems to present a collaborative pattern.

As the birthplace of taekwondo, South Korea has supported the development of quite a lot studies about taekwondo. Taekwondo research by country should be related with each country's research development or sport results.

Finally, it should be highlighted the role played by sports journals for presenting taekwondo research results as well as the appearance of a martial arts journal, *Archives of Budo*, among the most productive ones in this field.

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BODY BUILD OF JUDO AND JU-JITSU ATHLETES REPRESENTING A DIVERS LEVEL OF STATIC STRENGTH AND MUSCULAR ENDURANCE

Key words: martial arts, somatotype, motor abilities

Introduction

Martial arts are characterized by different techniques involving actions of grips, projections, offsets, chokes, joint locks and kicks. Athletes should display particular flexibility, agility, speed and balance [Costa *et al.* 2009]. Features such as strong hands, back, legs and abdomen are also relevant, since they provide an efficient performance during a combat. Individual elements of motor abilities point to divers correlations between morphological features [Seculic *et al.* 2005].

The aim of this research was to compare body build of judo and ju-jitsu competitors representing a divers level of static strength and muscular endurance.

Methods

The research material consisted of the measurements taken from 74 judo and ju-jitsu athletes at the age of 19-26 years, whose training experience ranged from 5 to 12 years. Measurements were taken of body length, width and circumference, and thickness of skinfolds. The Heath Carter method was used to determine a development of three body build components: endomorphy, mesomorphy and ectomorphy. Motor ability was evaluated on the basis of the following motor trials: handgrip strength, strength of back muscles, flexed-arm hang, standing long jump and sit-ups.

The k-means method was applied in statistical analysis. Grouping variables were: handgrip strength, strength of back muscles and flexed-arm hang. The results obtained during the trials enabled the researchers to divide them into two groups. T-Student test was applied to determine diversity in the values of anthropometric and motor features measured for both groups.

The examination was conducted within the framework of Scientific Project of Polish Ministry of Science and Higher Education no. N RSA1 001551 Poziom rozwoju siły mięśniowej u przedstawicieli sportów walki i sportów siłowych w aspekcie zmienności ich struktury morfologicznej.

Results

First group (I) consisted of athletes who obtained significantly lower values of handgrip strength and strength of back muscles. However, they obtained better values of a flexed-arm hanging time revealing their greater muscular endurance and significantly better results in sit-ups trials. Second group (II) consisted of athletes showing higher static strength, lower muscular endurance and sit-ups results. Values of morphological features such as body mass, breadth and circumference were significantly higher for this group (II). Values of length features and skinfolds were similar for the both groups. All the subjects examined had a mesomorphic body type but they differed in somatotype components. The first group somatotype was described as: 2,1-5,8-2,1, while the second group as: 2,2-7,1-1,3.

Discussion and conclusion

The development level of body build components (endomorphy, mesomorphy and ectomorphy) showed typical correlations observed in martial art competitors [Sterkowicz-Przybycień 2010; Sterkowicz-Przybycień *et al.* 2011]. Significantly dominant mesomorphy observed in the second group showed strong development

of their muscle mass related to muscle hypertrophy and increased bone massiveness. It resulted in an increase of static strength, since strength is proportional to the cross-sectional area of muscle [Zatsiorsky, Kraemer 2006]. However, an increased body mass of those competitors had a negative influence on their muscular endurance.

Static strength and muscular endurance depend on morphological body build of an athlete. Martial art competitors should use appropriate attack and defense techniques determined on the basis of their somatic predispositions.

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Vladimir Pilate

GM in the Battle Hopák, Lviv (Ukraine)

HISTORY OF THE SCHOOL "BOYOVYI HOPAK"

Battle hopák - Ukrainian martial art reproduced from elements of traditional Cossack battle preserved in folk dancing and personal experience of the researcher martial arts Lívivate Vladimir Pilate.

Before starting work on the revival of martial hopak Vladimir Pilate for seventeen years studying karate kyokushin, including eight years sensei. Along with kyokushin he studied Goju-ryu, Sonia, shotokan karate, kickboxing, aikido and jujutsu. Since the early 80s he began to explore and gain knowledge about the Ukrainian fighting culture. Holding the study of folk dances, Vladimir Pilate drew attention to the richness and diversity of their movements. He found that Ukrainian dances, particularly popular among the Cossacks Gopak Snowstorm and contain a lot of elements that are not common in other nations and similar to military equipment - jump kicks, prysyadsi or "spiders", various steps of reflection, sweeps "slider", "prysyadky", "daubing", "Kick Ass", etc. Later, these movements properly transformed to the requirements of modern martial arts, formed the basis of the technical arsenal Fighting Gopak. This title reproduced martial arts ancestors was due to the fact that a significant portion of vehicles able to decipher through the research of folk dances, especially Gopak.

Paternal grandfather Michael Pilate comes from knightly family, who since 1121 had a family coat of arms as "New". My grandfather passed the First World, Civil and World War II. Father Vladimir Stepanovich on mother's Andriy Hidey, during the rule of the Austro-Hungarian served in the personal guard of the Austrian Emperor Franz Joseph II.

In 1985 he collected material for the study of courtly art in Lviv Ukrainian Vladimir Pilate opened an experimental school for the study Gopak as a martial art. In 1987, officially established «School Fighting Gopak».

Since 1990, Fighting Gopak development was led folk-sport association "Galician Jan" which i created headed by Volodymyr Pilate. FSA "Galician Jan" was the first organization, which officially began spreading Fighting Gopak in Ukraine, whereas even the USSR. Based on the fact that NATIONAL martial art has deep cultural roots, "Galician Jan" for the first time in Ukraine united sport and culture of our people as to investigate, and study work.

Available material was systematized and published in book *Traditions of the Ukrainian National Physical Culture* form in 1991 with a circulation of 20 thousand [Pristupa, Pilate 1991]. In 1994 W. Pilate released book "Battle Gopak".

Teacher successfully combined academic work with the research process, and as a result, in 1994 YEAR WORLD saw his second book "Battle Gopak". This book is in wide circles Ukrainian people named primer Fighting Gopak. In 1995, folk sports association "Galician Jan" held the first Championship of Ukraine with Fighting Gopak.

In 1996, May 18-19 in Ukraine conducted the first nationwide competition to combat hopak, which was attended by over 150 participants. 10-13 April 1997 in Lviv held its second nationwide competition (300 participants from 8 regions of Ukraine). In October 1997, fighting hopak recognized national sport. In December 1997, registered "Central School of Martial hopak", which is a public, non-partisan and non-confession organization.

In 1998, Vladimir Stepanovich Pilate was developed teaching methodology Fighting Gopak for pupils level of perfection skills "Zhovtyak" and "Sokil", which came out pamphlets i roziyshlysya lightning all over Ukraine.

In 2001 was established and registered with the International Federation combat hopak, which also promotes fighting hopak abroad.

Today Fighting Gopak patented architectural style as his own name, logo as teaching methodology as a style of martial arts, Vladimir Stepanovich Pilate, who is President IFBH, Supreme Master and Founder of the style.

Much of the technology was able to decipher through the research of Ukrainian folk dances. From here was born and a new name art revival ancestors - Battle Gopak.

It is important to note the role of martial dance Gopak, which, according to the researchers, a bank of storage technology, tactics and the basic principles martial arts of our ancestors. Dance - is not just a movement to a song or music, dancing coded culture and mentality of the people.

From 7 to 15 October 2001 in South Korea Chardjou the IV World Martial Arts Festival, where the national team of Ukraine in combat Gopak ranked third, what shocked the world of martial arts. At the end of the festival, the school curriculum Fighting Gopak Vladimir Pilate gave the book "Fighting Gopak" Shaolin Temple to the library.

Today Gopak Battle beyond the conventional ideas about the sport or martial art. Battle Gopak - a powerful youth movement that captures and integrates Ukrainians throughout the world, regardless of social status or level of prosperity, membership of political parties or religion.

Pupils Fighting Gopak except machinery fight, studying Ukrainian national traditions and ceremonies, master the art of singing and dancing, playing musical instruments. Hopakers brought on the basis of statist patriotism and morality, respect for elders and respect for its history. Battle Gopak promotes among adolescents and young people smoking cessation, alcohol and drugs, delaying them from the underworld, promotes more rapid and effective social adaptation of young generation.

The main directions of development of martial arts are:

Health

Folklore and Art

Sports

Fighting.

"Odnotan", "Tan Duel", "Fun", "Bourne", "Hertz". "Odnotan" - a solo song accompanied by music from demonstration vehicles Fighting Gopak. Type of event where a person using strikes, waste, network of relationships, presents a beating with multiple opponents, and trying to overcome them. In the dance version odnotanu is music and some elements changed for greater beauty. Odnotan evaluated for excellence in performance and technical elements riznospryamovanost attacks. Odnotan effectively used in real combat "Tan-fight" - previously studied indicative program of technical elements Fighting Gopak, performed simultaneously by two parties that simulate match the musical accompaniment. "Fun" - a kind of fight with a limited touch. The main objective of "Fun" is the assimilation of technical elements Fighting Gopak and

ability to enter into battle and out of combat range. “Bourne” - a kind of fight with a light touch. In “Bourne” authorized serial operation at medium and long range. “Hertz” - a kind of fight with full touch. In “Hertz” provides more than ten kinds of touch, which are regulated by the rules of the competition according to modern international counterparts combat systems - mezhstilevaya and universal battle.

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INJURIES IN JUDO: A SYSTEMATIC LITERATURE REVIEW INCLUDING SUGGESTIONS FOR PREVENTION

Key words: martial art, combat sport, Olympic sport, athlete's health, sports injury

Background and Objective

There is limited knowledge on epidemiological injury data in judo. To systematically review scientific literature on the frequency and characteristics of injuries in judo.

Methods

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

Results

During the Olympic Games in 2008 and 2012 an average injury risk of about 11-12% has been observed. Sprains, strains, and contusions, usually of the knee, shoulder, and fingers were most frequently reported injuries, whereas being thrown was the most common injury mechanism. Severe injuries were quite rare and

usually affected the brain and spine, whereas chronic injuries typically affected finger joints, the lower back and ears. The most common types of injuries in young judo athletes were contusions/abrasions, fractures and sprains/strains. Sex-differences data on judo injuries were mostly inconsistent. Some studies suggested the relationship between nutrition, hydration and/or weight cycling and judo injuries. Also psychological factors may have an influence on the risk of judo injuries.

Conclusions

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

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THE SEARCH FOR INFINITY. THE NUMBER 8 AND THE MARTIAL ARTS

Key words: comparative historical method; cultural influences; East and West; martial techniques; cosmic symbolism.

Introduction

Since ancient times, in both West and East, the number eight is present in many cultural expressions [Ambrosius; Granet; Hart; Iraeneus; Kraft; Le Goff; Shaughnessy], having important functions, both symbolics and concretes [Burckhardt], from the religious sphere [Buswell; Shahar] to the mathematics [Aczel], from philosophy [Rucker; Swami] to the nomenclature of the winds and the solar system, from architecture [Barber; Cadei] to the game of chess, to bodily expressions such as Belly dancing, Tango, Qigong and various martial arts.

Concerning the human bodily experience, the movements in the form of 8 – originated from the basin to be transmitted to the arts – can be found in traditional dances and in several martial arts as well. These are two activities both well established already in archaic societies as expressions of universal efficiency of rhythmic alternation between opposing, but complementary and inseparable, forces [Lash; Lenoir – Standaert]. Trough the nature observation we can perceive this alternation.

Methods

Using the comparative historical method [Pettazzoni; Rossi; Orsi], we can trace the similarities among martial arts coming from different backgrounds, moving from the presence of the number eight in the cultural context, in the underlying philosophy and in the practice of the various disciplines. The aim is to strive not to an abstract summary, an idealistic archetype, but to the identification of the specificities of the different historical processes that have produced different body techniques.

The considered martial arts are originating from Brasil [Talmon-Chvaicer], China [Liang – Yang - Wu; Raimondo – Sabatelli 2013], Philippine [Galang; Inosanto], India [Ananda Lal; Nanak – Sat; Yogi Bhajan], Italy [Monaco]. We examine also some Qigong exercises [Raimondo – Sabatelli 2005] and the so-called Middle Eastern belly dance [Bonaventura; Karayanni], the Argentine tango [Azzi; Hanna] and the game of chess [Burckhardt].

Next steps of research are based on anthropological methodology: participant-observation fieldwork, semi-structured interviews and questionnaires to experts in the various disciplines in China, India, Europe.

Results

The comparative review of texts and images presented in this study lays the theoretical basis for a broader and more in-depth empirical research.

Observing and comparing a substantial body of text and images, it can be stated that in Martial arts the number eight corresponds to the dogged pursuit of a harmonious and dynamic balance in flux although apparently stable. In this sense we can maybe affirm that Martial arts have in their constitutive essence the “research of infinity”.

Moreover, we note once again that Martial arts are important both for the formation of the tradition and for its own preservation, without being detached from the evolution of the history.

Discussion and Conclusion

Techniques and philosophies of the concerned martial disciplines seem to share a boost to the search for infinity, not in the sense of immortality but as the eternal change.

In this sense these techniques make the practitioner able to accept and conform to the perpetual change that underlies the great universal order of nature. It can therefore be said that the observation of nature, from which all these disciplines originate, is their true common denominator and this is mostly important to contemporary society which, having been so radically departed from the natural spontaneity, has lost the ability to understand itself and to provide an ideal of progress. It turns out that nature itself provides greater guarantees of humanity than human beings can create themselves by acquiring artificial means.

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COPING STRATEGIES OF DIFFERENT LEVELS IN AIKIDO PRACTITIONERS

Key words: stress situation, challenge, experience, martial arts

Introduction

Aikido is a Japanese non-competitive martial art. It was developed in the middle of the 20th century by its founder Morihei Ueshiba as so called shinbudo, modern martial art. The ultimate goal of aikido is to develop personality in the balance of bio-psycho-socio-spiritual dimensions.

Aikido group described in this study is from Czech and Slovak aikikai groups, taught mainly by shihan Franck Noel from France and Seishiro Endo from Japan. The style is dynamic, smooth and fluid, and rather sportive than traditional, enabling wide population to practise Aikido.

Material and Methods

The purpose of this study was to assess the flow state of aikido practitioners. Seventy-six Czech male and female aikido practitioners (age 32.5±9.2 years (mean±SD), range 18-56 years) participated in this study. The subjects were divided according to a ranking system into three groups: Beginners (up to third kyu, ref. as (1)), Intermediate (second and first kyu, ref. as (2)) and Advanced (dan holders, ref. as (3)). COPE Scale by Carver, Scheier, and Weintraub [1989] was used. It contains sixty questions at the scale 1-4 divided to 16 dimensions according to coping strategies. Czech version of the diagnostic instrument was translated using

the Ten steps translation protocol. For basic interpretation descriptive statistics was used, then ANOVA and Scheffes post hoc test was used to show where significant differences at the level of $p=0.5$ can be found.

Results

According to the descriptive statistics, there were expectable differences in positive reinterpretation and growth ((1)=2.99; (2)=2.99; (3)=3.23), focus on and venting of emotions ((1)=2.54; (2)=2.24; (3)=2.15), use of instrumental social support ((1)= 2.85; (2)=2.63; (3)=2.37), religious coping ((1)= 1.52; (2)=1.42; (3)=1.21), behavioural disengagement ((1)=2.27; (2)=1.76; (3)=1.81), use of emotional social support ((1)= 2.45; (2)=2.21; (3)=1.92), substance use ((1)=1.35; (2)=1.34; (3)=1.10), suppression of competing activities ((1)=2.52; (2)=2.65; (3)=2.82) and planning ((1)= 3.00; (2)=3.11; (3)=3.17).

There were almost no differences in mental disengagement, humor, restraint and acceptance.

Discussion

The fact that many differences were not significant can be somehow surprised. Still, we can see a tendency in using strategies according to aikido (budo) theory. Practical significance shows that advanced aikido practitioners opposite to beginners use positive reinterpretation and growth, suppression of competing activities and planning. Aikido as a part of Japanese budo is built on permanent development of all four dimensions of personality. Results shows, that aikido training supports the responsibility for ones coping with stress situations. On other hand, differences as not big, so we should not say that aikido itself is an undoubtful tool for learning coping

Conclusion

There is no significant difference between aikido levels In the most of dimensions. Significant difference (at $p=0.5$) were find only in using of emotional social support in the way, that advanced practitioners do not use it as much as beginners, and in focus on and venting emotions as advanced and intermediate aikidokas do not show their emotions.

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THE EFFECT OF A SHORT-TERM PERIOD OF CREATINE SUPPLEMENT LOADING WITH DIFFERENT QUANTITIES ON ANAEROBIC POWER OF KARATE KA GIRLS

Key words: karate, creatine supplement, anaerobic power

Introduction

Karate is one of the most famous and popular combat sports of the world (2). The amount of women's capability and endurance in activity implementation has been taken into consideration for many years (1). So, the result of present research was, effect of a short-term period of creatine supplement loading with different values on anaerobic power of karate ka girls.

Methods

There were 30 karate ka girls who were chosen as samples, and were divided into two groups: experimental group and placebo group, and all groups in one place, at high intensity, have been practicing jumping training, startling training and a series of specific karate movements with maximum power of 70 percent every day for an hour. The final exam which has been spotted for anaerobic power operation was 8 sec Wingate exam. After practicing all the pre-test stage training, the subjects have consumed creatine with quantity of 200 and 300 mgr during 6 days randomly (10 people 200 mgr and 10 other people 300 mgr, for each kilogram of the body weight and for the control group, an adequate amount of wheat flour has been given. For the comparison of pre-test and past-test of each group results, the T test has been used.

Results

The results showed that short-term consumption of creatine with amount of 200 and 300 mgr causes anaerobic power increase which is negligible and has no significant affect statistically ($P>0.05$).

Discussion and conclusion

So, in order to improve anaerobic operation of girl karate ka, usage of creatine supplements is not recommended (according to consumption duration and values of this research)

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**FLOW STATE IN ELITE JUDO ATHLETES: A DESCRIPTIVE ANALYSIS
OF TWO SCALES OVER A FOURTEEN-WEEK PERIOD**

Key words: sport psychology; elite sport; combat sports; martial arts.

Introduction

Flow is defined as “the way people describe their state of mind when consciousness is harmoniously ordered, and they want to pursue whatever they are doing for its own sake” [Csikszentmihalyi 1990: 6]. This construct has received growing attention by Psychology and Sport Sciences researchers in the last years, especially at the elite level due to, among other reasons, its relationship to peak performance and sport success [Jackson, Csikszentmihalyi 1999]. Taking this into consideration, the purposes of the present study were: (a) to describe the flow characteristics in elite judo athletes; (b) to analyse and compare their flow characteristics in different moments of the sport season (competitive period).

Methods

Participants were eight elite judo athletes (5 male, 3 female) training at the Madrid High-Performance Training Centre. Ages ranged from 16 to 35 years ($M = 22.75$; $SD = 5.9$ years), with 12 or more years of

experience in judo practice ($M = 15.63$; $SD = 2.7$ years), and all participants held the rank of black belt. To assess the flow state we used the Dispositional Flow Scale (DFS) and the Flow State Scale (FSS) [Spanish versions by García-Calvo *et al.* 2008] and the Escala de Flow Disposicional - versión breve (EFD-B) [Dispositional Flow Scale – brief version] [Godoy-Izquierdo *et al.* 2009]. The DFS and EFD-B scales were administered at the pre-test and post-test (fourteen-week, during the competitive period) stages, while the FSS and the EFD-B were administered once a week after the after the training session that took place on Wednesdays. Means and standard deviations were calculated and we used a Friedman mean rank test to compare the obtained values for each scale in the pre-test, training (14-week mean scores) and/or post-test stages.

Results

DFS pre-test results showed that the “Loss of self-consciousness or inhibition” factor achieved the higher scores among the nine factors of the scale ($M = 3.2$; $SD = .73$), while the factor “Autothelic experience” scored higher for the EFD-B ($M = 4$; $SD = .93$). Mean scores during the 14-week period were higher for the “Loss of self-consciousness or inhibition” factor both for the FSS ($M = 3.43$; $SD = .44$) and the EFD-B ($M = 4.02$; $SD = .68$). Post-test results revealed higher scores in the “Loss of self-consciousness or inhibition” factor for the FSS ($M = 3.3$; $SD = .72$), and in the “Autothelic experience” factor for the EFD-B ($M = 4.3$; $SD = 1.04$). Finally, Friedman test showed differences in the “Sense of control” factor for the EFD-B ($p < .05$), with increased scores through the period, and no differences for the DFS (pre-test and post-test) and for the FSS (14-week mean scores).

Discussion and conclusions

This study has described the flow characteristics in a small sample of elite judo athletes. Differently from cross-sectional studies about flow in other sports [García-Calvo *et al.* 2008; Ruiz-Barquín, Rey 2010; Ruiz-Barquín, Rodríguez 2013], we used three questionnaires to assess flow longitudinally during all the fourteen-week period. Findings showed the “Loss of self-consciousness or inhibition” and the “Autothelic experience” factors achieving the highest scores, while only the “Sense of control” factor of the EFD-B changed during the studied period, probably because of the athletes’ physical, technical and tactical improvement during the training process. These aspects could be considered as indicators of the flow state in elite judo athletes, so that specific interventions can be designed to generate a flow state in the athlete, especially near to the competition.

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‘DOES ANYBODY HERE WANT TO FIGHT’... ‘NO, NOT REALLY, BUT IF YOU CARE TO TAKE A SWING AT ME....’ THE CULTIVATION OF A WARRIOR’S HABITUS IN A VENEZUELAN COMBATIVE ART

Key words: martial arts, stick-fighting, subject-formation, Venezuela

Introduction

The enduring legacy of the fighting stick among rural Venezuelans has led me to examine the persistence of stick, machete and knife fighting in Venezuela and what it has to say about modernity. I look at one example of a global tradition of living civilian combative traditions still practiced and transmitted to protect one’s body, command respect or protect ones property from expropriation at the same time the student is taught a respect for life and the values of the community. One element missing or downplayed in the scholastic literature of many combative systems is a consideration of the emotional commitment needed to succeed in combat. Among those who practice martial arts as a survival tool there is the recognition that a fighter must develop both callousness to the suffering of others and an emotional detachment to analyze the situation. In what I call the ‘warriors habitus’ I suggest these types of aggressive and pitiless dispositions are not purely biologically based but are often culturally mediated and shift through time and space in relations of apprenticeship with skilled combative teachers through the transmission of new ways of holding and moving the body in conjunction with material technology.

Methods

The material for this study arises from a long term project looking at the extent and role of stick fighting in rural Venezuela. Between 1998 and 2013, 4 trips ranging between 2 weeks and 7 months were made. Data collection relied on semi-formal and informal interviews as well as apprenticeships. Archival research and a literature review of relevant works were also employed to set stick fighting in a broader context.

Results

A common response to the question of what qualities does it take to become a good stick fighter is the idea that a love of stick fighting should ‘be in the blood’, or ‘one must like it’ suggesting an inherent trait. However, the willingness of teachers to train and socialize students in the intricacies of garrote suggests this trait may be open to modification. The ability or willingness to ‘go to the dark side’ or deliberately target vital or vulnerable areas of an opponent’s body in order to quickly and efficiently end a combative encounter and the way this disposition is cultivated and managed through training is seen as vital part of training. In conjunction with the desire to close in and engage an opponent, equally valued is the ability to maintain a sense of emotional detachment in order to seek out and exploit any weakness in the opponent’s defense. The successful domination of an opponent often results in overwhelming feelings of elation or joy that can lead to the active seeking out further combative encounters to test one’s skills and access the intense feelings of power and joy that comes from winning. In order to prevent a student from becoming a threat to their own community the ability to mediate ones response depending on the modality of combat is treated almost as importantly among garroteros.

Discussion

Traditional warrior art arts are concerned with technical efficiency first and foremost and morality last. The training of the body and the emotions for combat while retaining a sense for the humanity of others is what I call the ‘warriors habitus’. I find this a useful concept to explore how different combative systems over

time and through space have wrestled with and tried different solutions to deal with the realities of violence facing communities on an everyday basis while at the same time cultivating a sense of the importance of human life without which a community would destroy itself. As it took shape in Venezuela, this type of ‘emotion work’ [Wacquant 2004] or learned restraint acts as a type of ‘civilizing processes for garroteros. Students are exposed to sets of locally developed bodily movements in conjunction with a range of available weapons to channel their desire for high risk acts as well as a sense of emotional detachment when fighting as well as the ability to turn away from the pleasures associated with victory. Not only are the chances of dominating a combative encounter improved through this type of training, but the mastery of these dispositions are valued by the community grounding an individual’s sense of identity and belonging in a restricted set of movements. Ideally this type of transmission shows a student has been trained in a specific local style and that he has been deemed morally worthy to uphold and protect those around him. Through training the political nature of subjective relations are seen through the amount of time and quality of training imparted [Simmel 1906]. Similarly observable are the levels of skill reached by students, notwithstanding the level of instruction suggesting the habitus as the dominant factor in subject-formation is questioned [Mauss 1979; Downey 2010].

Conclusion

Interested in the persistence of local combative traditions in the modern world, this paper has focused on the role of developing and refining the necessary disposition of the emotional detachment and the enjoyment in the destruction of an opponent and then the ability to mediate these dispositions as not to become a threat to one’s community. In rural Venezuela men skilled in garrote were alternately feared or respected and the skills and attitudes they embodied were often seen as possessing a set of values, attitudes and practices that can up through today serve young people well in their struggle with a sometimes hostile and treacherous world.

Research suggests the cultivation of these dispositions occurs through culturally mediated forms of moving the body with a number of different weapons highlighting the variable and temporal nature of corporeal knowledges [Conley 1999; Todd 1938; Warnier 2011]. In working class neighborhoods and rural areas throughout the world where there is a concern with one’s public reputation, weak state control and a tradition of self-help strategies, learning how to fight with weapons, when to fight, and then how to spin the circumstance of fights to protect yourself from retaliation or to shore up your prestige become key lessons in negotiating everyday life [Falk 2004]. These lessons often arise unexpectedly, are brutal and unforgiving. Those that can successfully navigate through these episodes are often physically and emotionally scarred but can function or even prosper as model members of a community to be turned to when the community is in danger or to be looked up to by the younger generation to be imitated. For those young men who do not learn these lessons their road often takes them down the path to an early death, prison or madness. The main problem facing the young men raiding, dueling or brawling is how to re-integrate them back into society to act as a protector of their communities. The different pedagogical approaches enabling a young man to ‘flip the switch’ and fight, then teaching him to ‘turn off the switch’ and restrain these impulses has proven to be fraught with difficulties. Among my teachers the desire to close in on an opponent while maintaining a sense of emotional detachment and the instilling of a respect for life are key dispositions in the development of a garrotero. The unstable and fragile set of dispositions needed to excel in combat and become a respected member of a community which I call the warrior’s habitus is the subject of ongoing research.

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SOCIOLOGICAL CONSIDERATIONS ABOUT KARATE-DO: RELATIONSHIP BETWEEN BUDŌ AND *HABITUS* CONCEPT

Key words: Sport sociology, science of martial arts, Bourdieu theory

Introduction

This work intends to be the beginning of a reflection which crosses the concept of Budō - specific of the Martial Arts and coming from a far and closed culture - with one of the main concepts of the modern sociology - *habitus*, like proposed by Bourdieu. This proposed crossing was made using the Karate-Do (mainly in its traditional approach) as set, and the experience of the author as an athlete and instructor.

When an athlete has been promoted in Budō, he must follow the traditional values, search for increased practice and promote the research, as well as do his best to perfect and preserve the traditional art [Wilson 2010]. Using this to start, Budō could be seen as a set of values and ways to behave of the martial artist, and the set of “rules” used by the group to control the access to it. *Habitus* is a structured defined way of thinking, feeling and acting, and trained skills, which guide the answer of the individual to the social requests, that result of the incorporation of the social values and “rules” [Wacquant 2007]. So it’s easy to conclude that Budō could be seen as the specific *habitus* of the martial artist on the traditional way of practice.

Method

This work is reviews literature and makes a theoretical reflection based on it, crossing the concepts of Budō and *habitus*.

Results

Karate-Do is a Japanese martial art and it can be described as an art of self-defense with empty hands, on which the arms and legs are trained on a systematical way and by which an enemy who does a surprise attack could be controlled with a demonstration of strength equal to real weapons [Nakayama 1983]. It could be divided in four major styles: Shotokan, Shito-ryu, Goju-ryu and Wado-ryu.

Beside the styles there are two major ways to practice Karate-Do (or any martial art): traditional and competitive [Cynarski, Sieber, Litwiniuk 2005]. The first searches a moral and spiritual progression, shaping the self of the individual, besides the training of combat techniques. The second one searches the best physical performance and sport efficiency, making the martial art similar to others combat sports.

Budō is a concept linked to the traditional Japanese culture and it can be translated as “the way of Martial Arts”. Or, “the way of the pacifist”, because martial is linked to war and not to peace that the author refers

to be the truly translation of the words [Wilson 2010]. Budō is a modern interpretation of the base concept of Bushidō and it encourages cordial behavior, increase of technical ability, development of the body and perfection of the mind, it could be considered a way of self-development much more than the simple practice of combat techniques [Uozumi 2010].

Karate-Do uses an extended number of rituals and specific terminology that must be incorporated “in the bodies” (using the expression of Bourdieu [2001]) of the athletes and instructors [Stoleroff, Rosa 2008]. This rituals and specific terminology was directly linked to the concept of Budō.

Budō is an implicit established “figure” in the athletes group dynamic, framing a set of values and principles that was desired by the group that each individual share and present. By this, the group controls the way of behaviour of all athletes, limiting the access to the group to the individual who respects this particular way of behaviour, so only to the ones that assume this specific *habitus*. The main components that make the Karate-Do athletes specific *habitus* are expressed in *dojokun* (the main principles of the house of Budō), which are linked to concept of Budō [Filho 2013].

Dojokun must be perceived like a symbolic code which frames the specific *habitus* of the athletes of traditional Karate-Do, and should be used by them to guide the desirable conduct. This “code” is based on Bushidō, and could be seen as the expression of the Budō. Seeing the things like this, it’s easy to see that the way as Budō concept is linked to the *habitus* of athletes of traditional Karate-Do. As a code of conduct in an initial phase some kind of violation of it from some individuals is accepted, but when the individual gets deeper on the study of the martial art (older in practice and with higher grade) the violations of this code of conduct are gradually less accepted, and the individual who shows that they do not respect this “code” could be expelled from the group.

Beside the *dojokun* there are some other symbols that are worth some reflection, like the *dojō* itself, the salutation and the belt.

The salutation is a specific ritual of the practice of Karate-Do which is made on a lot of occasions in each practice session. This ritual represents to the athlete more than the simple greeting between each other, it’s a symbol of respect. Respect for each other but mainly for the hierarchy, for the older and the master. This ritual is an expression of a behavior of the *habitus* of the athletes of Karate-Do that is submission to the hierarchy. If a new actor who tries to enter the group doesn’t shortly show respect for this expected behavior, his entrance on the field is rejected, making the individual to quit the practice.

The *dojō* it’s the sacred place of training of the mind and body of the martial artist where the martial artist must maintain the discipline, etiquette and formality. The area of practice must be calm, safe, clean and with a solemn environment [Wilson 2010]. These “rules” and concepts of *dojō* are learned in the interaction between the younger and older athletes, and must be formally respected by all.

The belt it’s something highly ritualized and respected by all athletes of Karate-Do. The different colors of the belts are known by all and they represent symbolically how deep in the learning of the Budō that athlete is. This system of colors of the belts promote a continuous monitorization of the incorporation of the Budō (*habitus*) in each individual on the group, because the young athletes demand from the elder ones a complete demonstration of the Budō itself, and the older demand that young ones incorporate the Budō on their behaviour fast. Besides, the graduation to higher levels are subject to a formal exam, during which the *sensei* evaluates not only the technical ability but also the respect by the main principles and values of Budō.

Conclusion

Observing Budō as a set of principles and values incorporated in the behavior of the athletes of Karate-Do which was passed between the different “generations” by symbols, more or less noticeable. The mutual monitorization of this process of incorporation of these symbols on the individual behavior ensures the maintenance of the Budō as specific *habitus* of this restrict group, which controls the access to the field of new actors.

This sociological way to see the practice of the Martial Arts mixing this two concepts to better understand of the social dynamic of this restrict group shows to be a large field of further investigation yet to explore.

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INFLUENCE OF THE POLISH MARTIAL ART MODEL ON BATTLE TRAINING OF EUROPEAN ARMIES IN THE XVIII AND XIX CENTURIES – AN OVERVIEW

Key words: knight, cavalry, hussars, sabre, lance

At the end of the XVIIIth century there are changes in the military systems in Europe, namely within the battle leading system where the cavalry starts playing more and more important part next to the infantry. The West which since the end of the chivalry period and development of firearms ceased cavalry development in favour to the infantry development and firearms upgrade starts perceiving growing importance of the cavalry due to its mobility. A fighting soldier is no longer protected by his armour, hence more vulnerable to cutting (sabre) and piercing (lance) weapon.

Special mileage of the cavalry begins in the second half of the XVIIIth century alongside with the growth of national and liberation movements, especially in Italy. Poland is the only country in Europe with extensive horsemanship combat skills traditions. The infantry in Poland is scarcely present, if there is any, it is a foreign one – a German or Hungarian one. Throughout all his history a Pole was fighting together with the horse, therefore presence of well honed combat skills in this particular field.

Prowess and fitness of a Polish soldier is notably seen within the period from 1792 to 1863 when the Polish horseman is constantly present on the battlefield. Poland is also the only country to maintain tradition of joust, from the chivalry, through hussars and lance from the Napoleon period till the year 1939. Our best trained combat skills are related to the long pointed weapons. That experience achieves an exceptional esteem during the period of Napoleonic Wars when Polish lance becomes a weapon of choice for european armies which take the whole system of martial combat on. In the aforementioned period (1792-1863) for both the sabre and lance the gear and combat systems are of Polish provenance.

When at the end of the XVIIIth century a necessity to create cavalry formations equipped with sabres arises, the West takes from the Polish model in both the weapon type and the martial art. There is no tradition of fighting with a curve-bladed weapon on the West, nobody fights with the sabre and pole weapon is replaced by a rifle with bayonet. Frenetic search for the best models of battle sabre proves Poland possesses the best ones, alongside with the lance. Unfortunately, when all of the Europe gets equipped and fights using the Polish methods, Poland itself as a country is absent on the European map; Polish soldier fights in foreign

armies: Prussian, Russian, French, Austro-Hungarian, where he passes on examples of sabre and lance usage. Alas, lack of the statehood results in citations from sources of swordmanship knowledge referring not to Poland but to the army and country which a Pole represents while on active service. Despite the fact one can find information confirming the influence, importance and role of the Polish martial art and weapon use in the battle in foreign armies. The best example here is France with Napoleon, whose army keeps particular esteem for Polish Cheveau-légers and Vistula Cheveau-léger Lancers 7th Regiment.

The Emporor Napoleon's Ambassador baron Bignon writes this way: „*A Polish soldier is fit for every type of active service, albeit especially for cavalry. Every peasant in Poland is born a horseman; therefore cavalry regiment can be formed there with the same effortlessness as they form an infantry regiment elsewhere. Namely uhlands are recognised for their recherché use of lance and supply French regiments with instructors*”.

Acclamatory information on influence of the Polish martial art onto the European military can be found i.a. in such texts as :

1/ *CorvinKrański, Essaisur le maniment de la Lance. Paryż 1811*

2/ *A. Grisier, Les Armes et le Duel. Paris 1864*

3/ *J.A.L. Werner, Versuch einer theoretischen Anweisung zur Fechtkunst im Hiebe. Leipzig 1824*

4/ *Rules and Regulations exercise and manceuvers of the Lance. London 1825*

5/ *E. Hoyt, Rules and regulations for drill, sabre exercise, equitation, formation and filed movements of Cavalry. Greenfield. 1813.*

6/ *Lectures on the Tactics of Cavalry by Count von Bismark. London 1827.*

7/ *Mary Barton, An historical tale of Poland by Count Henry Krański. Vol. I. London 1846.*

8/ *Trattato di Shermasopra un nuovo Sistema di giuocomisto di scuolaItaliana e Francese. Firenze 1847.*

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INJURY RATE IN THE TOP LEVEL JUDO COMPETITIONS IN THE CZECH REPUBLIC

Key words: judo, injury, combat sport

Introduction

Sport and each of its sports industry, each sport is a distinctive kind of sports activities with features. The purpose of sporting activities is not just their simple implementation, but every athlete tries to achieve maximal performance, which is capable of. In pursuit of athlete's best performance are linked with many health risks of each one. The health risks are often linked with many factors, whether it is a personal thing to the athlete, the influence of another person, the cause of the sporting sector, climatic and sanitary conditions, technical equipment and organizational factor. The aim of this work is to determine the frequency of accidents at judo competitions held in the Czech Republic in the men's category and what factors affect the frequency of accidents.

Aim

The main goal is to determine the overall injury rate of competitors in competitions in the Czech Republic. What are the most common injuries happening, the degree of technical maturity, age of athletes, the length of active sports activities, each weight category, ranked matches and when the injury occurred especially in which minute has an injury happen.

Methods

The research survey was conducted on 69 subjects, in which some appeared as multiple injury or aggravation of the previous injuries. Research the value of an individual subjects, we investigated using questionnaire. In the questionnaire, we investigated the competition at which the accident occurred, the age of athletes, weight category, active sports activities, technical maturity level and match minute of injury, technique and after consultation with the doctor the type of injury and type of treatment. All the data we had obtained were subsequently analyzed. The research was conducted for one calendar year from May 2010 until May 2011.

Results

Through the questionnaire, we obtained all needed information about the factors affecting the frequency of injuries. Depending on the evaluation of injury minutes into the match, we concluded that the most critical period getting an injury is the third game and the third minute of the match. The second factor reflects the percentage of accidents in each weight category - in the total number of participating athletes. From percentage evaluation is evident, that the accident rate in judo ranges from 2.5 – 12 %. Furthermore, we examined the most common injuries to the periphery, the total localization of all identified injuries and injuries to the head and neck. Next, we examined the injury, which depends to the age, where we have the male category divided into four age categories, depending on the weight categories, where we examined the number of injuries. The highest percentage of casualties on the number of athletes was found in the lowest weight category up to 60 kg with 11.7 % of the injured, while the lowest percentage was found in the highest weight category over 100 kg, which was only 2.5 % of the injured.

Conclusion

The overall injury rate was monitored during 1 year at an event held in the Czech Republic under the auspices of the Czech Union of Judo. Judo is an individual sport that requires more than just physical preparation, but also technical skills and mental readiness of the athlete. These three ingredients mentioned before mostly affects the cause of the injury. If an athlete does not have all three ingredients sufficiently developed, can then not only win, but also becomes a potential victim, but also the cause of injury.

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**THE CORRELATION BETWEEN LEADERSHIP COACHING STYLE
AND SATISFACTION AMONG UNIVERSITY SILAT OLAHRAGA ATHLETES**

Key words: leadership coaching style, athletes’ satisfaction, silat, martial arts, combat sports

The word silat means a kind of sport or game, which consists of quick movements in attacking and defending (Anuar, 1987). Silat olahraga is a sport that existed in the midst of development of thousands of silat schools in Archipelago (Anuar, 1993). The main purpose of this study identified the correlation between coaches’ behaviors and satisfaction experienced by Universiti Teknologi MARA silat olahraga athletes. The perceptions on the leadership coaching style and level of satisfaction among male and female athletes were identified in the research. A total of 132 respondents, silat olahraga athletes that involved in silat olahraga national university competition were selected using systematic random sampling to make up the sample. Two questionnaires were used in this study, Leadership Scale for Sports (LSS) by Chelladurai and Saleh (1980) and Athlete Satisfaction Questionnaire (ASQ) by Riemer and Chelladurai (1997). A pilot study was conducted for reliability of the questionnaire. The study provided evidence male and female athletes have the same perception on leadership coaching style and female athletes have the highest level of satisfaction in all satisfaction’s factors except for the training and instruction which was better than the male athlete’s level of satisfaction. Furthermore, Pearson correlation demonstrated a significant relationship between leadership coaching style and athletes’ satisfaction. The correlations were moderate and positive which indicating a substantial relationship for leadership coaching style and athletes’ satisfaction, $r = 0.52$ and $p < 0.001$. The researcher stated some recommendation for further study on this topic.

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**HOW DID JIGORO KANO APPLY “THE PRINCIPLE OF BEST USE OF ENERGY”
INTO JUDO RANDORI?: FOCUSING ON *SEIRYOKU ZEN’YŌ KOKUMIN TAIKU***

Key words: *atemi-waza*, jujutsu, karate, Kenji Tomiki

Introduction

Jigoro Kano defined Judo as a way of life and held up two ideals; self-completion and mutual benefit. He also emphasized to live according to the principle of Best Use of Energy, and urged Judoka to practice Judo through randori and kata. From these facts, we can clearly understand that his theory includes a philosophy,

a method, and an attitude. These three are firmly incorporated. On the other hand, Kano created *Seiryoku zen'yō Kokumin Taiiku* (National Physical Education According to the Principle of Best Use of Energy) (hereafter, SKT) that includes an individual practice and a paired one, the former in particular is composed of various kinds of *atemi-waza* that Judoka would never use in randori. He then published a book of the same name in 1930. If there are consistencies in Kano's teachings, the principle of Best Use of Energy will influence the movements of *atemi-waza* in SKT. The purpose of this study is thus set up around the subject of how Kano applied SKT in Judo randori.

Research Method

This is a combined research of historical, philosophical and sociological ways of thinking based on the primary sources concerning the subject. Namely, this study is a trial to ask what Judo should be by considering why Kano thought of SKT and how he viewed it in the context of the society of that time. The main document examined in detail is Kano's *Seiryoku zen'yō Kokumin Taiiku* (National Physical Education According to the Principles of Best Use of Energy), published in 1930.

Results

1. Kano drew up SKT by extracting *atemi-waza* (striking and kicking techniques) from Karate because he had a strong interest in the *atemi-waza* of Karate since the final years of Meiji era, circa 1909.
2. Kano formalized SKT not only as a national form of physical education for the general public but also as a kata for Judoka.

Discussion and Conclusion

With the numerical increase in Judo matches, the posture of Judoka became worse and was different from the natural posture (*Shizen-tai*) that Kano urged. Kano felt the necessity of randori with *atemi-waza* in Judo since the early days of the Kodokan, so he had been enthusiastically studying various kinds of martial arts like Karate, Aiki-jujutsu, Boxing, Bo-jutsu and so on. On the other hand, Kano emphasized more importance on randori rather than on kata, and prohibited the use of *atemi-waza* in randori to ensure safety. It is considered that one of the main reasons that Kano created SKT was as a deterrent against bad posture by keeping Judoka conscious of a potential attack by *atemi-waza* in practice. This is because he placed a high value on Karate from the viewpoint of *atemi-waza* as well as *seiryoku zen'yō*. But isn't there any other reason? The problem of the structural difference between Karate and Jujutsu should be considered.

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COMPETITION STRUCTURE AND VOLUME OF YOUNG SLOVENIAN JUDOKAS

Key words: judo, age group, categorization, athletic career, early specialization, periodization

Introduction

In recent years, athletes begin specialized training for their sport at increasingly younger ages [Morrison, Schöffl 2007; Committee on Sports and Fitness, 2000]. One of the reasons of pressure for high standing at early ages represents the introduction of the Youth Olympic Games [Judge *et al.* 2009] in 2010 and especially in judo the introduction of World Judo Cadet Championship in 2009. Because of those competitions in judo, there will be a lot of attention directed to the development of athletes in the 13 to 14 and 15 to 16 year old groups [Julio *et al.* 2011]. The aim of the study is to present a 5 year competition status, structure, volume and the age category competition range of young Slovenian judokas, that are now categorised sportsman's by the rules and norms of Slovenian Olympic Committee.

Methods

The sample was selected from the current list of categorized athletes of Olympic Committee of Slovenia¹². The selection criteria were the year of birth 1990 and younger and the categorization level from which we selected the competitor's from the National, Perspective, International and World class sports categorization level. All data were collected from the freely accessible web page of Slovenian Judo Federation¹³ and its history of competition backing to the year 2009. After selection criteria we collected the data of 46 judokas (Male=24, Female=22). From the sample there were 15 judokas from National class (Male=11, Female=4), 23 judokas from Perspective class judokas (Male=11, Female=12), 5 from International class (Male=2, Female=3) and 3 judokas from World class (Female=3).

Competitive structure and volume was collected from the number of home, abroad and total number of competitions in the years from 2009 to 2013 in all age groups that they were competing. Competitive performance was collected from the scores and standings from all competition's and age categories that they were competing. For Data analysis we used SPSS 20.0. To describe the sample and variables we used the methods of descriptive statistics.

Results

Total sample of judokas had an average 30.37 (\pm 10.41) home competitions and 9.61 (\pm 8.39) abroad competitions in a 5 years range. The average overall starting age category of the total sample in the year 2009 was 5.15 (\pm 1.55) which means that they primary age competition category was U16. The National Class (NC) categorized judokas had an average 3.27 (\pm 4.20) competitions abroad, 30.27 (\pm 9.42) at home and total of 33.53 (\pm 11.98) competitions in a 5 year period. The Perspective Class (PC) categorized judokas had an average 9.48 (\pm 6.10) competitions abroad, 33.78 (\pm 10.20) at home and total of 43.26 (\pm 12.26) competitions in a 5 year period. The International Class (IC) categorized judokas had an average 18.6 (\pm 4.70) competitions abroad, 25.0 (\pm 4.53) at home and total of 43.6 (\pm 4.22) competitions in a 5 year period. The World Class (WC) categorized judokas had an average 27.33 (\pm 5.86) competitions abroad, 13.67 (\pm 3.06) at home and total of 41.0 (\pm 6.56) competitions in a 5 year period. The NC judokas gathered an average of 2544.73 (\pm 1831.75) points, PC judokas gathered an average of 4467.0 (\pm 2769.79) points, IC judokas

¹² OKS Olympic Committee of Slovenia (2014). Data available at <http://www.olympic.si/sportna-kariera/registracija-in-kategorizacija/aktualni-seznam/seznam-kategoriziranih-sportnikov/>

¹³ JZS Judo Federation of Slovenia (2014). Data available at <http://www.judo-zveza.si/?page=slocup&sub=indiv>

gathered an average of 10448.80 (± 1948.41) points and WC judokas gathered an average of 21392.0 (± 5102.13) points in a 5 year period.

NC judokas competed in 6.71 (± 1.15), PC judoka in 8.65 (± 1.40), IC judokas in 8.72 (± 2.08) and WC judokas competed in an average 8.20 (± 0.96) competitions per year.

In year 2009 NC categorized judokas competed in 1.87 (± 1.125) age categories, 2010 in 1.87 (± 1.125) age categories, 2011 in 2.53 (± 1.125), 2012 in 2.93 (± 0.884) and 2013 in 3.07 (± 0.799) age categories. In year 2009 PC categorized judokas competed in 1.83 (± 1.337) age categories, 2010 in 2.04 (± 0.976) age categories, 2011 in 2.48 (± 0.846), 2012 in 3.04 (± 0.767) and 2013 in 3.09 (± 0.900) age categories. In year 2009 IC categorized judokas competed in 3.00 (± 0.707) age categories, 2010 in 3.0 (± 0.0) age categories, 2011 in 2.40 (± 0.548), 2012 in 2.20 (± 0.447) and 2013 in 2.20 (± 0.447) age categories. In year 2009 WC categorized judokas competed in 3.00 (± 0.0) age categories, 2010 in 2.67 (± 0.577) age categories, 2011 in 1.67 (± 0.577), 2012 in 2.0 (± 0.0) and 2013 in 1.67 (± 0.577) age categories.

Discussion and conclusion

From the data of our research we can see that the average starting age category in 2009 of now categorized judokas was U16 which means that the judokas were between 14 and 15 years old. The recommended age limit to start training judo is 10 years [Kostka *et al.* 2012].

Abroad competitions are definitely an important factor in gathering important experience for a young judoka as we can see from Figure 1 that the higher the number of abroad competitions the higher the competitive success regarding to achieved points in Figure 2 and the higher the categorization level the more competition abroad did they have.

In average NC judokas competed in 6.71 (± 1.15), PC judoka in 8.65 (± 1.40), IC judokas in 8.72 (± 2.08) and WC judokas competed in an average 8.20 (± 0.96) competitions per year. Average number of competitions of categorized Slovenian judoka is 8.07 (± 1.4) competitions per year and it slightly differs between categorization classes but the main difference is in structure of home and abroad competitions. From this number we can see that Slovenian coaches have to implement an average of 8 competitions in their yearly periodization plan.

If young athletes, have better training conditions and spend more time practicing and competing with better teammates and opponents, the chance of becoming competent adult athletes would be greater [Gonçalves *et al.* 2012]. We can support that from our data in Figure 3 where we can see that the NC and PC judokas started competing in 2009 at an average 1.85 age categories. The number of competing in more age categories has increased steadily every year with 2010 1.96 age category, 2011 2.50 age category, 2012 2.99 age category and in 2013 3.08 age category. In practice this means that judokas were competing with at least 2 to 4 years older opponents in 1 to 2 higher age category competitions. Some of the judokas were even competing in 4 age categories which means that they had fights with at least 6 years older opponents from senior level. Structure of home and abroad competitions is showing us that the abroad competitions play an important factor in developing a youth athlete and should be attended at early age to achieve elite youth result and to have a good foundation for senior age category. Barreiros, Fonseca [2012] showed that male judokas that have participated in the major events started competing sooner at an international level. But competitions should be implemented inside of the athlete's primary age category or no more than one age category higher to ensure the proper development and progressive load of young body therefore coaches should include in their periodization more abroad competitions whit in competitor's primary age group.

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PROSPECTS FOR THE DEVELOPMENT OF CHINESE MARTIAL ARTS CENTERS IN THE EXAMPLE OF TRADITIONAL KUNG FU/WUSHU CENTERS

Key words: Shaolin temple, Wudang, Emei, chinese martial arts, kung fu

Introduction

Shaolin, Wudang and Emei - the most popular Chinese martial arts centers with long history, still attract millions of martial arts enthusiasts from around the world. These are the places which are not only important because of historical events, but also thanks to amazing stories, folk tales of brave monks, Chinese heroes. Here they were acquiring or increasing their skills in combat. In this article, the author has focused on contemporary situation of Wudang, Emei and their famous rival, the Shaolin monastery. Today, these places still play a significant role in martial arts training, especially now, when so called MMA (Mixed Martial Arts) are so popular.

Data collection and methods

China: Shaolin Temple (Henan Province, 2007, 2012); Wudang Shan (Hubei Province, 2012), Emei Shan (Sichuan Province, 2012).

Field interviews with practitioners from China, Europe and United States; participating observation. Studies were preliminary in nature.

Discussion

Still traditional or rather modern way of teaching/practicing martial arts?

Martial arts tourism – a new way for practicing, or just another method of earning money?

Commercialization of Chinese martial arts: the only way for traditional styles?

Conclusions

Schools of martial arts still exist in Wudang and Emei and have their own students, however their presence and activities are not so clearly visible, such as in Shaolin temple. But the skills of students after graduating the schools/courses are varied. The tourism "for legend" to those places is still popular.

An extensive network of hotels and restaurants is able to meet the large crowd of visitors and practitioners. It might seem that such a developed infrastructure for some time may lead to full commercialization of places that once were regarded as inaccessible hermitages, where only selected people could stay.

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A COMPARISON BETWEEN JUDO AND NON-JUDO PRACTITIONERS
IN AGGRESSION AND SOCIAL SKILLS DIMENSIONS

Key words: Budo, Buss-Perry Aggression Questionnaire, Kikuchi’s Scale of Social Skills, anger, hostility

Introduction

Modern Budo such as Karatedo, Aikido, Kendo, and Judo originated in Japan [Nippon Budokan 2009: 123-260]. Specifically, Judo joined the Olympic sport in 1964. At present, approximately 200 countries belong to the International Judo Association. The philosophy of Judo might play the significant role for this trend, which are “maximum efficient use of energy (*seiryoku-zenyo*)” and “mutual prosperity for self and others (*jita-kyoei*)” [Kodokan 2009: 21].

Iteya *et al.* [2001] explored reported individuals’ reasons to continue sport activity with 244 samples (Judo practitioners: N=186; Non-Judo practitioners: N=58; Age ranged from 18 to 80 years). One of their findings was that Judo practitioners continue their sport activity because of the challenge for their own maturity as a social person, and in turn, the more the individuals experience Judo practice, the more they are mature. In addition, Nagai *et al.* [1997] compared athletes’ perceptions of value propensity (orientation) in three sport groups: American football, Judo, and Kendo. They found two unique facts among the three groups: 1. American football players showed the highest winning-orientation. 2. Judo practitioners showed self-regulation/discipline orientation. Taken together, one aspect of Judo practice is not only to pursue beating over others (winning), but also to enhance/develop athletes’ character. In the United States, Matsumoto *et al.*[2006] indicated that practicing Judo can play a role to develop athletes’ positive character. They concluded that the Judo practitioners who practiced for a long time have more characteristics in discipline, respect, sincerity, and courage. It is an indication that Judo practice can support athletes’ character development.

Naturally, Judo has an aspect of combat sport which involves aggressiveness. Reynes and Lorant [2002] found that Judo pupil practitioners reported significantly greater aggression than non-Judo pupils.

Furthermore, Endresen and Olweus [2005] pointed out that power or fight and strength sports (boxing, wrestling, weightlifting, and oriental martial arts including Judo have core components such as violence and antisocial situation, which could do harm with child development. On the other hand, Lamarre and Nosanchuk [1999] have a view that Judo practice can be a key to decrease athletes' degree of aggression.

Therefore, the purpose of this study was to compare social skills and aggression between Midwest Judo practitioners and non-Judo sample that were college students in the United States.

Method

The total of 94 subjects in the Midwestern region ($n=69$ Judo practitioners & $n=25$ non-Judo practitioners) volunteered to complete the survey. The Kikuchi's Scale of Social Skills (KISS-18: 18 items and 5 point-scale) was conducted back translation method into English and confirmed the reliability of the scale [Kikuchi 1988]. In addition, perceptions of individuals' aggression were measured by the Buss-Perry Aggression Questionnaire that has four subscales (29 items and 5-point scale): Anger, Hostility, Physical Aggression, Verbal Aggression. Descriptive statistics, Pearson correlation, and t-test analyses were performed [Buss, Perry 1992]. This study obtained the permission from the Human Ethics Committee of Konan University.

Results

Descriptive statistics showed the Judo and Non-Judo groups' mean scores (M) and standard deviation (SD): Judo & Non-Judo group, respectively: $M=2.38$ & 2.34 , $SD=.61$ & $.78$ (Physical Aggression); $M=2.61$ & 2.93 , $SD=.75$ & $.84$ (Verbal Aggression); $M=1.93$ & 2.27 , $SD=.67$ & $.82$ (Anger); $M=2.22$ & 2.71 , $SD=.75$ & $.81$ (Hostility); $M=2.18$ & 2.39 , $SD=.06$ & $.64$ (Total Aggression); $M=4.05$ & 3.85 , $SD=.32$ & $.41$ (Social Skills). Pearson correlation analysis revealed that Judo practitioners' perceptions of social skills were associated with their age and Judo history (in years). Finally, t-test analysis revealed that Judo practitioners reported significantly lower aggression subscale scores and higher social skills score: Anger ($T=2.04$, $p<.05$, $\eta^2=.04$, $\omega^2=.03$), Hostility ($T=2.74$, $p<.01$, $\eta^2=.08$, $\omega^2=.07$), and Social Skills ($T=-2.20$, $p<.05$, $\eta^2=.05$, $\omega^2=.04$).

Conclusion

Results suggest that Judo practice both enhanced athletes' social skills and controlled their aggression. Noteworthy, Kodokan [2009: 27] stated "He (Jigoro Kano) accentuated judo's edifying potential and practical applications (*jutsu*) as important, albeit secondary, and modified violent jujutsu techniques into "Way of training for a better life." To sum up, Judo is not only to learn competitive skills, but also to train self-regulation skills. Thereafter, Sasaki and Binder [2006] pointed out when Judo therapy applies to mental disorder patients who are not able to self-regulate in such as emotion and behavior, instructors need to be fully careful to introduce Judo practice because such patients possibly just learn the judo skills such as *jujutsu* which are expected to protect opponents. Therefore, it is very important for judo coaches to introduce judo practice for their students as a whole education in both judo and self-regulation skills. Otherwise, the judo practice can be in danger of just promoting judo skills to the students, which might be an enhancer of judo practitioners' aggressive responses.

Future research should increase sample size and more Dojos (Judo classes) in order to support the hypothesis in this study, which was whether Judo practice is associated with athletes' regulation skills in behavior, cognition, and emotion. In addition, longitudinal setting might be of future researchers' interest.

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THE IMPACT OF FOUR-MONTH STRENGTH TRAINING ON BODY MASSIVENESS, PROPORTIONS AND TISSUE COMPOSITION IN ACADEMIC MALE ATHLETES

Key words: resistance training, body build, body composition, students

Introduction

Strength training has become a popular form of exercise among academic athletes for developing musculoskeletal and health-related fitness. Depending on the specific programme design, resistance training can improve strength, power, local muscular endurance and body build. It can also reduce the risk of injury [Faigenbaum, Myer 2010].

The aim of presented study was to evaluate the changes in body massiveness, proportions and tissue composition, and also in strength, in academic male athletes attending the specific progressive resistance training programme for 16 weeks.

Methods

The changes in body build and strength among 31 young athletes (20-23 y.o.) in response to a 16-week specific progressive strength training programme were examined. This programme, proposed by Stefaniak [1995], includes training three times a week with the increased number of repetitions (19-24), the number of sets (1-3) and the increased loads (5%). The exercises included: squats, lunges, stiff-legged deadlifts, bent rows, bench press, pullover, seated dumbbell shoulder presses, lateral raises, standing cable crossover, overhand push downs, underhand barbell curls, alternate hammer curls, side bent, mountain climber, hanging knee raises and crunches.

The anthropometric measurements were taken with instruments manufactured by GPM (Siber Hegner Machinery Ltd, Switzerland). The Body Mass Index was calculated to determine the athletes' massiveness and the somatotyping of subjects following Sheldon's typology as modified by Heath and Carter was performed. The body composition was examined with the BIA Akern 101 Anniversary Sport Edition analyzer. The

athletes' strength was measured with a grip strength dynamometer and a back strength dynamometer (Takei Scientific Instruments Co. Ltd, Japan). The assessment of measurement's reliability was conducted and the technical errors of measurement were calculated. During the statistical analysis the Student's t-test for repeated measures was used. The somatotypical differences were examined with the Somatotype Analysis of Variance.

All subjects were healthy, maintained their normal diet and refrained from ingestion of additional supplements throughout the training period.

The Committee for the Ethics of the University School of Physical Education in Wrocław accepted the performance of the research. The study was carried out within the framework of the Scientific Project of Polish Ministry of Science and Higher Education no. NRS1 001551 – *Poziom rozwoju siły mięśniowej u przedstawicieli sportów walki i sportów siłowych w aspekcie zmienności ich struktury morfologicznej*.

Results

After a 16-week specific progressive strength training the increase of body mass about 0.9 kg was observed in the examined group. Individual body mass enlargement reached 4-5 kg. It took effect on increased body massiveness, BMI values (from 23.9 +/- 2.2 kg/m² to 24.2 +/- 2.1 kg/m²). The somatotype analysis of variance showed an increase of mesomorphy (from 5.5 to 5.7) and decrease of ectomorphy (from 2.5 to 2.4). The level of endomorphy became stable (2.1). The maximal circumferences of flexed arm, forearm and calf increased significantly of about 0.6-0.8 cm. The little but consistent enlargement of subcutaneous fatness of limbs was observed. The amount of fat mass evaluated by BIA became stable (14.5 +/- 3.8 kg). The amount of fat free mass and muscle mass increased about 1 kg (MM from 45.9 +/- 6.1 kg to 47.0 +/- 6.5 kg), also the intracellular hydration enlarged. Back strength and hand grip strength increased respectively of 9.0 kg and 2 kg.

Discussion and Conclusions

The specific 16-week progressive strength training programme, proposed by Stefaniak [1995], results in parallel gains in fat free mass, muscle mass and strength. The student athletes participating in this program became more mesomorphic and massive. Fat mass did not change significantly, but the little enlargement of limbs' subcutaneous fatness was observed. Cloutier *et al.* [2014] and Baker *et al.* [2013] noted an enlargement in strength and fat free mass in young men after 8-week strength training. Baker *et al.* [2013] comparing of one versus three sets resistance training programmes paid attention to fact that the one set protocol produced significantly greater decreases in adiposity, what may suggests that greater training volumes do not produce more rapid adaptations in body composition characteristics than does training at a lower volume. After the progressive training programme tested in actual study the effect for fatness reduction may be indistinct.

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MOVEMENT ASYMMETRY AND SYMMETRY IN TECHNICAL AND TACTICAL PREPARATION OF ADVANCED AND WORLD ELITE JUDOISTS

Key words: movement asymmetry and symmetry, technical and tactical preparation, male and female judoists, junior and senior, advanced and world elite, direction of rotation in throws.

The equalizing level of judoist preparation and more tough international competition force to seek continuously for reserves. The diminishing reserves still remaining in fitness draw attention to technical and tactical preparation. Here, movement symmetry and its application in tactics have been little used, as yet. The objective was to determine appearance of movement symmetry its extent and importance for sport successes by judoists.

Material and Methods

General physical fitness tests, global movement coordination test, interviews, observations. Tested were 136 high advanced judoists (male and female), mainly juniors (finalists of the Polish Youth Games, reserve of the Junior National Team). Results were given on the background of literature data for 959 judoists of world elite from various countries. Together 1095 sportsmen.

Results

Investigation of the large judoists group has shown domination of right-side body activity, especially in young judoists (threefold in juniors). Over 20% of leading judoists made throws in both directions, with their number increasing with increase in sport proficiency (up to 57,3% among medal winners, and 71,4% among golden medal winners during various events, including Olympic Games). Symmetrically trained judoists have had greater successes when using right and left throws. This points to the increasing important of motor versatility at the highest level of sports mastery.

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AN ASSESSMENT OF LINKS BETWEEN FORCE ACCURACY AND FAT CONTENT IN SUBJECTS

Key words: force accuracy, fatty tissue, impedance, kinaesthetic differentiation

Objective of the study: The objective of the study was to assess the link between the percentage of fatty tissue in the subjects and the level of force accuracy of their limbs.

According to many scientists, the percentage of fatty tissue in the total body mass may play a key role in maintaining not only health but also relevant competitive level in sport, and in generating the right speed of movements and muscle power. Drawing on these data, the authors assumed that an assessment of the link between fatty tissue distribution in the body and force accuracy could be an additional source of information about rarely analysed links between kinaesthetic differentiation and the tissue composition of the human body.

The authors' assumption was that the percentage of fatty tissue in the subjects would be significantly correlated with the level of their force accuracy. In order to verify this hypothesis, they carried out tests on judo athletes as well as students of the Academy of Physical Education in Wrocław.

To measure fatty tissue in the subjects they used a bioelectrical impedance analyser (BIA).

In addition, the researchers analysed the ability to generate from memory (without visual analysis) a given force value, i.e. 50% of the maximum value. To this end they used a specialist device (characterograph) for measuring muscle strength of limbs. The first step was to determine in one attempt (with visual analysis) the 50% value of the force generated (the so-called standard), followed by five attempts to recreate it from memory (without visual analysis) for the right and left lower and upper limbs separately.

The material thus collected was analysed by means of common methods of descriptive statistics, taking into account the arithmetic average and standard deviation. In order to assess the differences between the average values in the study groups, the researchers used a t-Student test. A Duncan post-hoc test was used to carry out a detailed assessment of the significance of differences between averages in variance analysis.

Conclusions

The analyses carried out by the authors show that the percentage of fatty tissue in the subjects is significantly correlated with the level of their force accuracy.

The highest level of force accuracy is found in people in whom the percentage of fatty tissue is within the so-called physiological norm.

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THE LEVEL OF MUSCLE STRENGTH DEVELOPMENT IN COMBAT SPORTS AND POWER SPORTS
 ATHLETES WITH REGARD TO THE VARIATION OF THE MORPHOLOGICAL STRUCTURE

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APPLICATION OF CONFLICT ALGEBRA IN THE ANALYSIS OF A FENCING SKIRMISH AND TACTICAL PREPARATION METHODS

Key words: conflict algebra, fencing, tactics

He who loves practice without theory is like the sailor who boards ship without a rudder and compass and never knows where he may cast.

Leonardo da Vinci

Conflict is the basic feature of living in a community, its potential existence can be seen everywhere. In interpersonal relations between men and women, in interactions with other groups which are often marked with tension, as also in aversion to authority, parents, teachers and employers. It also appears in physical fitness.

Modern science has at its disposal many objective methods, which allow studying the preparation of sportsmen.

Scientific theories about fencing, where looked into in their books and articles by: Kalina [2000], Borysiuk [2002], Czajkowski [2005], Kalina, Stusiński [2004], Tomczak [2010]. About martial arts repeatedly wrote Cynarski [2009].

In this article the mathematical analysis outline of tactical thinking in a fencing sport skirmish was shown, which was published by Szafirowski [1971]. Theoretical issues were supplemented by tactical preparation methods of fencers. In order to prepare the material, the quality analysis method of source texts was utilized.

In sport fencing, tactical preparation can be assisted by the usage of tactical preparation methods. Forming of fencer's tactics is based on two processes: gradual introduction and improvement of his own concept of combat, counteracting general and individual combat concepts of his opponents, mastering the way to fight them and observation of contestants with which a skirmish is predicted. Additionally, tactics is being realized by introducing different means into combat, utilization of methods in tactical preparation of fencers, selecting contestants for skirmishes, setting training tasks, content and direction of analysis of past skirmishes, trainings and tournaments. Tactics of contestants can be formed by a large number of training skirmishes and participation in tournaments. Tactical preparation is improved with the aid of specially focused tasks in individual lessons and practicing in pairs. It is also the choice of partners for particular skirmishes and setting training tasks, content and direction of analysis of past skirmishes, trainings and tournaments. Creating varied situations during individual lessons and training skirmishes, a fencer is being prepared to counteract many different combat concepts.

Conventionally, three directions can be specified, which influence the formation of new combat concepts in modern fencing: contestant's predispositions to utilize his physical features and physical preparation, contestant's predispositions to utilize certain fencing actions, tactical direction during the fencing skirmish. Every one of the directions above determines a wide range of combat concepts, an example of such are: contestants, who keep a set distance in combat, fight in a static way, fight with a lot of mobility, utilize attacks with large range of different speed, apply quick retreats, mainly apply attacks, most often apply counterattacks, utilize the defence coming from distance, cover, ducking, end the attack in the hit area, utilize the length of the upper limb in preparation actions in fighting with a sabre, apply ultimate actions and defensive actions with choice, active contestants fight with the usage of tactical action guidelines, use only defined tactical variants, they distinguish themselves by the liking for complex skirmishes, apply set patterns in tactical thinking.

The tactical concept of a skirmish, fencers mainly improve through learning during individual lessons, exercises in pairs and training skirmishes, they select with the coach, to a specific opponent and his individual features, suitable technical-tactical means. In tournament preparation and during starts, a fencer searches for and improves ways to counteract specific concepts of his opponents; he works out a model

of future fencing skirmishes. He should skilfully utilize individual combat manners in skirmishes against unknown opponents.

Preparation for each skirmish with a specific opponent demands information gathering about him, earlier tournament skirmishes analysis, comparison of combat concepts with the possessed information and consideration of goals and skirmish results. All of this information serves the purpose of creating an model of future skirmishes. The above actions change with the current observation of the opponent and his skirmishes, evaluating results of each action and updating the pattern. A skirmish with a unknown opponent demands the choice of action concept during the skirmish and will be based on the ability of a contestant to quickly and correctly create patterns with the consideration of models, most suitable for his tactical intentions and actions.

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THE EFFECTIVENESS OF RECOVERY IN CHILDREN AGED 9-11 Y.O. PRACTICING AIKIDO

Key words: Recovery Efficiency Coefficient, training effect, girls, boys

Introduction

The development of aikido in Poland was inseparably connected with Szczecin. Just there in 1976 the first Aikido section was created and it has been existed up today. The founder of this section was Marian Osiński [Wysocki, Rovigatti 1990]. The practicing of aikido influenced advantageously on the motoric features and condition of exercising children [Pańczyszyn, Cynarski 2001].

The aim of studies was to indicate the influence of regular aikido trainings on the level of recovery in children aged 9-11 y.o. and to state if the recovery was effective, if there were significant recovery differences between genders, and also – in relation to training experience.

Methods

The studied group (S) was consisted of 100 children (24 girls and 76 boys), aged 9-11 y.o., regularly practicing aikido. The studies were carried out in Autonomic Aikido Academy in Szczecin four times a year: in May, September, February and July in the same children. The training experience of subjects was from 2 to 4 years. All children participated regularly in trainings two times a week during 45 min. Each child from S and control (C) groups declared also active participation in physical education lessons at school. To the C group 41 children were selected: 8 girls and 17 boys.

To evaluate the effectiveness of recovery the Recovery Efficiency Coefficient (REC) test was used. It relied on heart rate (HR) measurements three times in a sedentary position: in resting (I. measurement), just after exercise (II. measurement) and after 5 min. of recovery (III. measurement). Before the I. measurement a child sat also during 5 min. The physical exercise relied on a run in site, with a high lifting of knees, above the navel line. The HR was measured by the wrist blood pressure monitor KH8090 of BALANCE firm, UK.

Results

The difference of achieved REC values between S and C groups was deepened with the each study in consecutive months and it was statistically significant. REC values showed the prevalence of girls from the S group ($t=4,299^{**}$). In the S group a quite balanced percentage increase in REC values between months was observed, reflected by the line trend of positive increases, and for the C group by a decrease, in percentage REC values, with a line trend of negative increases. In boys the similar trend was monitored. From one side the REC values increased for the S group B ($t=3,877^{**}$), and from the other – decreased in the C group, thus in boys this decrease was less dynamic in comparison with the decrease of REC values in girls from the C group.

Discussion

The aikido training shaped endurance, flexibility and a general level of physical condition [Pańczyszyn, Cynarski 2001]. The statistical significance of REC values differences in consecutive months was a result - from one side - the of good achievements of the S group and from the other – the decrease of recovery effectiveness in the C group. On the base of obtained results one could conclude that the greatest recovery effectiveness of the chronological age 9-11 y.o. were achieved in the fourth year of practicing aikido, after a summer camp, and three full years of regular exercising aikido. The developmental changes of subjects were also imposed on the training results.

As a result of practicing aikido there were significant differences in recovery effectiveness to boys' advantage – the REC value 80% in boys, and – 70% in girls [Wilmore, Costill 1999; Suchanowski 2001].

Conclusions

1. Regular practicing of aikido increases a recovery effectiveness in 9-11 y.o. children.
2. Between genders there are differences in recovery effectiveness after the aikido training to boys' advantage.
3. In relations of training experience there are recovery effectiveness after the aikido training, it means the best effect one can achieve after three years of the regular aikido training.

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KARATE BLACK BELTS INJURIES: AN EXPLORATORY STUDY

Key words: trauma; injury; karate; combat sports

Introduction

Sport injuries and their risk of occurrence are a very important concern during training and competition as well as the repercussions that these have on sport careers of athletes and team performances. Combat sports have a high injury rate which is inherent to the game duality between two opponents who seek direct contact with each other. In a comparative study of injury incidence between boxing, wrestling and martial arts, performed with athletes that attended hospital emergency due to sport injury, Papas [2007] found that 1.6% of injured athletes needed internment, where 10.3 % played boxing, 58.8% wrestling and 10.3% martial arts. The interest in knowledge concerning sport injuries type and mechanism is crucial to develop preventive measures and to reduce injury severity. It also contributes to less time lost and less cost due to sport injury. Macan [2006] states that competition rules in karate should consider injury occurrence prevention, emphasizing the need to use sport protections and a different scoring methodology. For these measures to be outlined from a scientific point of view, and systematically re-evaluated, it is necessary to characterize the injuries type in combat sports, specifically in karate. This exploratory study, part of a larger project, aims to contribute to this knowledge by *i)* characterizing *ii)* classifying national karate injuries occurred during the practice in experienced practitioners (black belts), and *iii)* comparing the incidence and types of injury occurred between genders.

Methodology: 146 adult karate athletes accepted to participate in this study, 112 male (M) and 34 female (F), black belt (age: 31.7 ± 11 years; height: 172.3 ± 7.7 cm; weight: 71.9 ± 12.5 kg; Week training time: 5.7 ± 3.1 h; Years of Practice : 15.8 ± 6 ; Dan : 1.5 ± 0.7). Sample filled the adapted questionnaire of “morbidity” [De Loes , Goldie , 1988; Pastre et al, 2004], in which participants recorded their demographic data and injury episodes occurred in the last three sport seasons, focusing on six dimensions of analysis (anatomical site, type of injury, mechanism of injury, time of injury , injury severity, time of occurrence on the sport season). Answers were quantified in excel and then converted into SPSS (IBM, Statistics) for statistical processing. Descriptive statistics were used, and data is presented in percentage. For gender comparison, some of the dimensions were grouped and analyzed with Independent Samples *t*-Test and Pearson Chi-Square. A level of significance of $P < 0.05$ was settled.

Results: Only 27.3% of the sample did not suffer any injury. Among the athletes who reported injuries (72.2%), the highest incidence occurred in the lower limb (64.8% (foot-23.7%)), followed by upper limb (23.8% (hand - 52.4%)) and trunk (11.4% (low-back - 60%)). In the athletes that suffered injury, 43.3% of male karate athletes and 64.3% of female karate athletes reported more than one episode of injury. Most injuries occurred during the offensive punch and defensive actions (upper limb - 16%, 18.7%), kick (leg -

18.6%) and other non-specific mechanisms (injuries on the trunk - 50%). Injuries occurred primarily during training (92%), resulting in unexpected chronic pain (30%), contracture (25%), sprain and strain (19.3% and 21.1%). The comparison between genders shows that women karate athletes were significantly more often injured than men (F 82.4%, M 69.6%). There is a higher incidence of lower limb injuries in women, associated with kicking and jumping, which cause muscle distension and strain.

Discussion and Conclusion:

Results show that injuries occur with higher incidence in lower and upper limbs extremities. However, back injuries (lumbar spine) have a larger time loss. Karate athlete's injuries occur specially during the practice in the preparation season. Female karate athletes suffer more traumatic events than male, and among them it is more common to have other than one episode of injury. The highest incidence of injuries, sprains and ruptures differentiate female karate athletes in the type of injuries when compared to male karate athletes, recalling that genders have different morphological and functional ability and eventually, women require better conditioning for the practice of karate, and a training process specially structured for this population. The coach should analyze the process, develop and adapt training methodologies having in mind the prevention of injury, promoting the use of sport protections, safe practice places and equipments and the establishment of practice rules appropriate for risk reduction.

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EVALUATION OF STRESS CONDITIONS IN SELF-DEFENCE SCENARIO TRAINING

Key words: stress situation, conflict solution, self-protection, education

Introduction

The article focuses on evaluation of stress conditions in scenario training during an self-defence course. According to Yerkes-Dodson law optimal task performance occurs at an intermediate level of arousal, with relatively poorer performance at both lower and higher arousal levels, leading to an inverted U relation between arousal and performance [Colman 2009]. Scenario training (ST) is one of crucial parts of self-defence teaching. The aim of the study was to evaluate level of acute stress, which was induce to probands participating in self-defence ST. ST could be considered both training and evaluation method. There are more manners how to use ST and implement it into self-defence training. Using ST as a training method stress should be

set on the intermediate level to arouse optimal performance. When using ST as an evaluation method stress conditions should be set on level crossing the intermediate level to provoke errors, which are basis for the ex-post evaluation and reflexion. The essential factor of ST is presence of psychological stress and dynamic environment.

Methods

The sample consisted of university students of sport study programme. Total number of probands $n=41$, males $n=18$, females $n=23$. Non-standardised questionnaire was used for the analysis purpose. The tool consisted of 19 closed questions with scale 0 – 7 and 3 open questions. Described statistic methods were used for evaluation of data obtained by the scale. Open questions were analysed with the scientific software Atlast.ti.

Results

Subjects admitted they felt fear ($M=2,4$) and threatened ($M=3,1$). Also physiological symptoms of stress described in literature (Křivohlavý, 1994) were present: trembling with fear ($M=2,0$), sweat ($M=2,1$), palpitations ($M=3,1$). These symptoms persisted also after finishing ST. Probands were during ST in certain stress conditions. However, there are big differences between individuals, average values are rather lower. Analysis showed stress conditions as rather under sufficient level in this case. According to inverted U theory probands should be stressed more.

Discussion and conclusion

Stress condition setting was not precise in this case. Both for the training and evaluation purpose the level of stress should be higher. There are few reasons why ST was not so stressful as should be. One of them is to large space in the gym used for organisation of ST. Subject felt very free in their movement with many possibilities how to solve situation. Another reason is experience of probands with sports stress conditions. As active players they were used to some stress level and they felt quiet comfortable in the physical fight. Better setting of stress conditions approaching or crossing the intermediate level of arousal according to inverted U theory is recommended.

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ISOKINETIC STRENGTH OF THE WRIST IN MALE AIKIDO ATHLETES

Key words: combat sports, aikido athletes, isokinetic strength, wrist

Introduction

Research on physiological dimensions of combat sports is typically done on aerobic and anaerobic endurance. Initially, studies were concerned with characterizing recreational and elite combat sport athletes. Some of the earliest of these investigations were about heart rate and blood lactate in karateka (Imamura *et al.* 1997) as well as isokinetic leg strength in American recreational (Pieter *et al.* 1989) and elite taekwondo athletes (Conkel *et al.* 1988) among others. Recent research has also focused on isokinetic strength of the

lower extremities in taekwondo (e.g., Fong *et al.* 2013) and karate (Probst *et al.* 2007), while Drapšin *et al.* (2010) assessed isokinetic arm extension and flexion strength in male judoka.

Compared to other combat sports/martial arts, physiological research in general on aikido is scarce. Aikido athletes were found to have the third fastest choice reaction time compared to other combat sport athletes (Şentuna *et al.* 2010). The purpose of the current study, then, was to assess isokinetic strength of the wrist in recreational aikido athletes.

Methods

Male subjects ($n = 11$, 32.60 ± 8.17 years, 178.70 ± 6.05 cm, 75.80 ± 8.93 kg) were recruited from a summer camp organized at Masaryk University. Subjects were tested on a Cybex Humac Norm at 120° , 180° and $240^\circ/\text{sec}$ on both left and right wrists. A 3-way (Side \times Movement \times Angular Velocity) Anova with repeated measures on the second and third factors was used to assess the differences between right and left wrist extension and flexion by angular velocity. The level of significance was set to an effect size of 0.20.

Results

There was no Side \times Movement \times Velocity interaction ($\eta^2 = 0.006$, 95% CI: $-0.548 - 0.648$) but the effect was not clear. There was a Movement \times Angular velocity interaction ($\eta^2 = 0.859$, 95% CI: $0.451 - 0.954$). Simple effects analysis showed that wrist extension at $240^\circ/\text{sec}$ was lower than flexion at the same angular velocity ($d = 2.07$, 95% CI: $-1.87 - 3.95$) but the effect was not clear. Flexion at $120^\circ/\text{sec}$ was higher than at $180^\circ/\text{s}$ but the effect was also not clear: $d = 0.43$ (95% CI: $-4.33 - 4.63$).

Discussion

Strength exercises for wrist extension may be indicated, although a larger sample size will be needed to arrive at a definitive conclusion. More research is indicated with not only a larger sample size but also with aikidoka varying in age and experience. Female practitioners should be investigated as well.

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**KINETICS OF THE TURNING KICK – MEASUREMENTS OBTAINED
IN TAEKWONDO ATHLETES’ TESTS**

Key words: taekwon-do, analysis of movement, kinetics of kicks, biomechanics of combat sports

Introduction

The aim of this study is to attempt a biomechanical optimization of the turning kick on the basis of the foot and knee velocity values obtained, the time of the kick duration time and four movement phases have been distinguished in the present study: the initial stance (starting position), foot take-off, foot upswing and the final stage – braking.

Material and Methods

The study was based on 6 taekwondo ITF (International Taekwon-do Federation) athletes (age 16.50 ± 0.71 years; body mass 64.14 ± 7.04 kg; height 176.50 ± 4.64 cm). For the purpose of the experimental part of the study they were asked to adopt the same initial stance and perform the turning kick three times. In the analysis of particular segments of the technique the following factors were taken into consideration: highest speed of the foot with regard to X,Y,Z axis and highest speed of the knee with regard to X,Y,Z axis. In this case study Smart-D system for complex movement analysis produced by BTS S.p.A. company was used.

Results

Table 1. Biomechanical factors affecting efficiency of the kick

Variables	Average	SD	Range
speed of the foot with regard to Z axis [m/s]	9.75	2.54	7.10 – 14.6
speed of the foot with regard to Y axis [m/s]	5.91	0.90	4.14 – 7.65
speed of the foot with regard to X axis [m/s]	8.62	2.72	5.36 – 15.35
speed of the knee with regard to Z axis [m/s]	4.96	1.36	3.18 – 7.5
speed of the knee with regard to Y axis [m/s]	4.13	0.52	3.26 – 5.03
speed of the knee with regard to X axis [m/s]	3.77	1.07	2.38 – 6.17
maximum foot velocity at phase OZ [m/s]	3.68	0.14	1.01 – 6.15
maximum foot velocity at phase OY [m/s]	4.25	1.04	1.88 – 5.66
maximum foot velocity at phase OX [m/s]	3.52	2.25	1.30 – 7.85
time from the moment of the movement of the athlete’s whole body to the moment of the full extension of the kicking leg [s]	0.57	0.11	0.36 – 0.80

Discussion

The athletes who performed the turning kick at a specifically chosen distance obtained force of 1304-2089 N (Falco et. al. 2009). Thus, the kinetics of a particular strike can only be used fully to its advantage if the attacked target is located at an optimum distance for this particular strike. In the present study the average maximum speed was obtained when the length of the leg was 80 % of the maximum leg extension. This may be considered as an optimum length in this particular technique in order to achieve the maximum dynamics of the kick. A small mistake of 5-10 % in relation to the distance to the attacked target results in a clear decrease of the force of the kick (Wąsik, 2009). Hence, a precise evaluation of the distance as well as the moment of impact is of significant importance for athletes especially when it comes to power test events at taekwon-do competitions, where a breaker board is the athletes’ target.

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THE KINEMATICS OF TARGET EFFECT – TAEKWON-DO ROUNDHOUSE KICK

Key words: taekwon-do, martial arts and combat sports, kinematics, kick

Introduction

Tactics in taekwon-do as well as in other martial arts and combat sports involving striking and kicking aims at hitting a chosen place on the opponent's body in the shortest time possible. Thus, both speed and reaching the target are extremely important factors in a effective performance. However, a question arises whether the planned target of a kick might affect the kinematics of that kick? This problem seems to be of special importance in the traditional version of taekwon-do, in which a single kick might happen to reveal the winner.

Methods

The study was based on 6 taekwon-do ITF (International Taekwon-do Federation) athletes. For the purpose of the experimental part of the study the athletes were asked to adopt the same initial stance (in taekwon-do terminology called Niunja So Palmok Degi Maki) and perform the roundhouse kick in two versions: *version 1* - kick aimed at breaking a target board being a plastic rebreakable board with dimensions of 30 cm x 30 cm x 2 cm and *version 2* – throwing a kick into the air, i.e. without having a physical target object. Each version was performed by each athlete once, which gave a total of 12 executed kicks. In this case study Smart-D system for complex movement analysis made by BTS S.p.A., an Italian company, was used.

Result

Table 2. Biomechanical variables which affect kick's effectiveness

Variables	Kick without a physical target	Kick aimed at a breaking bard	t-test
	Average ± SD	Average ± SD	
v_x [m/s] speed of the foot with regard to X axis	14.61 ± 0.67	10.61 ± 0.86	0.00388
v_y [m/s] speed of the foot with regard to Y axis	7.09 ± 0.56	5.86 ± 0.07	0.06027
v_z [m/s] speed of the foot with regard to Z axis	14.53 ± 0.05	8.00 ± 0.47	0.00153
v_{kx} [m/s] speed of the knee with regard to X axis	5.28 ± 0.13	5.79 ± 0.14	0.01059
v_{ky} [m/s] speed of the knee with regard to Y axis	4.74 ± 0.29	4.73 ± 0.18	0.97513
v_{kz} [m/s] speed of the knee with regard to Z axis	7.35 ± 0.51	4.82 ± 0.14	0.00906
t [s] kicking time	0.57 ± 0.01	0.48 ± 0.01	0.00258

Discussion

Kicking time was determined along with maximum foot and knee velocities with regard to the Cartesian coordinate system. The obtained values were used to calculate the mean values as well as standard deviation. The mean values of the foot velocity 10.61 ± 0.86 m/s and of the movement duration (kicking time)

0.58 ± 0.01 s obtained for the kick aimed at a breaking board were significantly smaller than those of the foot velocity 14.61 ± 0.67 m/s and kicking time 0.67 ± 0.01 s obtained for the kick thrown into the air ($p < 0.01$). The knee velocity in version 2 was 5.79 ± 0.14 m/s and it was greater than in version 1, in which it was 5.28 ± 0.13 m/s. The results obtained in the measurements conducted show significant differences in the kinematics of movements being dependent on the intended target of a kick.

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A COMPARISON OF PHYSICAL FITNESS AND SELECTED MORPHOLOGICAL PARAMETERS OF YOUNG MALE JUDOKAS AND FOOTBALLERS.

Key words: combat sports, team sports, judo, football, physical fitness

Introduction

Each discipline has its own specific “champion model”, regardless of whether it is a team sport or individual sport. Coaches and scientists constantly modify training programmes to achieve the best possible results.

Objective of the study

The objective of the study was to establish and compare physical fitness level as well as selected morphological indicators of young judokas and footballers. The authors wanted to find out what abilities were prevalent in each discipline.

Material and methods

The study involved two study groups of 25 subjects (50 people in total). The first group comprised 25 athletes from the Silesian Macroregion Judo Team. The second study and comparison group was made up of 25 young footballers from the football class of the upper secondary school in Ustroń and footballers from the KS “Kuznia” Ustroń club (regional division). The subjects’ physical fitness was measured by means of the International Physical Fitness Test.

Results

An analysis of the results shows that in a comparison of the average values of motor tests, of statistical significance are strength tests (pull-ups), 4x10m shuttle run tests and abdominal muscle strength test (sit-ups). The judokas had higher average values in the pull-up and sit-up tests, while the footballers dominated the 4x10m test.

Conclusions

The level of physical fitness is higher among the judokas. In most tests their scores were higher than those of the footballers. The footballers achieved better results in the shuttle run test. The results of the study show which parameters probably get more attention during the training process in these disciplines.

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DIFFERENCES IN THE POWER OF LOWER LIMBS OF JIJITSU AND JUDO ATHLETES

Key words: judo, jujitsu, combat sports, strength, explosive strength, power, dynamic strength

Introduction

The notions concerning muscle strength encompass a variety of issues. This is extremely important given the training process, which must be designed in such a way so as to shape a specific feature of the muscular system (strength, power, muscle mass, strength endurance). Of particular importance in combat sports is the dynamic strength. In order to perform a given technique, an athlete must do so at a high speed, overcoming the opponent's resistance. The objective of the study was to show the development of dynamic strength in judo and jujitsu athletes.

Material and methods

The study involved 64 male athletes practising combat sports. They included 52 jujitsu athletes and 22 judo athletes. The average age of the jujitsu athletes was 24 years and that of judo athletes was 22 years. In order to measure explosive strength, the researchers used one of the tests from the International Physical Fitness Test set – standing long jump. In addition, they analysed the morphological structure with regard to strength parameters. The results were analysed by means of basic statistical methods (arithmetic average, standard deviation, variation coefficient).

Results

The average result in the standing long jump test for the judokas was 221.14 cm. The average result of the jujitsu athletes was 233.84 cm. Among the judokas, the average maximum thigh circumference was 58.9 cm, and among jujitsu athletes – 58.6 cm. The average maximum calf circumference among the judokas was 38.9 cm, and among the jujitsu athletes – 37.9 cm.

Conclusions

The different nature of training associated with specific sport regulations influences the strength parameters of the analysed groups of athletes.

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THE BODY MORPHOLOGY AND ANAEROBIC POWER CHARACTER OF CHINA TAEKWONDO ATHLETE

Key words: taekwondo, body morphology, anaerobic power

For improving the scientific level of training and exerting the athletics level better in the international tournament, this investigation has surveyed the physiological conditions of Chinese elite Taekwondo athletes. There are 16 Taekwondo athletes, including 6 male and 10 females, mean of age: 20.8 ± 2.4 years old. We tested body morphology and anaerobic exercise capacity.

Male Taekwondo athletes were higher for weight, body surface area, Quetelet's index, BMI, except for age, height and waist circumference than female athletes. But male Taekwondo athletes had significantly lower percent body fat than that of female (male: $10 \pm 1.4\%$; female: $18.3 \pm 2.9\%$; $P < 0.0$). Upper arm circumference of male Taekwondo athletes was significant less than wrestling (Taekwondo: $26.8 \pm 1.4\text{cm}$; wrestling: $31.5 \pm 4.4\text{cm}$; $P < 0.05$). Female Taekwondo athletes were significant less than wrestling on BMI, chest circumference, upper arm circumference and forearm circumference (Taekwondo: BMI 19.8 ± 1.2 , chest circumference $84 \pm 2.8\text{cm}$, upper arm circumference 23.4 ± 1.1 , forearm circumference 22.8 ± 1.4 ; wrestling: BMI 23.7 ± 1.7 , chest circumference $90.1 \pm 4.5\text{cm}$, upper arm circumference 29.4 ± 2.1 , forearm circumference 25.8 ± 1.0 ; $P < 0.01$). Except for the drop rate of anaerobic power, male Taekwondo athletes had significantly higher than female on peak and average values of anaerobic power. Male Taekwondo athletes had significantly higher relative peak and relative average power than male wrestling athletes (Taekwondo: Relatively peak values of anaerobic power 11.76 ± 0.81 , Relatively peak values of anaerobic power 9.1 ± 0.68 ; wrestling: Relatively peak values of anaerobic power 9.92 ± 1.19 , Relatively peak values of anaerobic power 8.0 ± 0.78 ; $P < 0.01$).

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LITERATURE REVIEW OF MARTIAL ARTS EDUCATION IN UNIVERSITY CAMPUSES OF CHINA: 1914-2014

Key word: development; innovation; teaching; traditional culture

Chinese martial art, which is broad and profound, has a long history. Both in terms of its sports forms and cultural content can be used as the best vectors of a traditional education. But with the development of science and technology and the cultural impact abroad, culture and issues of martial arts school education itself, how to thrive martial arts education in school when in face of invasion of foreign is a problem (Ji 2011). And to be aware of this problem, it is necessary to understand its past deeply and present in order to make the right choice and look forward to future developments. Therefore, the methods of literature consultation, the logic of law, through history of law and comparative law were adopted in this paper. Comprehensive study on literatures relate to Chinese martial arts education in university campuses from 1914 to 2014 was conducted, 100 years of development, understanding the modern martial arts education in university campuses and issues of modern schools of martial arts education, and put forward a number of reasonable proposals.

Research status: first, the study of university campuses martial art education development in modern times: 1) Modern martial arts education in schools was developed on the basis of the ancient martial arts education in university campuses (Li 2008; Wang, Cai 2005). 2) The development of modern martial arts education in university campuses and educational sector and government dignitaries, celebrities promoted are inseparable (Wang 2009; Su 1994). 3) Martial arts apprentice during the Organization of the establishment of school martial art in modern education and training a large number of talents (Wang 2009). 4) Because of the collision of East and West cultures, the martial arts have got new development (Wen 2009; Wang 2009; Xue 2013). Second, research of the development of modern martial art education: 1) Modern martial art education becomes more normalized (Wang, Cai 2005). 2) Teaching of College martial art courses have taken on a wide range of development situations (Hu 2013). 3) Martial arts faculty building has been improved significantly. 4) Martial arts education in PE College continues to increase expansion. 5) The Government and education sector pay more attention to the development of martial art education in schools (Ji 2011).

Successful experiences and major problems: first, successful experience. 1) National policy is a prerequisite for development of martial art education in school; 2) National economic development is the Foundation for the development of martial art education in school; 3) Advancing with the times, promoting school martial art education reform and innovation constantly (Ji 2013; Wu 2008); 4) Sound management system

development of martial art schools is necessary measures. Second, is the main problem. 1) Under the sports globalization background, foreign start technical on school martial arts constitute has shocked; 2) Martial arts lack of teachers, many teachers are “learn while one teaches” it is a serious restriction in the development of martial arts ; 3) Absence of traditional culture of martial arts in school (Ding 2012); 4) Martial arts textbook no innovation, courses set more rigid, completely according to outline content of teaching; 5) Martial arts museum school students shortage, in the background of pursuit the maximize profit. Part of the Museum’s quick success in management, management confusion, affecting the quality of teaching (Ji 2011).

We can learn a lot from the China near Centennial school martial arts education and development to we of revelation: first, the collision East-West culture of makes school martial arts development get updated; second, teaching level of improve is based on teacher power; third, school martial arts of development must to cater to youth of psychological needs; and then, the government and education sector to on school martial arts education of development made hard of rules and requires, and made long-term of planning (Wang 2009).

By studying the development of martial arts education in school for nearly a century, and provides insight into the development of martial arts education in school also has many problems. We must take a serious approach to solving these problems, making China perfect in the future development of martial arts education in schools (Yu 2006). We recommend: 1. Optimization of teaching contents, improving students’ initiative in studying martial arts, two in course design model of PE lesson and a martial arts lesson (Wang 2012); 2. Improving teacher training system, increase funding for teacher training and improve teaching quality of martial arts; 3. Raising awareness among Government and the education sector in martial arts, improve the school system, increase the hardware construction and equipment purchases (Qu 2012); 4. Technically, creating several sets of teaching materials suitable for students, making it easier for students to master; 5. Strengthen propaganda, make the martial arts as a part of the campus culture, inherit and carry forward of the martial arts provide a good foundation (Ren 2011).

Acknowledgements

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SURVIVAL OF *STAPHYLOCOCCUS AUREUS* IN TATAMI MATS AND JUDO-GI

Key word: infection, bacteria, indirect contact

Introduction

Numerous factors Judo at increased risk for cutaneous infection, such as physical contact related bruise and abrasions. The most common causative organisms associated with cutaneous infections include *Staphylococcus aureus* (SA). The following common factors are implicated in the development of SA during practice or competition, exposure to infection, compromised skin integrity (Larkin-Thier, Barber, Harvey, Livdans-Forret, 2010) and transmission through direct (Kazakova *et al.* 2005) or indirect contact (Oller, Mitchell 2009). SA infection also has become more prevalent among Judo. While there has been concern that tatami mats and judo-gi play a role in SA infections in Judo, but conclusive evidence is not currently available. The aim of this study was to examine the survival dynamics of *staphylococcus aureus* in tatami mat and judo-gi under environmental conditions.

Materials and Methods

Bacteria sample. The isolate of SA was obtained from tatami mat. Sufficient quantity of the inoculum was obtained by transferring the SA culture to tube 7.5% sodium chloride containing Lysogeny Broth (LB) medium and incubating the tube at 37°C. After pre-incubation, the bacterial suspension was suspended sterile distilled water. The bacterial suspension was then collected and the concentration was adjusted to 1×10^7 colony forming units (CFU) /mL.

Test materials. Microbial survival was tested on surface of tatami mat and judo-gi. Swatches (1cm×1cm) of tatami mat and judo-gi was autoclave sterilization (121°C, 20 min).

Survival test. All experiments were set up and safety cabinet. Swatches were lined up in rows next to, but not touching, each other. During the 500 hour period of the study, temperatures ranged from 25°C. Using an Eppendorf pipette, swatches were inoculated with 100μL (1×10^6 CFU) aliquots of concentration. Experimental units were sampled at 0, 24, 72, 168 and 500 hours after inoculation for all experimental units except the tatami mat and judo-gi. Immediately after inoculation, a single swatch of each material was picked up with sterile forceps and placed into a tube of 1.0 mL of PBS. The supernatant was ten-fold serial diluted and spread on compact Dry X-SA media (CD-XSA; Nissui Pharmaceutical Co., Ltd., Tokyo, Japan) (Teramura, Mizuochi, & Kodaka, 2010) and incubated at 37°C for 24 ± 2 h. Specific blue SA colonies were counted. Bacteria colony counts were expressed as mean \log^{10} CFU/mL of triplicate counts. Decimal (D_{10}) reduction values were calculated from the slope of each exponential curve.

Results

There was no significant in the survival dynamics between tatami mat and judo-gi. D_{10} values for tatami mat and judo-gi were 21.5 and 13.9 days, respectively, under the conditions tested.

Discussion and Conclusions

This study suggests that contaminated tatami mat and judo-gi may serve as possible reservoirs of SA, if such materials become contaminated with SA.

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TAEGEUK SERIES POOMSAE

Key words: taegeuk, poomsae, practice, taekwondo

Description of Poomsae

Poomsae is a Korean word and means “shape of motions”. Poom means “motion”, “action” and sae means “shape”, “look” or “appearance” [Tedeschi 2004]. Poomsae is a training tool designed to practice a prearranged, continuous pattern of movements and techniques, against imaginary opponents and in any direction. In other words, poomsae also allows students to practice an integrated series of defensive and offensive moves against one or more imaginary opponents. Taekwondo poomsae consists of combinations of various stances, punching, thrusting, striking, blocking, and kicking. Poomsae practice is generally considered an excellent way to develop appropriate taekwondo technique, and students practice progressively according to each learning level from beginner to advanced.

Many different sets of poomsae have been devised for Taekwondo practitioners including the Taegeuk, Koryo, Keumgang, Taebaek, Pyongwon, Sipjin, Jitae, Chonkwon, Hansu, and Ilyo. In this paper, the eight Taegeuk poomsaes, which are practiced at the beginning and intermediate levels in the World Taekwondo Federation (WTF) dojangs, are discussed.

Effect of Poomsae Training

Taekwondo trainee learns the applications of the most varied techniques of Taekwondo through the practice of poomsae. In particular, poomsae practice helps to develop the following various aspects of Taekwondo:

1. The formal exercises develop physical and spiritual concentration, and train you to concentrate your soul in each given instant of life, so that you can borrow from your life force and mobilize it at the critical instant.
2. Practiced conscientiously, the poomsae is a type of active meditation, which provides both spiritual and physical experience.
3. They help to perfect individual fundamental techniques.
4. They develop rhythm and timing, and thus create smooth and efficient motion.
5. The forms train you to combine those techniques so that they work effectively together in combination.
6. They develop balance, accuracy, and endurance.
7. They help weave defensive and offensive techniques into one coordinated whole.
8. They develop patience, passivity, and an understanding of the deep meaning of the art.
9. They develop confidence and speed.
10. They help develop a “sixth sense” of perception and intuition.
11. They simulate active combat, enabling you to tight more than one assailant from any direction for as long as necessary without tiring. [Chun 2006: 136]

Description of Taegeuk Poomsae

Taegeuk poomsae from 1 jang to 8 jang emerged in the 1970s. They reflected more modern methods of combat, using the upright high-forward or short stances [Cook 2001]. The Taegeuk series follow the shape of the Chinese character for “king” (王) as a linear pattern. The keys in practicing the Taegeuk poomsae are in performing with precision, speed, and power control. Special attention must be given to the solid balance and stability while executing these techniques.

Each of the eight Taegeuk forms has its own philosophical connotation and meaning that are outlined in the classic Chinese text, the *I Ching* or Book of Changes. These philosophical underpinnings are used to guide Taekwondo trainee’s mental-spiritual approach to forms practice. The following Table 1 provides a brief commentary of each of the eight poomsaes of the Taegeuk series.

Table 1
A Brief Commentary of Each of the Eight Poomsae of the Taegeuk Series

Name	Class Rank	I Ching Symbol/Name	Image	Number of Movement	Linear Pattern
Taegeuk 1 Jang	8th Kup-grade	☰ / Keon (乾)	Haven (天)	18	King (王)
Taegeuk 2 Jang	7th Kup-grade	☱ / Tae (兌)	Lake (澤)	18	
Taegeuk 3 Jang	6th Kup-grade	☲ / Ri (離)	Fire (火)	20	
Taegeuk 4 Jang	5th Kup-grade	☳ / Jin (震)	Thunder (雷)	20	
Taegeuk 5 Jang	4th Kup-grade	☴ / Seon (巽)	Wind (風)	20	
Taegeuk 6 Jang	3th Kup-grade	☵ / Gam (坎)	Water (水)	23	
Taegeuk 7 Jang	2nd Kup-grade	☶ / Gan (艮)	Mountain (山)	25	
Taegeuk 8 Jang	1st Kup-grade	☷ / Gon (坤)	Earth (地)	24	

Note. Chinese characters are included in the columns of I Ching Symbol/Name, Image, and linear pattern.

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MECHANISM OF ENDURANCE TRAINING-INDUCED SPORTS ANEMIA IN CHINESE KICKBOXING ATHLETES INVOLVES ERYTHROPOIESIS

Key words: sports anemia, 2,3-DPG, Epo, kickboxing, exercise

Purpose

A number of studies have suggested that destruction of erythrocytes occurs during physical training and that it may lead to an anemia state, commonly called “sports anemia”. Sports anemia is an important issue attracting the attention of the sports medicine circle for it is a major factor restricting improvement of sports performance. So far, the mechanism of sports anemia in kickboxing athletes remains uncertain, although some possible causes have been proposed.

Methods

12 female kickboxing athletes were assigned to two groups: control group (C; n=6), sports anemia group (SA; n=6). Hematological indices were determined using a blood cell analyzer (Sysmex SF-3000, Japan). Circulating 2,3-diphosphoglycerate (2,3-DPG) concentrations were assayed by Roche kits (Mannheim, Germany). Circulating erythropoietin (Epo) concentrations in the serum were determined using specific enzyme-linked immunosorbent assays (ELISA) for human (Lifekey Biomeditech Corporation, NJ, U.S.A.) according to the manufacturer’s protocol.

Results

Sports anemia group has lower hemoglobin concentrations than control group (118.29 ± 6.03 g/l vs. 135.10 ± 5.20 g/l, $P < 0.01$). Sports anemia group has higher 2,3-DPG concentrations than control group (2.09 ± 0.15 mmol/l vs. 1.73 ± 0.09 mmol/l, $P < 0.05$), meanwhile sports anemia group has lower Epo concentrations than control group (0.63 ± 0.08 mg/ml vs. 0.80 ± 0.19 mg/ml, $P < 0.05$).

Conclusions

The low hemoglobin concentrations were associated with an increase in red blood cell 2,3-DPG, and decrease in relative circulating Epo in Chinese kickboxing athletes. It is suggested that the pathogenesis of sports anemia in kickboxing athletes maybe involves Epo production.

This work was supported by the National Natural Science Foundation of China (30270642) and the National Key Technologies R&D Program Fund of China (2002BA904B04-4).

GRAND MASTERS IN THE CONGRESS AND GALA



5. *Meijin* Lothar Sieber, 10 dan **jujutsu**, 10 dan **karate & ido** (Germany). He is a Master-Teacher of W.J. Cynarski (photo 7). 6. Mrs Hannelore Sieber, 9 dan **jujutsu**, 7 dan **karate**, practicing **self-defence**.



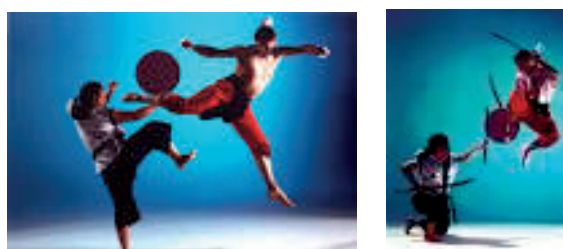
8. Prof. Dr Keith Kernspecht, 10 master degree in **WingTsun kung-fu**, and *dai-sifu* Dr Oliver Koenig, 8 master degree (Germany, Austria)



9. *Shihan* Hans-D. Rauscher (9 antas **combat arnis**, 8 dan **karate**, 7 dan **iaido**) from Germany. In the photo with *meijin* Shizuya Sato 10 dan **jujutsu**.



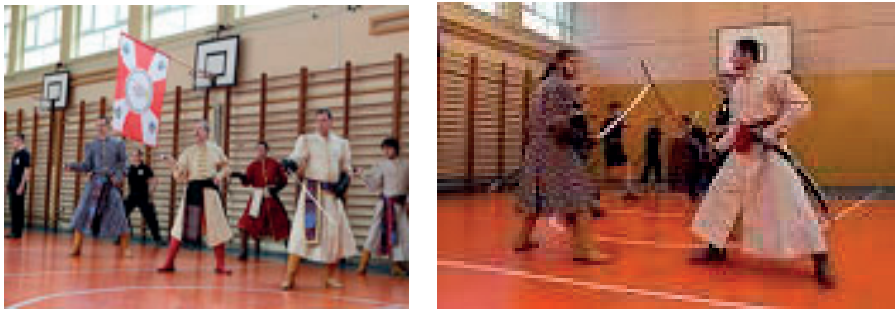
10. Dr Juliusz Piwowarski, 8 dan **karate & kickboxing** (Poland)



11-12. Prof. Dr Chuchchai Gomarutut is a Grand Master of **Muai Thai & Krabi Krabong**, the cultural heritage of Thailand.



13. **Hopak** dance
GM Wołodimir Piłat is a leader of **combat hopak** school in Ukraine.



14-15. The old Polish fencing **Signum Polonicum** is teaching by GM Zbigniew Sawicki.



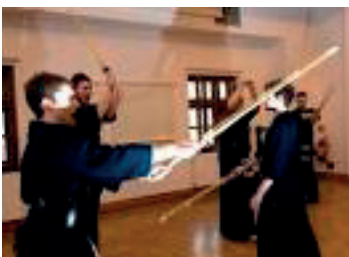
16-17. *Shihan* Sergio Mor-Stabilini – 8 dan **karate**, 7 dan **kenjutsu katori shinto-ryu** (Italy)



18. Prof. Dr Sergio Raimondo (5 duan) – **Chen taiji quan** and **taiji jian** (Italy)



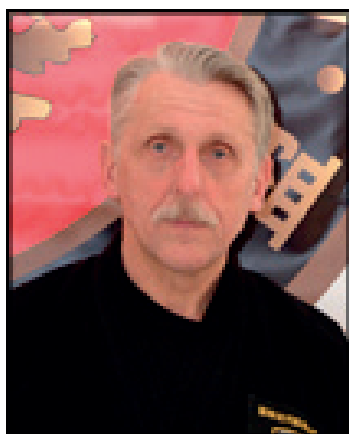
19. Taekwondo ITF, *sabun* Prof. Dr Jacek Wąsik 4 dan (Częstochowa, Poland)



20. Kendo - *sensei* Maciej Murzyniec (4 dan kendo, 4 dan iaido) from Kraków, Poland



21-22. Sifu Don Hyun Kiolbassa, World Champion in **wushu**, master of **Shaolin kung-fu** – from Hollywood, USA



23. Dr Jan Słopecki, 10 dan, **modern jujutsu**, *hanshi* (Warszawa, Poland)



24. Dr Rafał Kubacki, 7 dan **judo**, World Champion (1993 and 1997) – the bigger athlete in the photo, from Wrocław, Poland



25-26. *Sifu* Tomasz Płaza – **chow gar** kung-fu, combat and dragon dance (Rzeszów, Poland)

Prof. Dr Abel A. Figueiredo, 6 dan **karate** (Portugal)

Prof. Dr Stanisław Sterkowicz, 5 dan in Korean art **hapkido** (Poland)

Prof. Dr Kazimierz Witkowski, 5 dan **judo** (Poland)

Doc. Dr Zdenko Reguli, 5 dan **aikido** (Czech Republic / Slovakia)

Dr Gabriel Szajna, master class' coach of **fencing**, and a Slovak group of European **historical fencing** (Slovakia)

Dr Mohamad Nizam Mohamed Shapie 8 dan, GM of Malaysian **silat** (Malaysia)

Mr Mohammad Hassan Boostani, World Champion **karate** WKF (Iran)

And many other personalities

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