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Editorial

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. 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 2nd International IPA Symposium in Rzeszów.

In 2012 Prof. Dr Sergio Raimondo organized the first official IMACSSS International Conference in Genoa (Italy). In the same year Prof. Dr Wojciech 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 – in October 2014, at University of Rzeszów. Thus, the intuitional development is 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.

We would like to thank participants of the Congress, and for your works (over 100) sent to us. We appreciate the work done by the reviewers. The Congress was special experience and an opportunity to gain new, inspiring knowledge for all participants – scientists, pedagogues, coaches and all practitioners. We publish now some of the works.

Wojciech J. Cynarski, Anna Nizioł

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Women's saber fencing in Poland until 2008

"The vast majority of society would simply like to admire pretty, elegant and shapely women. But women, despite their unquestionable beauty, would also like to do sports". [Jakubowska 2014: 19]

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

Abstract

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 Rother 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 Wight 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.

Introduction

At the turn of the 19th century Pierre de Fredy Baron de Coubertin, the renovator of the Olympic Games and the founder and longtime President of the International Olympic Committee, expounded a view that women's sport was against the laws of nature and that it presented the most unsightly sight to the human eye. This was, in fact, a fairly common perception of women's sport at that time [Jakubowska 2014: 33] despite intensive activities of advocates of women's rights [Chwalba 2008: 610]. Women who wanted to practice fencing, however, did join sports clubs and entered fencing competitions, disregarding the Victorian model of frail and sensitive womanhood [Jakubowska 2014: 37].

The first advocates of women's fencing in Europe appeared in Austria, France and Britain. In the 1880s women took part in fencing academies and open tournaments. A fencing academy established on November 22, 1883 in Vienna was also attended by two Polish women: Agnieszka Szemiotówna and Karolina Ebers from Lvov [Rotkiewicz 1988: 57-60]. The first foil championships attended by female fencers were held in the United Kingdom in 1904 [Czajkowski 1986: 104].

Although various sports were becoming parts of mass culture, fencing still bore the hallmarks of an elitist discipline [Chwalba 2008: 184]. In Poland - which remained partitioned by Russia, Germany and Austria-Hungary – in Austrian-controlled Kraków, fencing was coached by Antoni Bąkowski, a graduate of the Vienna Akademie der Fechtkunst, who between 1910 and 1912 trained a group of women in the difficult skill of fencing sensorimotor coordination [Młodzianowska 1982: 10-11].

For the first time, women entered an Olympic fencing tournament in 1924 in Paris. One of the competitors was the Polish Wanda Dubieńska from the fencing section of the Academic Sport Association in Kraków [Polakiewicz 1926: 91]. A women's individual foil competition became part of the European Championship programme in 1929 in Naples, and the team competition in Copenhagen in 1932. Women's individual and team epee events were first held in 1988 in Orleans, and saber events in 1999 in Seoul as part of the world championships¹ [Schirmer 2012: 204, 209; "Escrime" 1999: 45, 51]. The women's individual saber European championships were first organized in 2000 in Bolzano, Italy² [Wikipedia 1999], and the team championships in Funchal, Portugal³. Women's epee was included in the

¹ The first women's saber world champion was Yelena Jemayeva (Azerbaijan), and "Escrime" 1999 the first vice-champion - Ilaria Bianko (Italy), the bronze was won by Eve Pouteil-Noble (France) and Anna Ferraro (Italy). In the team event the gold was won by Italy (Ilaria Bianko, Anna Ferraro, Allesia Tognolli, Daniela Colaiacomo), the silver by France (Anne Lise-Touya, Cécile Argiolas, Eve Pouteil-Noble, Magali Carrier), and the bronze by Azerbaijan (Yelena Jemayeva, Anjela Volkova, Tatyana Dyachenko).

² The first European champion in saber fencing was Yelena Jemayeva (Azerbaijan), the silver was won by Cécile Argiolas (France) and the bronze by Natalja Makejeva (Russia) i Edina Csaba (Hungary). http://pl.wikipedia.org/wiki/Mistrzostwa_Europy_w_Szermierce_1999

³ http://pl.wikipedia.org/wiki/Mistrzostwa_Europy_w_Szermierce_2000 The team event was won by Russia (Jelizaveta Gorszt, Irina Bazsenova, Natalja Makejeva, Elena Nečaeva), the runners-up were France (Anne Lise-Touya, Cécile Argiolas, Magali Carrier) and the third place by Italy (Ilaria Bianko, Anna Ferraro, Gioia

Olympic programme in 1996, women's individual saber in 2004 in Athens, and women's team saber in 2008 in Beijing. The inclusion of women's saber fencing into the programmes of the world championships⁴, World Cup⁵, European championships and Olympics contributed to the growing popularity of this sport.

The decision about the inclusion of women's saber fencing into the world championship programme of 1999 had been made at the FIE Congress in La Chaux-de-Fonds, Switzerland on October 2, 1998. Three days later a women' fencing saber competition was held in the same Swiss city [Ottogalli, Six, Terret 2013: 160].

Beside the competition for the senior age category, also championships in the junior category (below 17 years of age) began in 1999 and in the youth category (below 20 years of age) in 2000^6 .

The beginnings of women's saber fencing in Poland

The present study discusses the origins and main achievements of women's saber fencing in Poland. The time framework of the present study covers the period between 1998, i.e. the first women's saber competition in Poland and 2008, i.e. participation of the Polish women's saber team in the Olympic Games in Beijing. The primary research sources were records from the archives of the Fencing Club in Konin and the Academic Sport Association in Poznan, reports of the Polish Fencing Association and articles from Polish sport magazines *Przegląd Sportowy* (Sport Review), *Szermierz* (Fencer), *Escrime* and *Fechtsport*. Particularly valuable were personal communication and interviews with fencing coaches and fencers themselves.

Probably, the first women's saber fencing training in post-WWII Poland was organized in July 1950 at a sport training camp in Zakopane. One of the camp participants, Bogdan Chwalisz, wrote that fencing training sessions were held for three groups of participants: young fencers, fencing instructors and referees. The head camp instructor was Janos Kevey, the then coach of the Polish national men's saber team, who propagated his own method of "matching movements". Interestingly, among the participants was a Bulgarian female competitor [Łuczak 2002: 210] who could only practice saber fencing, but not compete as no saber competitions were organized at that time [Chwalisz 2005, unpublished].

In western European countries e.g. France, the United Kingdom, the Netherlands and Italy, but also in the United States and the Soviet Union, women's saber competitions began in the 1980s.

Organizational structure

In the post-communist Republic of Poland women's saber fencing started in 1996/1997. The first saber training was organized in the Fencing Club in Konin. Tadeusz Piguła – the then head coach of the senior national team – gave first saber lessons to his

Marzocca, Allesia Tognolli). The individual event was won by Anne Lise-Touya before Elena Nečaeva and Gioią Marzocca and Yelena Jemayeva.

⁴ The first world championships in the senior category were held in Seoul in 1999, and in the junior category in Dijon (France)

⁵ The first World Cup competition were held in 1999 in Budapest, the second in Fogia (Italy), and the third in Orleans (France).

⁶ The contest was known as the Poland Cup. They were held once in Katowice and twice in Konin. Among the senior competitors the best fencer was Aleksandra Socha.

daughter Katarzyna Pigula, who had earlier practiced foil and epee. Soon, saber fencing was taken up by other female foilists and epeeists from Konin and Warsaw, followed by competitors from Łódz, Sosnowiec, Poznań and Białystok. They were also joined by young girls without any previous fencing experience.

In January 1997, on the initiative of a former Olympic saber fencer, Marek Gniewkowski, saber training classes for women began in the fencing section of the Academic Sport Association of the University of Physical Education in Warsaw (AZS AWF). The foilist Dorota Burnagiel joined the section together with Aleksandra Socha and Irena Więckowska. Soon after, Piotr Stroka (an AZS AWF coach) started recruiting candidates for the women's saber section. He was assisted by Robert Mrówczyński (from 2002), a former AZS AWF Warsaw fencer.

In the Dąbrowa Basin, in 1998, Krzysztof Wątor established a saber fencing section for girls from the 19th Primary School in Będzin. The following year the young sabreurs became members of the fencing section in the Municipal Center of Sport and Recreation in Sosnowiec. In the same year girls from the Poznań Academic Sport Association took up saber fencing on the initiative of Jerzy Kosiński – a former member of the Polish national junior fencing team. Kosiński's section consisted of Agnieszka Gałkowska, a temporarily loaned foil fencer from the Warta Sport Club, Agnieszka Janek (who later became a member of the Polish national women's saber team), Agnieszka Kosińska, Patrycja Balcer, Katarzyna Kędziora and Agnieszka Zdrojewska. In 1999 fencing training classes in the Poznań AZS club were also carried out by students of the University School of Physical Education: Przemysław Wojciechowski and Sebastian Tylkowski (until the end of 2001)⁷.

After some time the authorities of fencing sections of sports clubs gave up their training in other fencing weapons (foil, epee, men's saber) in favor of women's saber. This was the case of the fencing section in Łódź, when in 1998 Wojciech Makówka commenced women's saber training sessions in the Włókniarz Sports Club. The first trainee was the epeeist Justyna Derbich, who by the end of 1999 moved to Warsaw and continued saber training in the Warsaw AZS AWF club. In 2000 Makówka recruited three other saber fencers: Marta Rosiak, Małgorzata Karolak and Matylda Ostojska. On June 3, 2004 the Włóniarz Sports Club in Łódź became the Dragon Sports Club [Annual 2004]⁸.

In 2000 Jarosław Mazurek (a former saber fencer of the Jagiellonia sports club) established a women's saber section as part of the Pupils' Sports Club in the 13th Primary School in Białystok.

In Konin and Warsaw fencing coaches contacted a number of primary school principals and offered saber training classes to school girls. Saber fencing training became part of the curriculum in school grades with an extended PE programme. In Warsaw, most young female sabreurs came from the State Sport School.

In Sosnowiec, 30 girls and boys took up saber training in 1998, 17 girls in Poznań in 1999, 13 girls in the Pupils' Sport Club in Białystok, including Magdalena Buchałko and Agnieszka Ciwoniuk, and 6 in the Włókniarz Sports Club in Łódź. In 2002, there were 40 girls who practiced saber fencing in the Fencing Club in Konin. The most distinguished members of the club included Katarzyna Piguła, Katarzyna Kuźniak, Katarzyna Katarzyna Kowalska, Monika Kościucha, Maja Majkowska and Joanna Daniłowska. In the

⁷ P. Wojciechowski and S. Tylkowski became certified fencing instructors in 2001.

⁸ http://www.szermierz.pl/dokumenty/sprawozdania.za.2004.dragon.pdf, Sprawozdanie Zarządu Stowarzyszenia Klub Sportowy "Dragon"- Łódź Organizacja Pożytku Publicznego za rok 2004 (Annual report of the Board of the Dragon Sports Club, 2004).

same year the fencing section of the Warsaw AZS AWF comprised 20 girls, including Bogna Jóźwiak and Justyna Derbich. The Sosnowiec saber section consisted of 15 fencers, e.g. Maria Wątor, Monika Jajęśniak and Marta Stolarek. In 1999 Przemysław Wojciechowski and Sebastian Tylkowski recruited 15 girls aged 10-11 years for the fencing section of the Poznań Academic Sport Association. Two years later the section membership was reduced to 10 girls.

Facilities

The best fencing facilities were in the Konin Fencing Club, and they included the club's own fencing hall with eight permanent pistes, locker rooms, coaches' room, lecture hall, spa facilities, hotel and cafeteria [Wojciechowski 2003: 51-52]. The saber fencers from the AWF AZS Warsaw club practiced in the fencing hall of the University of Physical Education (former Olympic Center) in Bielany. The building also encompassed washing facilities and equipment storage rooms [Wojnowski 2014].

In the Dąbrowa Basin fencing classes took place first in the gyms of the 90th Primary School in Będzin and 45th Primary School in Sosnowiec; from 1992 they have been held in the gym of the Municipal Center of Sport and Recreation [Interview 2002]⁹.

In Poznań, from 2000 to September 1, 2005 the AZS fencing section organized saber fencing training sessions in the gymnasium of the Saint Mary Magdalene Secondary School. Then the classes moved to the Poznan Center of Sport and Recreation. The new venue included a gym, sauna, storage rooms as well as locker rooms for fencers and coaches [Wojnowski 2014: 35; OŚ AZS 2005: 8; Interview 2014]¹⁰.

In Łódź the saber fencers from the Włóknaiarz sports club (later Dragon sports club) practiced fencing four times a week in the club hall (formerly a factory hall) [Report 2005]¹¹. Although the fencing hall had eight well-equipped pistes, it lacked central heating.

In Białystok the female saber fencers from the 13th Pupils' Sports Club trained in the gym of the 4th Public Middle School.

Equipment

The pupil fencers from the Sports School in Warsaw used the school's own equipment. Due to financial problems of the fencing section other saber fencers had to use their own sports equipment. In Sosnowiec the sports club provided only specialist fencing equipment, i.e. face masks, weapons and fencing outfits, whereas the footwear and body cords the fencers had to buy themselves. In Poznań, the fencers brought their own sports and specialist equipment as their club lacked financial resources. A similar situation was in the Włókniarz sports club in Łódź. The Pupils' Sports Club of the 13th Primary School in Białystok had its own sports and specialist equipment bought by the young fencers' parents [Wojciechowski 2003: 51-52].

⁹ Interview with coach Andrzej Bil, MOSiR Sosnowiec z April 16, 2002.

¹⁰ Sprawozdania z działalności OŚ AZS Poznań za okres 03.12.2003 – 28.11.2005 (Reports on activities of the AZS Poznan fencing section, Dec 3, 2003 – Nov 28.2005), p. 8; Interview with coach Leszek Tylkowski, September 30, 2014.

¹¹ Sprawozdanie merytoryczne za rok 2005 Klubu Sportowego "Dragon" Łódź. (Report on activities of the Dragon sports club, 2005) http://www.szermierz.pl/dokumenty/sprawozdania.za.2005.dragon.pdf

Financing

The activities of the Konin Fencing Club were financed and subsidized by the Konin Mayor's Office, individual sponsors, companies, membership fees, the Municipal Department of Physical Culture and Sport and the Ministry of Education and Sport [Janikowski 2003: 47-48, 101].

In Warsaw, the State Sport School covered the expenses of transportation to fencing competitions and training; whereas in the saber section of the Warsaw AZS AWF each fencer paid full membership fees. Some funds were also received from the Office of Physical Culture, Warsaw City Office and the district council office [Wojciechowski 2003: 79].

In Sosnowiec, the saber fencing section was subsidized by the Mayor's Office which also covered the remuneration for fencing instructors and all training-related costs. Following the political transformations in Poland after 1989 and the introduction of the free market system, due to financial difficulties the fencing section of the Zagłebie Sosnowiec sports club was taken over by the Municipal Center for Sport and Recreation in Sosnowiec [Interview Bil 2002; Interview Janicki 2012].

Members of the Poznań AZS paid their membership fees to cover the expenses of fencing hall rental. The fees were also used to finance training camps and transportation and accommodation at sports tournaments. In 2002 the Poznan club paid salaries to the coaches, however, the instructors worked voluntarily. Until October 2002 the fencing section was financially supported by the Prolift company owned by Zbigniew Stochalski, a former saber fencer of the Warta Poznan sports club. After that the section could only rely on financial contributions from young fencers' parents and subsidies for sport achievement [Wojciechowski 2003: 79].

The budget of the Włókniarz Łódź sports club was based on monthly fees paid by the saber fencers. In 2001 some funds were received from the Parents' Association. In 2005, a sport hall was renovated thanks to the financial support of the Mayor's Office in Łódź, and sport equipment was bought for 18,000 zł [Report 2005]¹².

The fencing section of the Pupils' Sports Club in the 13th Primary School in Białystok was financed by pupils' fees and subsidies from the Mayoral Office.

Fencing events

The first official women's saber fencing competition in Poland was organized on February 14, 1998 in Łódź as part of the cyclical Golden Blade men's saber tournament sponsored by the Dziennik Łódzki newspaper. In the same year, two women's saber fencing tournaments were also organized: in Konin (May 30) and in Gliwice (September 8); the 1st Polish Championships took place on December 19, 1998 in Katowice. Since then four such tournaments have been organized. The most significant test of competences of young female sabreurs before international fencing contests was the All-Polish Championships (individual and team) which resulted in the selection of the Polish national women's saber fencing team¹³ [Łuczak 2006: 71].

The 1999 World Fencing Championships in Seoul were not attended by Polish female saber fencers since the coach Arkadiusz Roszak and the President of the Polish Fencing

¹² Sprawozdanie merytoryczne za rok 2005 Klubu Sportowego "Dragon" Łódź [in Polish],

http://www.szermierz.pl/dokumenty/sprawozdania.za.2005.dragon.pdf

¹³ Mistrzostwa Polski Seniorów 1998 Gliwice (Polish Senior Fencing Champinships, Gliwice, 1998), "Szermierz" 1998, no. 9-10, p. 15.

Association Adam Lisewski thought they were still too young [Interview Roszak 2014]¹⁴. The first female world champion in saber fencing became Elena Żemajewa of Azerbaijan¹⁵ [Schirmer 2012] in the individual event, while the best team was Italy after having defeated France in the finals. In women's team saber world championships the champions have been Russia (4 championship titles) and Italy, Ukraine and the United States (2 championship titles each). In women's individual saber the winner was twice Anne Marie Lise Touya, and three times American saber fencers, e.g. Mariel Zagunis.

The main supporter of the introduction of women's saber fencing into the Olympic programme in Athens 2004 was the President of the International Fencing Federation (FIE), Rene Roche. The suggestion was accepted by the IOC President Jacques Rogge on the condition that the fencing Olympic tournaments should not exceed 10 events. Soon the idea of organizing co-ed contests came to nothing. The introduction of these changes in 2000 evoked protests from both male and female fencers. During the team foil championships in Leipzig the women's fencers wore black armbands in protest. In the final bout of the tournament in Como on April 20-21, 2000 Valentina Vezzali (Italy) and Sabine Bar (Germany) scored no hits and the winner was selected by drawing lots [Ottogalli, Six, Terret 2013]¹⁶. Ultimately, the IOC decided to introduce women's saber fencing into the Olympic programme to the benefit of those countries in which women's saber enjoyed a position equal to the other fencing weapons, e.g. the United States.

Following the decisions of the FIE and the IOC the Polish Fencing Association appointed on December 14, 2001, the national coach of the Polish women's saber team, Arkadiusz Roszak. The members of the Olympic team included Aleksandra Socha, Irena Więckowska, Bogna Jóźwiak, Katarzyna Kuźniak and Maria Wątor.

Saber fencing competitions

National competitions

Ten female fencers took part in the first women's saber competition on February 14, 1998 in Łódź. The first place was taken by Aleksandra Socha (AZS AWF Warsaw), before her clubmate Dorota Burnagiel and Katarzyna Piguła from the Konin Fencing Club. The first Poland Cup (December 19, 1998) in Katowice was won by D. Burnagiel before K. Piguła and Maja Majkowska [Wojciechowski 2003: 10, 78]. The Silesia open championships in women's saber fencing were first held in Gliwice between September 3 and 6, 1998 and were regarded as the first unofficial Poland's championships. The competition was won by Katarzyna Piguła from the Konin Fencing Club before Aleksandra Socha from AZS AWF Warsaw¹⁷. A

¹⁴ Interview with coach Arkadiusz Roszak, September 26, 2014.

¹⁵ A. Schirmer, Letzte Barriere fällt Damensäbel 2004 olympisch [in:] Andreas Schirmer [ed.], "En garde! Allez! Touché!". 100 Jahre Fechten in Deutschland eine erfolgsgeschichte, Meyer & Meyer Verlag, Aachen 2012, p. 140.

¹⁶ On May 3-4, 2000 the individual World Cup in fencing was interrupted after 64 fencers advanced to the next round; also the women's individual foil competition in Paris on May 3-4, 2000 was interrupted at the same stage. As a sign of solidarity with the female foilists the 2000 men's individual foil competition in Paris was cancelle. Also the Wołodyjowski Saber Tournament was cancelled. A meeting of representatives of fencing federations from Russia, Italy, Hungary, Romania, France, Germany, Spain, Greece and Poland failed to materialize in Budepest the same year in protest of President Rene Roche's decision. A special letter was sent to Jacques Rogge. A prospective inclusion of women's saber into the Olympic programme in Athens 2004 was not supposed to be at the cost of other disciplines. The Russian fencing federation even appealed to the court of arbitration in Lausanne.

⁷ Third place was won by Maja Majkowska (KKSz) and Dorota Burnagiel (AZS AWF Warszawa).

year later (September 18-23) in Wrocław, at the first Polish championships in women's saber in the senior age category the gold medal was won by A. Socha, the silver by Agnieszka Janek (AZS Poznań) and the bronze by K. Piguła and Katarzyna Kuźniak, who as members of the Konin Fencing Club (KKSz) (Katarzyna Kuźniak, Katarzyna Piguła, Maja Majkowska, Monika Kościucha) won the team event, defeating the AZS AWF Warsaw team 45:38 in the final match [Lorens 1999:10]. K. Piguła also became the Polish champion in the senior age category in Gdańsk in 2000, and during the same competition the KKSz team came second (Katarzyna Piguła, Monika Kościucha, Katarzyna Kuźniak, Maja Majkowska) losing in the final match to the AZS AWF Warsaw team [Stasiewicz 2000: 11].

In 2001 and 2005, the Polish women's team saber championship was won by the AZS AWF Warsaw before the KKSz team [Report 2004: 9]¹⁸. In 2006 the saber fencers from the Poznań AZS defeated the AZS AWF Warsaw team in the finals. In the next year the saber fencers from Warsaw came first, and in 2008 the victory was scored again by the Poznan team, defeating the team of the Association of Fencing Enthusiasts from Sosnowiec¹⁹ [Report 2008: 10-13]. Thus before 2008 the Polish championship was won seven times by the female saber fencers from the AZS AWF Warsaw, twice by the AZS Poznań, and once by the KKSz team.

International competitions

In 2000 the 2nd Women's World Championship in Saber Fencing was organized in Budapest. The Polish saber team consisting of Aleksandra Socha, Agnieszka Janek and Katarzyna Piguła made its international debut²⁰. A. Socha came thirteenth, A. Janek – twenty-fifth, and K. Piguła – forty-eighth [FIE 2014]²¹. In the team event the Poles were the last team out of eight [FIE 2014]²². In 2002, in Lisbon, Aleksandra Socha came twelfth, Katarzyna Kuźniak – twenty-sixth, Irena Więckowska – twenty-seventh and Marta Wator – fifty-fourth [Report 2004: 22; "Escrime" 2002: 49; FIE]²³.

The first international success was Aleksandra Socha's bronze medal in the individual event in Havana 2003, at the same tournament Bogna Jóźwiak took the sixteenth place²⁴. In Leipzig in 2005 Aleksandra Socha was 10th, Katarzyna Karpińska – 15th, Irena Więckowska – 37th, and Bogna Jóźwiak – 40th [Report 2004: 22]²⁵. In Turin, in 2006 the performance of the Polish team was not impressive (Irena Więckowska – 28th, Bogna Jóźwiak – 33rd, A. Socha – 42nd). A. Socha's success from Havana was repeated by Bogna Jóźwiak in Sankt Petersburg (2007) in the individual event from among 70 participating saber fencers. Aleksandra Socha was 8th, Irena Więckowska – 25th, and Małgorzata Kozaczuk – 45th.

At the team world championships in Budapest (2000) the Poles came eighth, but two years later in Lisbon only 11th out of 14 participating teams. In New York in 2004 the Poles

¹⁸ Report of the Polish Fencing Association, 2001-2004, Warszawa Dec 18, 2004, p. 9.

¹⁹ Report of the Polish Fencing Association, 2005–2008, Warszawa, Dec 20, 2008, pp. 10-13.

²⁰ Report of the Polish Fencing Association, 1997-2000), Warszawa, Dec 16, 2000, p. 30; World Championships South Bend, Indiana (USA) 18-25.04.2000, "Szermierz" 3-4, March-April 2000, pp. 24-26; "Escrime" 2000, 32, p. 25. Katarzyna Kuźniak (19th palce) and Maja Makowska (35th place).

http://www.fie.ch/Competitions/ResultsList.aspx?Key=BD8715E6ED13758B84417F89EA16A2CB 22

http://www.fie.ch/Competitions/ResultsList.aspx?Key=33586A89107E856B8452ED0495D6CC7D

²³ Women's saber fencing in: Sprawozdanie zarządu Polskiego Związku Szermierczego za lata 2001-2004 (Report of the Polish Fencing Association, 2001-2004), Warszawa Dec 18, 2004, p. 22; World Championships, "Escrime" 2002, 41, p. 49; http://www.fie.ch/download/en%20bref/fr/seniors%20ind/sfs.pdf 24 http://www.fie.ch/download/en%20bref/fr/seniors%20ind/sfs.pdf.

²⁵ Women's saber fencing in: Report of the Polish Fencing Association, 2001-2004, p. 22; http://www.fie.ch/download/en%20bref/fr/seniors%20ind/sfs pdf.

came 5th (out of 13 teams); in Leipzig (2005) – 4th, in Turin (2006) – 4th and in Sankt Petersburg (2007) – 6th [Report 2008: 22]²⁶.

At the Athens Olympic Games in 2004 Aleksandra Socha took the 11th place. At the Beijing Olympics Bogna Jóźwiak came 10th out of 39 competitors, Irena Więckowska – 16th, and Aleksandra Socha – 18th [FIE 2014]²⁷. In the Olympic team contest the Polish team (Aleksandra Socha, Bogna Jóźwiak, Irena Więckowska) was sixth.

At the European championships the first gold medal in the women's individual saber event was won by Aleksandra Socha in 2004 in Copenhagen [Wikipedia 2004]²⁸, and the bronze medal by Bogna Jóźwiak Izmir, Turkey in 2006 [Wikipedia 2006].²⁹

In July 2001, at the European Championships in Coblenz the Polish team consisting of Aleksandra Socha, Irena Więckowska and Katarzyna Kuźniak won the bronze medal ["Przegląd Sportowy" 2001: 17; Report 2004: 22; "Przegląd Sportowy" 2001: 17]³⁰. And at the European Championships in July 2002 in Moscow Aleksandra Socha, Bogna Jóźwiak, Katarzyna Kuźniak came sixth ["Przegląd Sportowy" 2002: 17]³¹.

On October 15, 2005 Aleksandra Socha, Irena Więckowska, Bogna Jóźwiak i Katarzyna Karpińska took the fourth place at the team saber fencing championships in Leipzig. In the 1/8 round the Polish team defeated the Canadians 45:24, and the Chinese in the quarterfinals 45:41. Unfortunately, in the semifinals the Poles lost to the Russian team 36:45, and then to the Hungarian team 38:45 losing the chance of winning the bronze medal. In 2005 at the World University Games in Izmir the Polish team won the bronze medal and took the eighth place in the World Cup Grand Prix competition [Report 2008: 22; "Przegląd Sportowy" 2005: 27]³².

In 2006, the silver medal was won by Aleksandra Socha, Irena Więckowska, Bogna Jóźwiak and Lidia Sołtys in Izmir, Turkey [Wikipedia 2006]³³. The first gold medal at the European championships the Polish women's saber fencing team (Aleksandra Socha, Irena Więckowska, Bogna Jóźwiak, Matylda Ostojska) won in Kiev in 2008.

Conclusion

The first women's saber training sessions were organized in Poland in 1998 in the Fencing Club in Konin and the Academic Sport Association of the University of Physical Education in Warsaw. The number of saber fencing sections of sports clubs increased systematically, although the overall number was still relatively low. The first women's Polish championship was held in 1998 in Łódź, followed by the Poland Cup and All-Polish Championships in 1999. The main advocates of women's saber fencing were Tadeusz Piguła

Szabla kobiet [in:] Sprawozdanie zarządu Polskiego Związku Szermierczego za lata 2005–2008 (Women's saber fencing [in:] Report of the Polish Fencing Association, 2005–2008), Warszawa Dec 20, 2008, p. 22; http://www.fie.ch/download/en%20bref/fr/seniors%20eq/sfs-eq.pdf.

²⁷ http://www.fie.ch/download/en%20bref/fr/seniors%20ind/sfs.pdf

²⁸ http://pl.wikipedia.org/wiki/Mistrzostwa_Europy_w_Szermierce_2004

²⁹ http://pl.wikipedia.org/wiki/Mistrzostwa_Europy_w_Szermierce_2006

³⁰ "Przegląd Sportowy" July 9, 2001, 158, p. 17. In the quarterfinals Poland defeated a highly ranked France 45:35, and in the semifinals it lost to Germany 40:45. In the match for the third place Poland defeated Romania 45:43. Katarzyna Kuźniak won 5 out of her 9 bouts.

³¹ Women's saber fencing [in:] Report of the Board of the Polish Fencing Association, 2001-2004, Warszawa, December 18, 2004, p. 22; "Przegląd Sportowy" July 8, 2002, no. 157, p. 17.

³² Women's saber fencing [in:] Report of the Board of the Polish Fencing Association, 2005–2008, Warszawa, Dec 20, 2008, p. 22; "Przegląd Koniński" Dec 13-19, 2005, p. 27.

http://pl.wikipedia.org/wiki/Mistrzostwa_Europy_w_Szermierce_2006

and Marek Gniewkowski. The fencing training conditions were generally satisfactory; however, some problems with the provision of specialist equipment did appear. The fencing sections of sports clubs were usually financed from a number of sources, including contributions from young fencers' parents covering transportation, equipment and competition participation expenses. The development of women's saber fencing worldwide resulted in the introduction of this discipline into the programme of the fencing world championships in Seoul in 1999, the Olympics in 2004, and the European championships in 1999. The greatest successes were achieved on the national and international levels by the saber fencers from the AZS AWF Warsaw club, AZS Poznań and the Konin Fencing Club. The performances of Polish female sabreurs were generally successful. Altogether, Aleksandra Socha and Bogna Jóźwiak won two world championships bronze medals and came fourth twice in the team event (2005 and 2006). At the Beijing Olympic Games Bogna Jóźwiak took the tenth place in the individual competition, and the sixth place in the team event. Finally, the Polish female saber fencers won five medals at the European Championships: gold (2004) and bronze (2006) in the individual event, and gold (2008), silver (2006) and bronze (2001) in the team event.

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BJJ Black belts in MMA – from fighters and coaches perspective

Key words: martial arts, MMA, BJJ, black belt

Abstract

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.

The aim of the paper was to made an analysis of BJJ skills influence on fight level in MMA. The author knows facts and persons introduced in the paper. All the competitors and coaches when giving the information, were very satisfied with the analysis.

Introduction

The origins of MMA took place in 1996 when first BJJ school was opened in Poland. The first name of the school was *Black Belt*, and today's name is *Poznań Fight Zone*. The club established cooperation with many instructors from Brazil and since then the following BJJ and MMA pioneers started to cooperate with the club in Poland: Mirosław Okniński (MMA Warsaw/Okniński Team), Mariusz and Maciej Linke (*Linke Gold Team*), Piotr Bagi Bagiński and Robert Siedziako (*Berserkers Team Szczecin*), Marcin Dudek (*Grappling Kraków*).

Next clubs specializing in BJJ and MMA were established in 2000 in Poland. Mirosław Okniński³⁴ who fighted with Michał Lutto during TV show, had a big contribution in MMA development in Poland. Moreover, Okniński confronted his competitors with Judo, Kickboxing or Boxing competitors. He was the first who organized MMA fight and promoted

³⁴ One of MMA pioneers in Poland, the owner of black belt in BJJ.

this kind of sport in Poland. The fight mentioned above, took place in October 10th, 2002 during *Body Show* sport fairs. Grzegorz Jakubowski from Gdynia and Temistokles Teresiewicz from Łódź stood in the box prepared especially for the occasion. The fight lasted 45 minutes and after that time the judge decided to be draw.

First big event connected with MMA fights took place in April 26th, 2003 in Warsaw Legia's hall of wrestling. First eliminations to the final *MMA Poland 1 Eliminations* Gala took place then. Many competitors, BJJ coaches as well as novice MMA coaches were interested in taking part in this event. The meeting was planned after competitions with aim of unification of MMA rules in Poland. In fact, many competitors didn't appear at the competitions what was seen as a lack of MMA popularity in Poland. The organization of competitions had to be improved in a broad scale³⁵. Audience who participated in the competitions could see only five professional fights.

BJJ as a Brazilian martial sport has its origins in ju-jitsu, wrestling and judo. The characteristic feature of the sport is taking rival down. BJJ includes fights in standing position, in close and in a takedown. There are two fundamental formula of BJJ fight:

- fight in gi (kimono),
- fight without gi (submission fighting)³⁶.

Brazilian ju-jitsu is based on grips. Heaves, strangles as well as other techniques of stopping/pinning the competitors dominate in the discipline. Hits are not present in the discipline. However, the hits are trained by competitors preparing to the fight in MMA formula.



Photo 1. Marcin Held (from his back, black belt in MMA) during finishing technique on *the Bellator* 68 gala [source: Marcin Held's archives]

³⁵ According to interview with MMA journalist Paweł Ziółkowski.

³⁶ The formula was established in 90s of the XX century. It is a wrestling fight with submissions, i.e. finishing techniques such as: heave and strangle.

Methods of getting information

In the aim of gathering information needed to elaborate the problem, the author conducted six interviews with competitors having black belts in BJJ or MMA coaches who also have black belts in BJJ. There were five Polish people among the respondents and one MMA competitor with black belt from Croatia, formerly UFC competitor. Among Polish respondents there was one person who gained black belt as the first person in Poland. One has to underline that all the competitors are MMA or BJJ coaches at the same time. The author asked the following questions to the respondents:

- 1. Do you, as coach with black belt, focus mainly on teaching BJJ techniques as leading ones during MMA fight?
- 2. What do you teach in BJJ at the beginning?
- 3. Which techniques are the most difficult to teach?
- 4. Do competitors with their origins from BJJ, now fighting in MMA, have advantage over those who have other fundamental style?
- 5. "Standing position" or a takedown (BJJ)? Which ground/surface is more difficult to learn and why?
- 6. What is the importance of BJJ skills in MMA successes?
- 7. Do you have any favorite BJJ techniques?

The author presented the silhouettes of persons, who gave all the information as well as achievements of both MMA and BJJ competitors were introduced in the paper.

The literature of the subject analysis

There are many publications concerning BJJ techniques on the market, especially in foreign literature. Many books come from USA, which were written by former competitors. These are as follows: G. Wells: *Brasilian Jiujitsu – ground-fighting combat (Martial arts sports zone)* 2012, M. Walder: *Brasilian Jiujitsu* 2008, R. Gracie and J. Danaher: *Mastering Jujitsu* 2003, Paiva A., Słowek S.: *Jiu-Jitsu Brazylijskie* 2010, R. Machado: *Brazylijskie Jiu-Jitsu* 2004, R. Gracie, K. Peligro, R. Azoury: *Brazilian Jiu-Jitsu Submission Grappling Techniques* 2003, R. Gracie, K. Peligro, 2001.

MMA is a young sport, therefore books are not commonly available in Poland because of low popularity of the discipline. Foreign literature joints MMA and BJJ topics in the following books: J. Snowden: *Total MMA: Inside Ultimate Fighting* 2008, D. Plyler and Ch. Seibert: *The Ultimate Mixed Martial Arts Training Guide: Techniques for Fitness, Self defense* 2009, R. Keating: *Mixed Martial Arts: The Basics of Jujitsu & MMA* 2009, A. T. Heath, D. L. Hudson jr: *Mixed Martial Arts-most wanted* 2012, G. Wells: *Mixed Martial Arts Ultimate Fighting Combinations,* 2012.

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Polish owners of black belts in BJJ

The black belt is the highest award/honour for the competitor. BJJ, similarly to other martial sports, has its own system of levels marked by belt's color:

- white,
- blue,
- purple,
- brown,
- black.

There are five levels, and "the way" from white belt to black one lasts about ten years. One should underline, that it depends on the competitor, because there are people who do not need ten years to get black belt, but on the other hand there are also competitors who stop on blue or purple belt level in their career. Sometimes, in separate levels, the so-called bars are introduced which mean the competitor's progress as well as the length of having the belt.

BJJ promotion system has informal character. There are no precise requirements concerning white, blue or purple belt. The instructor is often the person who decides if the competitor deserves the higher level or not. The development is on many grounds because the competitor has to learn a general strategy, defined resource of techniques as well as the skills of using it in the fight. The most important determinant of the progress is how the knowledge is used in the fight. Additionally, there is one more, a very important criterion when giving levels – it is assessment of trainee's behavior taken as a whole. It depends on coach's criteria of assessment, his demands and trainees' characters.

The black belt means membership to an absolute elite. It signals deep knowledge of BJJ and the ability of using it in the practice. The black belt is given not for *seniority*, because it is a kind of mark for both coach and the whole BJJ.

According to information dated 17 November 2014, there are 117 competitors with a black belt in Poland. There are people among the respondents, who gave information to the author of the paper (in a chronological order according to the date of their promotion):

- first owner of black belt in Poland Mariusz Linke *Linke Gold Team* (29.04.2006., supervisor: Jorge *Macaco* Patino);
- Piotr Bagiński- Berserkers Team Szczecin (27.11.2006., supervisor: Felipe Costa);
- Marcin Rogowski (13.11.2011., supervisor: Vinicius Draculino Magalhaes);
- Jarosław Zjeżdżałka- Ankos Wrestling Poznań/Gameness Team (21.07.2012., supervisor: Robert Drysdale);
- Marcin Held- *Bastion Tychy* (03.03.2013., supervisors: Sławomir Szamota and Vinicius *Draculino* Magalhaes);
- The sixth competitor who gave information to the author was Goran Reljic from Croatia, who gained his black belt in 2013 from Adem Redzovic.

Mariusz Linke (photo 2 and 3) was born in July 31st, 1969 in Szczecin. He was MMA competitors and the most honoured BJJ competitor in Poland; has got black belt in BJJ and judo. Mariusz Linke is also one of MMA pioneers in Poland. He established *Berserkers Team* club in 1999 in Szczecin together with his brother Maciej, and Piotr Bagiński as well as Robert Siedziako. Mariusz Linke won first big competitions in BJJ in 2000. He achieved first

place during *Bad Boy Cup* in Goteborg in up to 95 kg category. A year later he won third place during the same competitions in 85 kg category. Through next few years he was a champion and medalist in BJJ in Europe and Brazil. He and his brother decided to quit *Berserkers Team* club in 2000 and established the own club named *Linke Gold Team*. With the development of the club, Linke achieved more and more medals in BJJ prestigious tournaments. He won gold medals on the BJJ Europe Championship in 2006 in Lisbon. Next years also were full of international achievements and successes. Among others: silver medal on the World Championship in Brazil, gold medals in *NAGA World Championship* in 2008 and in 2009 as well as gold medal on the Europe Championship in 2012 in Lisbon. Mariusz Linke fought in 16 duels during his entire career – his balance is 11 victories and 5 failures (updated 10.09.2014.). His first fight in MMA formula took place in December 14th, 2001 with Sławomir Zakrzewski. The winner was Mariusz Linke who took the rival by triangular strangle.



Photo 2. Mariusz Linke during his MMA fight [source: www.grapller.info, available at 3.11.2014]



Photo 3. Mariusz Linke in keikogi [source: the author's archives]

Mariusz Linke is a coach in his club with the black belt in BJJ, and he says: as a trainer and black belt in BJJ I focus on a takedown techniques but only during full and taskoriented sparring. I think that from the defined level of development (from the purple belt) one should fight as much as possible to adapt to various situations when fighting in a cage, ring or mat³⁷. Moreover, learning of separate BJJ techniques, depends on motor predispositions of competitors: in my opinion, difficulty level depends on trainer's predispositions. Different techniques are difficult for various trainees³⁸.

MMA is still little-known for many people in Poland but from the very beginning it has changed a lot. However, the competitors whose fundamental style is BJJ, have the advantage only in a takedown: the competitors from BJJ have the advantage in a takedown over those who come from other basic styles. But I still think that it is more difficult to fight in a takedown than in a standing position, but of course it depends on the competitor's predispositions³⁹.

Mariusz Linke also underlines versatility of modern MMA: in a modern MMA everything is important. Each element can decide on victory and failure at the same time and the Mixed Martial Arts, as the name suggests, have to draw on the experience of everything. Times when classical BJJ was in advantage gone away and never come back. The current rules oblige us to train everything. Nowadays, it is no time to work to finish fight in a fast way. The reason is that there are no fights without time limits. When fight in a takedown is passive, the judge rises the fight to the top (to the standing position). I think that is the main reason why BJJ is not dominant any more⁴⁰. Mariusz Linke finds key from side position his favorite technique.

Piotr *Bagi* Bagiński (photo 4) was born in May 5th, 1972 in Szczecin. He is the competitor of BJJ and the owner of black belt (the second black belt in Poland) as well as in judo. He is a coach in *Berserkers Team Szczecin* as well as Polish team of grappling⁴¹.

His first success in BJJ achieved in 2005 on Polish Championship in submission wrestling being third on the list. The next successes of Piotr Bagiński are as follows:

- 2006: Polish Championship in submission wrestling first place
- 2006: *Europe Championship in Lisbon* second place and third place in open category
- 2006: Open BJJ Tournament Copa de Polonia first place in open category
- 2006: International Germany Championship first place in 91 kg and open category
- 2007: Mundial CBJJE in Sao Paulo first place
- 2009: World Championship of Veterans 4th World Wrestling Games w Siauli first place in 84 kg category
- 2009: *Europe BJJ Championship of CBJJE organization* in Morges first place in 88 kg and open category
- 2012: Europe BJJ Championship in Lisbon first place

³⁷ Interview from 1.07.2014., conducted with Mariusz Linke.

³⁸ Interview from 1.07.2014., conducted with Mariusz Linke.

³⁹ Interview from 1.07.2014., conducted with Mariusz Linke.

⁴⁰ Interview from 1.07.2014., conducted with Mariusz Linke.

⁴¹ Grappling or fight for grips is a kind of hand-to-hand combat based mainly on using the following techniques: heave, strangle and knock down. Hits are forbidden. BJJ and submission fighting are based on it.

• 2014: Europe BJJ no GI Championship in Rome – first place.

Piotr Bagiński took part in six fights in MMA career, he won three of them. He was semi-finalist in the KSW V tournament in 2006. He finished his career in 2007. Nowadays, he is a great judge during MMA galas. Piotr Bagiński, BJJ and MMA coach since many years, has his point of view towards MMA that, according to him, is a modern and cross-sectional sport: *MMA has developed as a martial sport and today it is a new sport discipline with its training methodology. As a coach I try to teach my trainees all the techniques and fight surfaces⁴². According to P. Bagiński, high BJJ skills are not enough in a modern MMA because: <i>each MMA competitor knows that the knowledge of a takedown is very important issue, therefore everyone tries to improve his/her skills on that surface.* MMA as a sport is developing in a very fast and strong way, that is why the scope of competitors' skills has to be improved all the time. According to P. Bagiński, wrestling skills are more important nowadays: *some time ago BJJ skills were the most important but since few years wrestling are more important skills. The competitors coming from wrestling are very well prepared from motor point of view⁴³. Piotr Bagiński prefers the following two finishing techniques: strangle by kimono and triangular strangle by both hands.*



Photo 4. Piotr Bagiński [source: the competitors' archives]

Marcin Rogowski (photo 5) is 34th Pole with the BJJ black belt. He is founder and main trainer in Gracie Barra Club in Łódź. He is seen as one of the best MMA trainers in Poland. His charges are as follows: Karolina Kowalkiewicz - KSW federation champion and Paweł Pawlak – the UFC competitor.

⁴² Interview from 4.06.2014., conducted with Piotr Bagiński.

⁴³ Interview from 4.06.2014., conducted with Piotr Bagiński.



Photo 5. Marcin Rogowski (from the right) with his charge Paweł Pawlak [source: www.mmania.pl, available at 14.11.2014]

Marcin Rogowski as every BJJ coach, has its own point of view on BJJ and MMA fights. He claims that the competitors should be trained multidimensional: *I teach all my charges everything what is needed in MMA*. *Teach only those BJJ techniques which are used in MMA*⁴⁴.

BJJ, as every martial sport, needs solid fundaments for the next stages of effective trainings. M. Rogowski thinks that: *BJJ basics are the most significant things, that is why I start teaching from these ones.*

MMA competitors coming from BJJ have no advantage over other competitors nowadays. Takedowns are trained by every competitor. M. Rogowski claims that: today competitors do not have any advantage over others because everyone trains takedown and can defend. The only chief asset they have is their so called ground, in where they can always win^{45} .

So, what is needed to achieve success in MMA? M. Rogowski claims that: *at present, MMA competitor has to have a very solid BJJ bases. It can be enough to achieve success in MMA*⁴⁶.

Jarosław Zjeżdżałka (photo 6) got his black belt as 48th competitor in Poland. He is one of trainers in Ankos Wrestling Club in Poznań and Gameness Team. Jarosław Zjeżdżałka has got many successes both in BJJ and judo. The paramount are listed as follows:

- First place Judo Open Tournament, Poznań 1989;
- First place International Tournament of Juniors in Judo, Wrocław, 1990;
- Third place International Tournament of Juniors in Judo, Poznań, 1990;
- Second place Tournament of Juniors in Judo, Wrocław, 1990;

⁴⁴ Interview from 10.07.2014., conducted with Marcin Rogowski.

⁴⁵ Interview from 10.07.2014., conducted with Marcin Rogowski.

⁴⁶ Interview from 10.07.2014., conducted with Marcin Rogowski.

- Second place Macro-region Championship of Juniors in Judo, Piła, 1991;
- Third place International Tournament of Juniors in Judo, Poznań, 1991;
- First place Eliminations to Polish Championship in Judo, Poznań, 1991;
- First place International Tournament in Judo, Gorzów Wielkopolski, 1992;
- Second place Polish Championship of Juniors in Judo, Koszalin, 1992;
- First place Copa Baltica in jiu-jitsu, Gdynia, 2003;
- First place the Polish Cup in jiu-jitsu, Gliwice, 2003;
- First place Submission Grappling Competitions, Włocławek, 2003;
- First place the Polish Cup in BJJ, Gdynia, 2004;
- First place Polish BJJ League, Racibórz, 2004;
- Third place Copa Bitetti BJJ, London, 2004;
- Third place Polish BJJ Championship, Poznań, 2005;
- Second place Polish BJJ Championship, Aleksandrów Łódzki, 2006;
- First place Polish Open Trials ADCC, Kraków, 2006;
- Third place Polish ADCC Championship in MA, Szczecin, 2007;
- First place Europe BJJ Championship in team tournament, Lisbon, 2007;
- Second place Polish ADCC Championship in MA, Szczecin, 2008;
- First place Europe BJJ Championship, Lisbon, 2008;
- First place Europe BJJ Championship in team tournament, Lisbon, 2008;
- Second place Europe BJJ Championship in team tournament, Lisbon, 2010;
- Third place Gold Team Polish BJJ, Śrem, 2010;
- First place all-Poland classification tournament in grappling, Szczecin, 2010;
- First place all-Poland classification tournament in BJJ, Szczecin, 2010;
- First place Polish Championship in grappling, Konin, 2010;
- Second place Ragnarok the beGInning, 2010;
- First place Naga Germany Grappling Championship, 2013.



Photo 6. Jarosław Zjeżdżałka in *keikogi* [source: wuefclub.pl, available at 14.11.2014]

Jarosław Zjeżdżałka had his first start in MMA in March 18th, 2005 by losing with Błażej Woźnicki through unanimous judges' decision (points). The second start in MMA took place in November 19th, 2010 by winning with Michał Pufhal. The last his fight was held in April 21st, 2012 by winning thanks to unanimous decision of point judges. The defeated competitor was Łukasz Kaśniewski⁴⁷ With the experience in MMA and BJJ and being trainer at the same time, Jarosław Zjeżdżałka says about his teaching methods: *As MMA trainer I do not focus mainly on BJJ because it is the last ground where the fighter is located. The fight begins from the standing position, then one should work on knock down or safe takedown and then we can use BJJ. It sometimes happens that BJJ can be used in a standing position but it takes place very rarely⁴⁸. Jarosław Zjeżdżałka, as every coach, has his own BJJ teaching methodology and he says about it in the following way: <i>Among beginners I start teaching BJJ from basic techniques from closed guard, semi-guard, butterfly guard and dominant positions such as: side, knee bend as well as from behind position⁴⁹.*

There are many techniques in different positions in BJJ; one group is easier, other is harder to learn. According to Jarosław Zjeżdżałka, the most difficult is: *in each group are easy and difficult techniques. Everything depend on fighter advance.*

MMA development and change of fights' schema made that great BJJ skills are not enough to win in MMA. According to Jarosław Zjeżdżałka, *MMA has changed very much. Some time ago BJJ was enough to win the fight because few people trained takedowns. Fights had no time limits what was obvious that sooner or later the fighters will find themselves in octagon or ring on mat. Nowadays, rounds last 5 minutes and the dominant position is the standing one but one can forget about BJJ or wrestling* and takedown skills are still very important and *BJJ techniques are important if the trainee wants to be comprehensive. I know leader competitors in Poland who lost their first "almost won" fights because they had BJJ skills too weak. They were dominating during rounds but when fighting a takedown, they had to collapse*⁵⁰.

⁴⁷ The author's elaboration on the base of MMA fights analysis of Jarosław Zjeżdżałka.

⁴⁸ Interview from 5.10.2014., conducted with Jarosław Zjeżdżałka.

⁴⁹ Interview from 5.10.2014., conducted with Jarosław Zjeżdżałka.

⁵⁰ Interview from 5.10.2014., conducted with Jarosław Zjeżdżałka.

Jarosław Zjeżdżałka as the competitor, has his favorite BJJ techniques. These are as follows: *Of course I have got my favorite techniques, these are all the semi-guard techniques.*

Marcin Held is a competitor of young generation, very talented and with great grappling skills. He was born in January 18th, 1992; trains in *Bastion Tychy Club* under Sławomir Szamota's tutelage. He says about the beginnings with BJJ in the following words: *My adventure with martial sports began when I was nine. I started to train BJJ. Now, when I fight in MMA I try to use these skills because these are the best abilities I've got.* He also points that these skills are not the most important ones: *MMA has changed very much since last few years. Several years ago it was enough if somebody could box and hit.* Marcin held also claims that, except BJJ skills, has something to improve: *I started from BJJ, so my standing position was weak. Now I work on it permanently to be a comprehensive competitor. Mixture of a good standing position and a takedown is necessary*⁵¹.

Marcin Held's successes in BJJ:

- 2007 second place (up to 64 kg category) on the Third Polish Championship in BJJ;
- 2008 third place (up to 65,9 kg category) on *the Submission Fighting* Polish Championship;
- 2010 second place (up to 77 kg category) on *the Submission Fighting* Polish Championship;
- 2010 first place (up to 76 kg category) on the VI Polish Championship in BJJ;
- 2011 first place (up to 77 kg category) on *the Submission Fighting* Polish Championship;
- 2013 second place (up to 82,3 kg category) on IX Polish Championship in BJJ.

Marcin Held began his professional career in MMA in 2008 by winning with Mateusz Piórkowski thanks to elbow lever during *Abak Moto* Gala in Katowice. He fought six times in 2009 and won with the following rivals: Artur Sowiński (majority decision), Mariusz Pioskowik (TKO), Rafał Lasota (TKO). He won lightweight tournament of MMA Challengers federation in 2009, winning with Ireneusz Mila (decision), Mariusz Abramiuk (strangle from behind), Borys Mańkowski (elbow lever).

In the next six fights he won four times (three times by submission). M. Held signed contract in 2010 with American Bellator Fighting Championships Organization and till 17th of May, he won seven times per eight fights.

⁵¹ Interview from 23.07.2013., conducted with Marcin Held.



Photo 7. Marcin Held in keikogi [source: the competitors' archives]

Goran Relijic is a Croatian competitor, born in March 20th, 1984 in Zadar. He has the black belt in BJJ and made his debut in 2004. Within 2008-2010 was the UFC competitor, fighting in four fights. The first fight was won in the second round by KO/TKO with Wilson Gouveia in May 24th, 2008. During preparation to the next fight with Thales Leites (17-4-0), he was injured in his back very seriously. He had to had a surgery. After long and difficult rehabilitation he came back stronger and started to train to professional fights. Subsequent Reljic Goran's fight, after the injury, took place in February 20th, 2010. This time, the competitor lost the fight with CB Dollaway by unanimous decision. The third fight in the UFC took place in July 3rd, 2010 with well-known Kendall Grove. The fighters were evenly matched but finally Croatian competitor lost by non-unanimous decision. The last fight of Reljic Goran in the UFC (also lost by points) took place in November 13th, 2010 with Krzysztof Soczyński (born in Stalowa Wola). After the adventure with the UFC, Croatian competitor won three fights: one in 2011 and two in 2012. Next, there was a failure with Jan Błachowicz during night fight and rivalry in semi-heavyweight belt on KSW XXII Gala. The last Goran's fight was a victory thanks to judges' decision on KSW XXVI Gala. Karol Celiński - Polish competitor from Arrachion MMA Olsztvn Club was defeated.



Photo 8. Goran Reljic [source: mymma.pl, available at 14.11.2014]

MMA is a sport that joints many other sport disciplines. Very good skills in every ground make it possible to achieve success. Yet, BJJ has been always associated with MMA. *BJJ is a part of MMA, but mixed martial arts are more realistic⁵²*, (BJJ is just one part of MMA and I

⁵² Interview from 5.05.2014., conducted with Goran Reljic.

like MMA more because it is realistic fight) – Goran says so. Despite having the black belt in BJJ and great grappling skills, Goran Reljic does not fight in a takedown very often: *not so often anymore because MMA game has changed a lot it is more stand up now*⁵³.

A development of every sport brings evolution of techniques used in the fight. The same situation is in BJJ which is a fundament of a takedown fight in MMA. BJJ techniques have changed according to Croatian competitor: *they are a lot different now because MMA has evolved on another level it s more freestyle wrestling combined with some elements of BJJ and off course stand up*⁵⁴. Yet, the least complicated techniques are the most useful ones in MMA – Goran Reljic says so: *anything that is basic and simple not too complicated*.

Research results

After the interviews with the competitors presented in the paper, one should make some conclusions. On account of that, both competitors and trainers unanimously agree that when training MMA one should not focus only on teaching BJJ skills. Mixed martial arts are very large-scale sport and one should put an attention on every grounds of fight. Moreover, the material gathered during research makes it possible to claim that great BJJ skills are the element that can help in the fight in a significant way. On the other hand, these skills are not key ones on account of the fact that nowadays a comprehensive MMA competitor should have the same skills both in standing positions and in BJJ. BJJ learning starts from, according the respondents, basic BJJ skills as well as comprehensive development of every competitor. BJJ learning, depending on novice competitor, is proceeding in different levels. Every competitor has various motor predispositions that facilitate or hinder BJJ elements learning process. Nevertheless, every competitor aspires to improve his/her skills.

Discussion

Mixed martial arts training is very difficult. Indeed, ideal and comprehensive MMA competitor has to have high level skills in several sports and martial arts. MMA training includes: wrestling, hit sports (mainly: boxing, kickboxing), gripping sports and martial arts (judo and BJJ). BJJ is a martial sport integral with MMA. A takedown skills decide on the success. The competitor can take the rival one of the finishing techniques, change defensive position into the offensive one. Therefore, BJJ training is an essential condition to achieve success in mixed martial arts.

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- 3. Interview with Piotr Bagiński
- 4. Interview with Marcin Rogowski
- 5. Interview with Jarosław Zjeżdżałka
- 6. Interview with Goran Reljic

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Taegeuk Series Poomsae

Key words: taegeuk, poomsae, practice, taekwondo

Abstract

Poomsae is a Korean word and it means "shape of motions". Poomsae is a training tool designed to practise a prearranged, continuous pattern of movements and techniques, against imaginary opponents and in any direction. In other words, poomsae also allows students to practise 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 practise 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 practised at the beginning and intermediate levels in the World Taekwondo Federation (WTF) dojangs, are discussed.

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. The Taegeuk series follow the shape of the Chinese character for "king" (\pm) 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 Taeguek series.

What is the symbolic meaning of the practice? E.g. each of the Eight Poomsae of the Taegeuk Series refers to the symbolism of *I Ching* [Yu *et al.* 2014].

Description of Poomsae

Poomsae is a Korean word and it means "shape of motions". *Poom* means "motion" or "action", and *sae* means "shape", "look" or "appearance" [Tedeschi 2004]. Poomsae is a training tool designed to practise a prearranged continuous pattern of movements and techniques against imaginary opponents in any direction. In other words, poomsae allows students to practise 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

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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 practised at the beginning and intermediate levels in the World Taekwondo Federation (WTF) dojangs, are outlined.

Effect of Poomsae Training

A 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 his/her soul at each given moment of life, so that one can borrow from the life force and mobilize it at the critical instant.

2. Practised conscientiously, poomsae is a type of active meditation which provides both spiritual and physical experience.

3. The practice of poomsae helps one to perfect individual fundamental techniques.

4. The practice of poomsae helps one to develop rhythm and timing, and thus create smooth and efficient motions.

5. The poomsae forms train one to combine taekwondo techniques so that they work effectively together in a combination.

6. The practice of poomsae helps one to develop balance, accuracy, and endurance.

7. The practice of poomsae helps one weave defensive and offensive techniques into one coordinated whole pattern.

8. The exercise of poomsae helps one to develop patience, passivity, and an understanding of the deep meaning of the art.

9. The practice of poomsae helps one to develop confidence and speed.

10. The techniques of poomsae help one to develop a "sixth sense" of perception and intuition.

11. The exercises simulate active combat, enabling one to combat 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. This technique reflected more modern methods of combat, using the upright high-forward (upper body) or short stances [Cook 2001]. The Taegeuk series follow the shape of the Chinese character for "king" (\pm) as a linear pattern. The keys in practicing the Taegeuk poomsae rest in performing with precision, speed, and power control. Special attention must be given to solid balance and stability while executing these techniques.

Taegeuk is written in Chinese as $(\overline{\underline{x}})$. "Tae (\underline{x}) " means bigness, and "geuk $(\overline{\underline{w}})$ " means eternity. "Thus, Taegeuk has no form, no beginning, and no end. It is the eternal infinity whose vastness contains the essence of everything, and from which everything in the universe originates" [Chun 2006: 360; *cf*. Cynarski, Obodynski, Litwiniuk 2008].

Each of the eight Taegeuk forms have their own philosophical connotation and meaning which are outlined in the classic Chinese text, the *I Ching* or Book of Changes. These philosophical underpinnings are used to guide the Taekwondo trainee's mental-spiritual

approach to the practice of forms. Gwon [1984] argued that "you must move your body in accordance with these thoughts in order to keep your training in essential purity" (preface section, para. 2). The following sections provide brief commentaries of each of the eight poomsaes of the Taeguek series. Also, the directions and techniques of each of the eight poomsaes of the Taeguek series are included.

Taegeuk 1 Jang

	Meaning:
Class Rank: 8th Kup-grade	* "Heaven sends the rain, and the sun shines the light so that all things will exist, live and grow" (Kim, 1992, p. 293).
<u>I Ching Symbol/Name</u> : ☰ / Keon (乾)	* "As Heaven, it is the symbol of pure creativity" (Chun, 2006, p. 361).
Number of Movement:	* As such, this form represents "the source of creation by presenting the most basic of techniques to the novice" (Chun & Cook, 2013, p. 41).
<u>Image</u> : Haven (天)	* "can be easily learned by the beginning student but are practical throughout the study of Taekwondo" (Chun, 2006, p. 361).



Fig. 1. Taegeuk 1 Jang Movement [Source: Kukkiwon 2006: 314]

Attentive Techniques

- ✓ Walking Stance (apseogi)
- ✓ Front stance (apkubi)
- ✓ Underneath blocking (arae-makki)
- ✓ Trunk blocking (momtong-makki)
- ✓ Trunk punch (momtong-jireugi)
- ✓ Front kick (ap-chagi)

Taegeuk 2 Jang

	Meaning:
Class Rank: 7th Kup-grade	* Like a lake, "it represents something of a spiritually uplifting nature. Not aggressive, it is serene and gentle, like bubbles flowing to the surface of a lake" [Cook 2001: 65-66].
<u>I Ching Symbol/Name</u> : ☱ / Tae (兌)	* "Movements should be made in a relaxed manner yet with firm control" [Chun, Cook 2013: 41].
<u>Number of Movement</u> : 18	
<u>Image</u> : Lake (澤)	



Fig. 2. Taegeuk 2 Jang Movement [Source: Kukkiwon 2006: 326]

Attentive Techniques

✓ Face punch (olguljireugi)

Taegeuk 3 Jang

	Meaning:
<u>Class Rank</u> : 6th Kup-grade	* Like a fire, it has its "characteristics of warmth, enthusiasm, and hope" [Chun 2006: 377].
<u>I Ching Symbol/Name</u> : Ξ/Ri (離)	* "This form should be performed with the warmth and enthusiasm that accompanies the unpredictable pace and
<u>Number of Movement</u> : 20	passion found in the flames of fire" [Chun, Cook 2013: 41].
<u>Image</u> : Fire (火)	



Fig. 3. Taegeuk 3 Jang Movement [Source: Kukkiwon 2006: 338]



stance (dwitkubi)
Taegeuk 4 Jang

<u>Class Rank</u> : 5th Kup-grade	<u>Meaning</u> : * "Just as a fearsome thunderstorm passes leaving rain freshened air in its wake, this form teaches us to act bravely in
<u>I Ching Symbol/Name</u> : Ξ / Jin (震)	the face of danger knowing it too shall pass" [Chun, Cook 2013: 41].
Number of Movement: 20	* "The practice of this form should help one act calmly and bravely in the face of loud and terrifying dangers - real or imagined - knowing that they, too, shall pass" [Chun 2006: 385]
<u>Image</u> : Thunder (雷)	363].



Fig. 4. Taegeuk 4 Jang Movement [Source: Kukkiwon 2006: 354]

- ✓ Hand blade trunk blocking (sonnal momtongmakki)
- ✓ Flat-hand fingertips erect punch (pyonsonkkeuttzireugi)
- ✓ Swallowpoom one hand blade neck hittng (jebipoom mokchigi)
- ✓ Side kick (yopchagi)
- ✓ Trunk outer blocking (momtong bakkatmakki)
- ✓ Backfist face hitting (deungjumeok olgulapchigi)

Taegeuk 5 Jang

Class Rank: 4th Kup-grade	Meaning: * Like a wind it "can be alternately gentle and flexible as a breeze, or powerful and unyielding as a cyclone" [Chun 2006:
	393].
<u>I Ching Symbol/Name</u> : Ξ / Seon (巽)	* "Its techniques sweep through the air, pushing away
Number of Movement: 20	resistance, and then penetrating like the wind" [Chun: 2006: 393].
<u>Image</u> : Wind (風)	



Fig. 5. Taegeuk 5 Jang Movement [Source: Kukkiwon 2006: 370]

Attentive Techniques✓Hammerfist down hitting
(mejumeok naeryochigi)✓Elbow turning hitting
(palkup dollyo-chigi)✓Elbow target hitting
(palkup pyojeokchigi)✓Cross stance (kkoaseogi)✓Left hand stance
(wenseogi)✓Right hand stance
(oreunseogi)

Taegeuk 6 Jang

Class Rank: 3rd Kup-grade	 <u>Meaning</u>: * "Just as water can wear down the hardest of rocks over time, this form teaches patience, consistency, and flow. Humility,
<u>I Ching Symbol/Name</u> : Ξ / Gam (坎)	too, is refined since water always flows downward" [Chun, Cook: 2013: 41].
Number of Movement: 23	* "Like water, Taegeuk 6 Jang is flowing and gentle yet destructive" [Chun 2006: 401].
<u>Image</u> : Water (水)	



Fig. 6. Taegeuk 6 Jang Movement [Source: Kukkiwon 2006: 388]

- ✓ One hand blade twist blocking (hansonnal olgul bitureo makki)
- ✓ Round house kick (dollyo-chagi)
- ✓ Face outer blocking (olgul bakkat-makki)
- ✓ Uunderneath push blocking (arae hecho makki)
- ✓ Palm hand trunk blocking (batangson momtong-makki)

Taegeuk 7 Jang

<u>Class Rank</u> : 2nd Kup-grade	<u>Meaning</u> : * "Climbing a great mountain, one must develop the wisdom of when to hesitate and when to move ahead. The dual
	principles of stability and ambition are appreciated" [Chun,
<u>I Ching Symbol/Name</u> : 〒 / Gan (艮)	COOK 2013. 41J.
<u>Number of Movement</u> : 25	This form "teaches the practitioner when to advance and when to hesitate, mirroring the behavior of an experienced climber as he progressively attains the summit" [Cook 2009: 13].
Image : Mountain (山)	



Fig. 7. Taegeuk 7 Jang Movement [Source: Kukkiwon 2006: 402]

- ✓ Hand blade underneath blocking (sonnal araemakki)
- Palm-hand assist trunk inner blocking (batangson kodureomakki)
- ✓ Covered fist (bojumeok)
- ✓ Scissors blocking (kawimakki)
- ✓ Knee kick (mureupchigi)
- Trunk push blocking (momtong hechomakki)
- Two fists bent backward punching (dujumeok jeocho jireugi)
- ✓ Cross underneath blocking (arae otkoreo makki)
- ✓ Backfist outer hitting (deungjumeok bakkat chigi)

Taegeuk 8 Jang

	Meaning:
<u>Class Rank</u> : 1st Kup-grade	* Like an earth, it has its characteristics of "receptive, gentle and nurturing" [Chun, Cook 2013: 41].
<u>I Ching Symbol/Name</u> : ☷ / Gon (坤)	* "The earth is where the creative force of heaven is realized" [Chun 2006: 417].
Number of Movement: 24	* "Representing the mother earth, from which all life comes, Taegeuk 8 Jang contains all the basic elements of Taekwondo.
<u>Image</u> : Earth (地)	serving both as a review of the beginning forms and as foundation for the first black belt form" [Chun 2006: 417].



Fig. 8. Taegeuk 8 Jang Movement [Source: Kukkiwon 2006: 418]

- ✓ Two feet alternate front kick (dubal dangseong apchagi)
- ✓ Cutter wrist outter blocking (kodureo bakkatmakki)
- ✓ Cutter-wrist-underneath blocking (arae kodureo makki)
- ✓ Jump kick (twiochagi)
- ✓ Elbow turning hitting (palkup dollyochigi)

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Social and psychological conditions of pain in martial arts

Key words: pain, culture, combat sport, psychology

Abstract

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 harmonybuilding 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).

Introduction

Sociological and psycho-social orientation has dealt with opinions and attitudes to sports, including martial arts, for many years. Sports effort involves not only the body (as physical activity) but also psychological side of the personality (mental aspect). In reference to perceiving pain as, broadly speaking, the notion of humanistic sciences there should be a few aspects taken into account; sub-disciplines of sociology (sociology of sports, sociology of medicine, sociology of culture) as well as psychology and its sub-disciplines (psychology of sports, psychology of pain and somatopsychology) and also philosophy, anthropology and theology.

Topic of research

Multi-dimensional aspects of pain and making the pain familiar have been issues the researchers from various scientific fields have considered a problem for a very long time. The approach to pain as subjective feeling allows for assumption of a definition by International Association for the Study of Pain: "Pain as an unpleasant sensual and emotional feeling connected with currently occurring or potential damage of tissues or described in categories of such damage" [Muller, Lehr 1998]. Pain is often associated with the notion of suffering and such approach was the source of inspiration for the writers, poets and artists. For many centuries a huge number of compositions which dealt with pain and suffering have appeared.

The philosophical and theological approach to pain perception cannot be neglected, as pain is treated here as a part of human existence. Plato and Aristotle described pain as an experience of psychological nature. The notion of "soul passion" created by Aristotle defines pain as "unpleasant feeling which is formed outside the body": "We speak of the soul as being pained or pleased, being bold or fearful, being angry, perceiving, thinking. All these are regarded as modes of movement, and hence it might be inferred that the soul is moved", "To feel pleasure or pain is to act with the sensitive mean towards what is good or bad as such" [Smith 1931]. Spinoza referred to those thoughts and divided the human emotions into three categories, among which one is sadness. General sadness was supposed to cause melancholy and topical sadness was supposed to cause pain [Domżał 1983].

An interesting context connected with the notion of pain appears in anthropology, by referring to culture and religion where the interpretation is that pain is the meaning of human life. Suffering and pain are inseparably connected with canon of faith, etymology of the word pain from Greek "*poine*" – punishment, is transformed into English as "pain" – punishment for the sins. Experience of pain and suffering in Buddhism is integrated with arjasatia, in Christianity it is perceived as a gift of God and road to salvation. In the Old Testament (Book of Job) the pain has purifying power. In Islamic religion we can find an exactly the same interpretation.

Ways of experiencing pain by different people are dependent on cultural and social context (i.e. social status, ethnic origin). Differences in environment, sex, age and perhaps also race all have influence on perception of pain. "The differences in experiencing pain can be distinguished in reference to biological sex (e.g. the way the body is built and inner organs) as well as social sex (gender). As it is pointed out by Charlton (2005) women are more willing to look for medical help than men when they want to fight with pain" [D. Byczkowska-Owczarek 2013]. Women are 2 to 7 times more in danger of pain than men. It can result of both their physiology as well as serving social functions (being a mother). Interesting research

connected with serving social functions was conducted by Josef Kotarba "(...) referred to relations between dealing with pain and the performed profession of occupation. He compared sportsmen and physical workers. Both of those groups live with pain on everyday basis but the sportsmen hide the fact they feel pain far more often. The cost of showing the pain is first of all the criticism which results in feeling guilty and ashamed. Such emotions can overpower the potential benefits of showing the fact of being in pain" [D. Byczkowska-Owczarek 2013]. It can be clearly stated that pain perception is an individual experience, dependent on predisposition of a unit to pain and dependent on situational context. The notion of familiarising pain which appears in the topic is also dependent on the expectations and experiences of the person, the group, society, discipline, cultural or even historical background.

The sports environment acquires the injuries, wounds (in micro and macro scale) and the perception of pain in a specific way. Injuries occur here more or less often, depending on age and sex of the sportsperson and depending on the sports discipline. According to Dziak and Tayara [1999] classification of the sports injuries can be divided into typical, long-term and severe long-term ones [Kurzbauer, Kalinowska-Waniek 1996]. Typical injuries are characteristic for one group of sports disciplines and incidental in case of practicing sports in general. Next division is connected with diagnostics and treatment of injuries which occur in professional sports and recreational sports. In case of martial arts there is a big risk of appearance of injuries and what follows the presence of pain [Bujak 2008].

Many years of studies of the opinions of Wojciech J. Cynarski, especially his humanistic theory of martial arts and sports allows having a specific approach to martial arts in the sphere of spirituality. According to Wojciech J. Cynarski: "the knightly road of a fighter" has a universal character. The fighter exists beyond the borders of the pain, nobleness of the role, universal values and proper motivation let the person work on the physical and psycho-physical resistance to pain [Cynarski, Litwiniuk 2006].

Method

Presented research is a part of a big research project conducted within PhD dissertation by M. Szyszko on the topic: "Algological problems of professional sport. Psychological perspective". Target group is going to consist of 260 people from the following groups:

- 1. Group of sportsmen in situation of pain
- 2. Group of non-sportsmen
- 3. Group of disabled sportsmen with dysfunction of loco-motor system.

In the study the following seven research tools were used:

- 1. Melzack's Pain Questionnaire (MPQ-SF);
- 2. Pain Catastrophising Scale (PCS), M. Sillivan;
- 3. Coping Strategies Questionnaire (CSQ);
- 4. Beliefs about Pain Control Questionnaire (BPCQ);
- 5. Adjective Check List Test (ACL), H.B. Gough and A.Ab. Heilbrun;
- 6. Scale of Injury Perception in Sports (Polish abbreviation: SPUwS), J. Blecharz;
- 7. Dimensional Questionnaire (in Polish: KD), M. Szyszko.

The following types of self-assessment results and co-relationships from the Dimensional Questionnaire were used in this publication:

- 1. current pain "here and now" (8 items)
- 2. pain vulnerability (5 items)
- 3. models of experiencing pain (4 items)
- 4. strategies of pain management (6 items)

From the whole tested group 48 sportsmen were identified as martial arts sportsmen – training karate, judo, kendo, jujitsu and fencing. 36 men and 12 women took part in the study.

Results

The tables below present cross-dependencies between points of the questionnaire in chosen areas of the Dimensional Questionnaire (KD). The tables present only the dependencies of chi-square Pearson's test on the statistically relevant level.

Answers to item "Pain, which I suffer from will go away quickly" are in the strongest corelation with answers to item "With age I get more resistant to pain" (chi-square (30) = 63.031; p < 0.001). In martial arts there exists a huge awareness of pain and elaborated pain realism. Years of experience and achievement of more and more champion titles cause that pain, despite its presence, becomes a smaller obstacle. It is connected with pain awareness, which is included in item "I know the boundaries of my pain resistance" (chi-square (30) = 53.675; p < 0.01).

"Pain, which I suffer from, will not go away quickly" is the type of self-knowledge which results from similar pain experiences in professional career. In martial arts it is necessary and statistically significant to refer this aspect of self-knowledge as to a sentence presented in item "sport makes me resistant to pain" (chi-square (25) = 40.833; p < 0.05). Sports understood as planned self-development activity reaches an ideological and philosophical meaning in martial arts. It is strengthened by close dependence of the awareness of pain dynamics with belief of being pain resistant. There is no opposition to that only synergy.

		χ^2	df	ni
1	I have always been resistant to pain	40.253	25	0.027
2	with age I get more resistant to pain	63.031	30	0.000
3	I know the boundaries of my pain resistance	53.675	30	0.005
4	sport makes me pain resistant	40.833	25	0.024

Table 1. Cross-dependencies between item "Pain, which I suffer from will not go away quickly" and other items (N = 48)

At the same time the analysis with the use of student t-Distribution test for independent trials has shown that the difference between mean values in answers in point "Pain which I have will not go away quickly" for men (M = 3.08; SD = 1.44) is statistically irrelevant in comparison to answers given by women (M = 4.00; SD = 1.54), t (46) = -1.877; ni.

Table 2. Cross-dependencies between item: "there is a point in this pain" and answers to other items (N = 48)

		χ^2	df	ni
1	I have always been resistant to pain	43.004	25	0.014

Dependence between answers to item "there is a point in this pain" and "I have always been resistant to pain" is statistically relevant: chi-square (25) = 43.004; p < 0.05. It means that rationalisation of pain is connected with the level of pain perception. This dependency can be very significant for pain psychotherapy and in martial arts in particular because here the pain has its logic and justification.

Analysis with the use of student t-Distribution test for independent trials for the abovementioned items has shown that mean value for answers in point: "There is a point in this pain" for men (M = 3.42; SD = 1.38) is statistically irrelevant in comparison to level of answers given by women (M = 2.83; SD = 1.11), t (46) = 1.324; ni.

Table 3. *Cross-dependencies between item: "Despite the pain I complete the task I started" and other items* (N = 48)

		χ^2	df	ni
1	this pain is inevitable	34.044	20	0.026

Dependency between answers to items "despite the pain I complete the task I started" and item "this pain is inevitable" is statistically relevant: chi-square (20) = 34.044; p < 0.05. This dependency shows the persistency and determination occurring in martial arts. Awareness of inevitability of pain does not exclude physical activities. Such dependency seems to be dominant in martial arts and is less visible in other sports disciplines.

Analysis with the use of student t-Distribution test for independent trials for the abovementioned items has shown that mean value for answers in point "despite the pain I complete the task I started" for men (M = 5.11; SD = 1.30) is not statistically different in comparison to level of answers given by women (M = 5.08; SD = 0.90), t(46) = 0.068; ni.

Table 4. Cross-dependencies between "My pain decreases when I'm with other people" and answers to other items (N = 48)

		χ^2	df	ni
1	I have always been resistant to pain	47.200	30	0.024
2	with age I get more resistant to pain	56.855	30	0.002

Dependency between items "My pain decreases when I'm with other people" and "I have always been resistant to pain" is statistically relevant: chi-square (30) = 47.200; p < 0.05, and also dependency between answers to items "My pain decreases when I'm with other people" and "with age I get more resistant to pain" is statistically relevant: chi-square (30) = 56,855; p < 0,01. Both dependencies show the social character of the factors which influence the resistance to pain.

Analysis with the use of student t-Distribution test for independent trials for the abovementioned items has shown that mean value for answers in point "My pain decreases when I'm with other people" for men (M = 2.89; SD = 1.78) is statistically irrelevant in comparison to answers given by women (M = 2.67; SD = 1.56), t(46) = 0.385; ni.

Table 5. Cross-dependencies between "due to my pain others judge me worse" and answers to other items (N = 48)

		χ^2	df	ni
1	I have always been resistant to pain	41.832	20	0.003
2	I know the limits of my pain resistance	41.667	24	0.014
3	sport makes me pain resistant	33.592	20	0.029

Table 5 presents three important dependencies of item "due to my pain others judge me worse" and answers to other items. The most important is the dependency with the item: "I have always been resistant to pain": chi-square (20) = 41.832; p < 0.01. Other dependencies refer to item "I know the limits of my pain resistance": chi-square (24) = 41.667; p < 0.05 and to item "sport makes me pain resistant": chi-square (20) = 33.592; p < 0.05.

Also the analysis with the use of student t-Distribution test for independent trials has shown that mean value for answers in point "due to my pain others judge me worse" for men (M = 2.22; SD = 1.35) is statistically irrelevant in comparison with answers given by women(M = 1.67; SD = 1.07), t(46) = 1.289; ni.

Table 6. Cross-dependencies between "my pain helps me to understand myself better" and answers to other items (N = 48)

		χ^2	df	ni
1	with age I get more resistant to pain	85.954	36	0.000

Dependency between item "my pain helps me to understand myself better" and item "with age I get more resistant to pain" is statistically relevant: chi-square (36) = 85.954; p < 0.001.

The analysis with the use of student t-Distribution test for independent trials has shown that mean value for answers in point "my pain helps me to understand myself better" for men (M = 3.11; SD = 1.56) is statistically irrelevant in comparison with answers given by women (M = 2.42; SD = 1.44), t(46) = 1.357; ni.

Table 7. Cross-dependencies between "I was prepared for the occurrence of this pain" and answers to other items (N = 48)

		χ^2	df	ni
1	I know the limits of my pain resistance	65.815	36	0.002
2	sport makes me pain resistant	50.078	30	0.012

Dependency between items "I was prepared for the occurrence of this pain" and "I know the limits of my pain resistance" is statistically relevant: chi-square (36) = 65.815; p < 0.01, and dependency between items "I was prepared for the occurrence of this pain" with item "sport makes me pain resistant" is statistically relevant: chi-square (30) = 50.076; p < 0.05.

The analysis with the use of student t-Distribution test for independent trials has shown that mean value for answers in point "I was prepared for the occurrence of this pain" for men (M = 3.83; SD = 1.87) is statistically different from level of answers given by women (M = 1.83; SD = 0.72), t(46) = 3.588; p = 0.001.

		χ^2	df	ni
1	I have always been resistant to pain	42.797	25	0.015
2	with age I get more resistant to pain	51.878	30	0.008
3	sport makes me pain resistant	50.873	25	0.002
4	despite the pain I complete the task I started	74.595	25	0.000

Table 8. Cross-dependencies between "I reconcile myself with my pain" and answers to other items (N = 48)

Dependency in table 8 between answers to items "I reconcile myself with my pain" and "despite the pain I complete the task I started" is statistically relevant: chi-square (25) = 74.595; p < 0.001, and dependency between items "I reconcile myself with my pain" and "sport makes me pain resistant" is statistically relevant: chi-square (25) = 50.873; p < 0.01. The same item in reference to item "with age I get more resistant to pain" has chi-square (30) = 51.878; p < 0.01 and with item "I have always been resistant to pain" has chi-square (25) = 42.797; p < 0.05.

The analysis with the use of student t-Distribution test for independent trials has shown that mean value for answers in point "I reconcile myself with my pain" for men (M = 3.89; SD = 1.35) is statistically irrelevant in comparison with answers given by women (M = 4.08; SD = 1.44), t(46) = -0.425; ni.

Discussion and conclusions

In martial arts the occurrence of pain as a result of injuries and contusions during training or sports competitions is something very common. Experience of pain has extended consequences in the area of the whole psychosomatics. They determine the sports activities of the contestants, their efficiency and effectiveness.

Attitude to pain is conditioned by individual nociceptive susceptibility and personal as well as psycho-social variables. Among the main ways of dealing with pain there are association and dissociation strategies. Tests show that in martial arts the association strategies are dominant. Association strategy concentrates attention of the person feeling pain on the pain itself by accepting its presence and positioning it as important and indispensable element of the situation of effort and sports competition. Such regularity can be observed in the discussed elements of the tests results.

No other group of sports disciplines besides martial arts group gives the pain a sense in reference to pain being a fight and a road to personal development as a sportsman and fighter at the same time. Tests show statistically relevant dependency between answers to item "there is a point in this pain" and item "I have always been resistant to pain". A question can be asked in this moment about the direction of the dependencies between those categories: if they are connected because of being convinced about individual resistance to pain and the sense of pain is being assigned to the pain or the other way round?

Further quantitative analyses refer to the dependencies between items declaring independence of pursuing a goal from the existing pain: "Despite the pain I complete what I started" and answers to item "this pain is inevitable". It is at the same time universal definition of professional sports and in martial arts is a universally applied rule.

Interesting dependencies can be found between influence of presence of other people on resistance to pain and in the first case this resistance is a possessed feature and in second case

it is a feature learnt during lifetime. Statistical analysis shows that the influence of others on pain grows with age and in case of older contestants it is higher than in case of younger sportsmen. Such dependency is bigger than in case of resistance to pain as a possessed feature. Influence of other people in this case is significantly lower.

Interesting statistical dependencies are presented in the next group of analyses. First of them refers to dependencies between item "due to my pain others judge me worse" and three other items. Dependency between first item: I have always been resistant to pain shows that there is constant perception of the worse judgement of others in case of felt pain. It can be assumed that it is not connected with the felt pain itself but the effects of the pain such as break in trainings and decreased results in sports. The picture is completed by self-assessment of the individual resistance to pain. Limits of individual resistance are surely known to contestants of martial arts group where effort connected with training and competition is closely connected to the upper limit of effort possibilities and the presence of pain techniques in the main meaning of those sports.

Again in this group of items there is a relevant dependency with item "sports makes me pain resistant". In martial arts the dependency of those two items can be interpreted as despite "a sport makes me pain resistant", it does not change the fact that "the pain decreases judgement made by others".

Strong statistical dependency is observed between items "this pain helps me understand myself better" and "with age I become more resistant to pain". Experiences of professional sportsmen in martial arts have cumulative character and that is why the dependency between those items seems to be mutual. Frequent experience of pain increases the self-knowledge and this knowledge helps to strengthen the resistance to pain.

Another table presents dependencies between choices of items: I was prepared for the occurrence of this pain and I know the limits of my pain resistance. In martial arts both of those psycho-algological features are functionally connected with one another. Knowledge about frequently occurring situations of pain causes that one is able to recognise the conditions in which one reaches the limit of pain. On the other hand, the situation of awaiting pain which is repeatable causes that the contestant recognises the outer and inner conditions of this pain. In martial arts such dependency is strong. In other sports such phenomenon may not occur because experiencing pain is incidental. It should be noticed, however, that there is a difference in answers of men and women to item "I was ready for the occurrence of this pain". Bigger expectations of pain in case of women can be interpreted through physiological or psychological factors.

Relevant dependencies occur also in dependency of item "a sport makes me pain resistant" and item "I was prepared for the occurrence of this pain". Resistance to pain aids being ready for the pain to appear, no matter the reason it appears. In martial arts the practiced sports has a bigger context, it is a niche in comparison with technique, it has universal sources and refers to the idea of self-development through broadly understood practicing of sports.

Reconciliation with individual pain can be understood as strategy of dealing with pain. "To reconcile" means to be between association and dissociation strategy. In martial arts, due to common occurrences of pain incidents the dominant strategy is association. A question arises if sports from martial arts group can be practiced with the use of dissociation strategy. The answer seems to be negative.

Reconciliation with pain is in closest dependency with item "despite the pain I complete the task I started". Pain in martial arts is perceived as sports meta-category - it is often the constant element of sports competition although hurting other is not the goal of sports.

Reconciliation with pain is also dependent of items "I have always been resistant to pain" and item "with age I get more resistant to pain". Those items are co-related similarly to the abovedescribed dependency of item "my pain decrease when I am with other people" to other items. Resistance to pain treated as a constant feature and a feature which can be acquired with age is in statistically relevant dependency with strategy of dealing with pain. Once again it is visible in relevant cross-dependencies of item a sport makes me pain resistant. It proves that the broad perception of self-realisation, viewed in this way especially by sportsmen of the martial arts group, is strictly connected with strategies of dealing with pain.

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Coping strategies of different levels in aikido practitioners

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

Abstract

The ultimate goal of aikido is to develop personality in the balance of bio-psycho-sociospiritual dimensions. The purpose of this study was to assess the coping strategies of aikido practitioners. Seventy-six Czech male and female aikido practitioners (age: 32.5±9.2 years old (mean±SD), range 18-56 years old) 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. According to the descriptive statistics and using Cohen's d to measure the size effect, 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, humour, restraint and acceptance. The results show that aikido training supports the responsibility for ones coping with stress situations.

Introduction

Aikido was developed in the middle of the 20th century by its founder MoriheiUeshiba 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.Contrary to the popularity of aikido, empirical research is still to be developed. There are many publications which deal with technics of aikido, its philosophy, history and applications in everyday life.Aikido is a Japanese non-competitive martial art, although it is a part of World Combat Games of SportAccord and it was also a part of the World Games organised by International World Games Association under the patronage of International Olympic Committee. Martial arts originating from eastern Asia and other systems of psycho-physical practices can be well described by the Humanistic Theory of Martial Arts [Cynarski 2004, 2012]. Aikido is practised with someone rather than against someone. It is possible to say that the aim of aikido is to achieve the state of sumikiri, the perfect clarity[Ueshiba 2004].The practice of aikido includes the physical and psychological dimensions of an individual, which means self-realization is to train fighting skills or weapons training. For better understanding the value of

aikido, the four dimensional model of development is also used. Unity of bio-psycho-sociospiritual development is fulfilled in lifelong learning (biodromal) process[Reguli 2004].

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. Both of the teachers stress not only physical, but also psychological, social and spiritual (philosophical) aspects of aikido [Noel 1996; Endo 2013]. The style is dynamic, smooth and fluid, and rather sportive than traditional, enabling wide population to practise Aikido.The only way, how to test performance is the examination for kyu and dan grades. There are standards for different levels according to Aikikai Headquarters. Kyu and dan grades are often called technical levels, but this simplification can lead to misinterpretation.Kyu and much more dan grades reflect also seniority, the level of personal development, and examinee contribution to aikido development. Aikido grading system should also express the level of personal development of the aikido practitioner. That means that more advanced aikidoka should be more developed also from social, spiritual and psychological point of view. A part of psychological development is also coping with a stress situation. The more as aikido is a Martial Art based on solving stress situation actively and pragmatically.

Material and Methods

The purpose of this study was to assess the coping strategies of aikido practitioners. Seventysix adult Czech male and female aikido practitioners (age 32.5 ± 9.2 years (mean \pm SD), range 18-56 years) participated in this study. The subjects were divided according to a ranking system into three groups as it can be seen in Table 1. Beginners (up to third kyu, ref. as (1)), Intermediate (second and first kyu, ref. as (2)) and Advanced (dan holders, ref. as (3)). Every participant in this study was at least 18 years old, had his aikido history longer than one year, and was still actively involved into aikido training once per week or more.

	Descriptive statistic								
Parameters	Sample group	N	Mean (SD)	Range					
	Advanced	24	36.3 (7.9)	24-51					
Age (years)	Intermediate	28	30.7 (8.2)	21-52					
	Beginners	24	30.9 (10.5)	18-56					

Tab. 1. Description of participants (N=number of participants; Mean (SD)=age and standard deviation; Range=age range)

Coping strategies can be measured by a lot of scientific tools. For this study COPE Scale by Carver, Scheier, and Weintraub[1989] was used, as it has good scientific reputation and can be used for general population in common environment. COPE Scale contains sixty questions at the scale 1-4 divided into 16 dimensions according to coping strategies. The Czech version of the diagnostic instrument was translated using the Ten steps translation protocol. There is no anypossibility to statesome"overall" score on COPE Scale. In someof the dimensions it hard to talk even on adaptiveormaladaptivecoping. Thisscalecanmeasure a dominant coping

style for a given person or, as it is in this study, a group. Sixteen dimensions measured by COPE Scale can be defined as:

- 1. Positive reinterpretation and growth
- 2. Mentaldisengagement
- 3. Focus on and ventingofemotions
- 4. Use of instrumental social support
- 5. Activecoping
- 6. Denial
- 7. Religiouscoping
- 8. Humor
- 9. Behavioraldisengagement
- 10. Restraint
- 11. Use ofemotionalsocial support
- 12. Substance use
- 13. Acceptance
- 14. Suppressionofcompetingactivities
- 15. Planning.

The data was taken as follows: the subjects were asked to answereachquestionusing a 4 point scalerangingfrom1=Iusuallydon't dothisatall; 2=I usually do this a little bit; 3=I usually do this a medium amount; 4=I usually do this a lot;just after a practice on a weekend seminar taught by a master teacher. Then, all data was rewritten to Microsoft Excel sheet and statistically analysed in Statistica 12 software.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. Because aikido deals with people's education, also subtle changes can play a role. We were also interested in practical significance formulated by effect size (Cohen's D).

Results

According to the descriptive statistics, there were small, but expectable differences in some of dimensions:

- 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)
- planning ((1)=3.00; (2)=3.11; (3)=3.17)

There were almost no differences in mental disengagement, humour, restraint and acceptance. But ANOVA in Table 2 says, that from statistical significance, only "Focus on and ventingofemotions" and "Use ofemotionalsocial support " shows a difference. AditionalShefe's post-hoc test confirmedthedifferencebetweenbeginners and advancedonly, but not betweenbeginners-intermediate, orintermediate-advanced.

	ANOVA				
Dimension	p < ,05000				
	F	p			
Positive reinterpretation and growth	1,81	0,17			
Mentaldisengagement	0,37	0,69			
Focus on and ventingofemotions	3,21	0,04			
Use of instrumental social support	2,69	0,07			
Activecoping	0,32	0,72			
Denial	0,84	0,43			
Religiouscoping	1,38	0,25			
Humor	0,29	0,74			
Behavioraldisengagement	2,19	0,12			
Restraint	0,02	0,98			
Use ofemotionalsocial support	3,20	0,04			
Substance use	2,13	0,12			
Acceptance	0,35	0,71			
Suppressionofcompetingactivities	2,04	0,14			
Planningplánování	0,57	0,56			

Tab. 2. ANOVA for dimensions at levels in COPE Scale

More important was to use size effect to recognise if there was any practical significance. In this case, we consider practical significance as more important, because even small difference can indicate, that aikido training led to change in a psychological, social or spiritual way. Except "restraint", at least a small effect was found in all dimensions. In some dimensions an effect was found between beginners and intermediate, but not between intermediate and advanced. A curious fact was found in the dimensions where an effect was found between beginners and intermediate, but not between beginners and advanced. That means a way back from intermediate to advanced aikido practitioners.

Tab. 3. Size effect. Bold numbers indicates when *small* or **medium** effect was found in Cohen's d

Dimension	Beginners- intermediate	Intermediate- advanced	Beginners- advanced
Positive reinterpretation and growth	0.00	0.58	0.45
Mentaldisengagement	0.20	0.20	0.02
Focus on and ventingofemotions	0.52	0.17	0.67

Use of instrumental social support	0.35	0.37	0.62
Activecoping	0.06	0.16	0.23
Denial	0.10	0.29	0.36
Religiouscoping	0.15	0.33	0.49
Humor	0.18	0.02	0.22
Behavioraldisengagement	0.47	0.10	0.42
Restraint	0.05	0.05	0.00
Use ofemotionalsocial support	0.34	0.44	0.68
Substance use	0.01	0.65	0.52
Acceptance	0.21	0.20	0.00
Suppressionofcompetingactivities	0.28	0.32	0.58
Planning	0.21	0.10	0.29

Discussion

Many researches dealing with coping in sportsmen cover coping strategies in acute stress in sport competition. Gould, Eklund and Jackson [1993] published an interesting article about coping strategies in Olympic wrestlers. They found for groups of strategies as (a) thoughtcontrolstrategies (blockingdistractions, perspectivetaking, positive thinking, copingthoughts, and prayer), (b) taskfocusstrategies (narrow, more immediatefocus, behavioralbasedstrategies concentrating on goals), (c) (changingor controlling theenvironment, following a set routine), and (d) emotional control strategies (arousal control, visualization).

The fact that many differences in coping strategies in aikido practitioners were not significant can be somehow surprising. 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. Similar results can be found also in martial arts from other cultures.

Forexample, taichichuanexercisemaylead to improvementsin well-being, especialyfroma psychological point ofview [Sandlund, Norlander 2000]. But similarly to ourfindings in aikido itis not clearwhatfactorcausedthe positive effect. Whether these positive effectsofmartialartsare duesolely to itsnon-agressivepurpose, orrelaxation and meditation component, or whether they are the consequence of various factors, since it is known that stress reductionoftenoccurswhenweindulge in activitieswefindpleasurable and satisfying. Our the results also show that aikido training supports the responsibility for ones coping with stress situations. On other hand, differences are not as 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 most of the dimensions. Significant differences (at p=0.5) were fond only in using of emotional support in the way

thatadvancedpractitioners do not use it as much as beginners, and in focus on and ventingemotions as advanced and intermediateaikidokas do not show theiremotions. Practical significance was also foudin variousotherdimensions, so we can state that aikido helps to build positive and activecopingstrategieswhich are a componentofvariousotherbenefits in biopsycho-socio-spiritual development.

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Evaluation of stress conditions in self-defence scenario training

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

Abstract

Aim. The article focuses on the evaluation of stress conditions in ascenario training during a self-defence course. According to Yerkes-Dodson law optimal task performance occurs at an intermediate level of <u>arousal</u>, with relatively poorer performance at both lower and higher arousal levels, leading to an inverted U relation between arousal and performance [Colman 2009].

Methods. The sample consisted of university students of a sport study programme. The 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 - 6 and 3 open questions. Descripted statistic methods were used for evaluation of data obtained by the scale. Open questions were analysed with the scientific software Atlast.ti.

Results. The subjects admitted they felt fear (M=2,4) and threat (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 the ST. The analysis showed stress conditions as rather under the sufficientlevel in this case. According to Yerkes-Dodson law the tested persons should be stressed more.

Discussion and conclusion. The stress condition setting was not precise in this case. Both for the training and evaluation purpose the level of stress should be higher. A better setting of stress conditions approaching or crossing the intermediate level of <u>arousal</u> according to Yerkes-Dodson lawis recommended.

Introduction

Combative systems could be divided into three groups according to their aims in the contemporary world. Probably the biggest one is the group of complex developing systems, which includes a huge number of traditional martial arts (usually non-competitive) such as aikido, kalaripayattu, xingyiquan etc. The second one is the group of competitive systems e.g. boxing, kendo, wrestling etc. Individual combative sports do not always fall neatly into a single category[Reguli 2004]. Some of these systems were developed as traditional martial arts in the past and the competitive variation came later (a typical example is judo, karate, tai chi chuan etc.). The third group is comprised of self-defencesystems. There is a strong connection between traditional martial arts and self-defence. However, we practice martial arts for different purposes these days (personality development), they have practical, utilitarian roots (an original cause for the creation of martial arts was need of fighting skills). The evolution and today's significance of traditional martial arts were well described by Cynarski [2009]. Focusing on personal protection there are many self-defence systems in use today. They were usually developed as eclectic systems based on today's tactical environment (e.g.FISFO, S.P.E.A.R., Kravmaga etc.). The use of progressive training methods in self-

defence was elaborated e.g. by Maczuga [2011]. Considering the difference between the traditional training on one side and a self-defence training on the other side, there is a contrast in using one very important factor – stress. While in traditional martial arts the biggest focus is brought on technical development and self-cultivation, in the self-defence training the technical level of fighting skills is important just on a reasonable level. In the real self-defence situation the reaction to stress, decision making process under stress conditions and ability to cope with physiological symptoms of stress are more important than the technical mastery. Our professional estimate of ratio between psychological and physical reaction on attack, which could probably lead to the successful behaviour in a self-defence situation corresponds to Pareto principle – 80% is affected by psychological processes, 20% depends on a physical (technical) reaction. Stress is the strongest factor when the health or life of the person attacked are endangered and could lead to errors or a total failure in a defensive action.

The article focuses on the evaluation of stress conditions in the scenario training during a selfdefence course. According to Yerkes-Dodson law an optimal task performance occurs at an intermediate level of arousal, with a relatively poorer performance at both lower and higher arousal levels, leading to an inverted U relation between arousal and performance [Colman 2009].The scenario training (ST) is one of the crucial parts of self-defence teaching. The aim of the study was to evaluate the level of acute stress, which was induced to probands participating in self-defence ST. There are more manners how to use ST and implement it into a self-defence training. ST could be considered both training and evaluation method. 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 the level crossing the intermediate level to provoke errors, which are basis for the ex-post evaluation and reflexion. The essential factor of ST is the presence of psychological stress and a dynamic environment.

Methods

Data from one semester self-defence class for university students wasanalysed with both quantitative and qualitative methods. For data gathering a questionnaire with 19 closed questions was appliedusing (answering on a 7 grade scale) and 3 open questions. Basic descriptive statistical methods were used for the quantitative analysis, standardized software Atlas.ti was used for the qualitative analysis of open questions.The tool was elaborated specifically for the group of non-experienced participants, where psychological reaction and physiological symptoms of stress were evaluated. Open questions were used for ex-post evaluation of scenario training by participants.

Tested persons	Number
Males	18
Females	23
Total number	41

 Table 1. Sample of tested persons

The sample consisted of university students of sports study programme. The total number of probands n=41, males n=18, females n=23. All tested persons were without previous experience with self-defence training.

Non-standardised questionnaire was used for the analysis purpose. The tool consisted of 19 closed questions with scale 0 - 6 and 3 open questions.

Grade of the scale	Delineation of the grade
0	absolutely not
1	a little
2	rather less
3	medium
4	rather more
5	very
6	absolutely

Table 2. Evaluation scale and its description

The tested persons were educated during one semester self-defence class which consisted of 12 lessons. The training included all basic aspects of personal self-defence as handling with verbal attack, managing the correct distance, body language, physical skills for defence, escaping strategies etc. The conflict cycle and its three phases (pre-conflict, conflict, post-conflict) were set as a basic scheme for a personal protection strategy. After the whole course students were involved in the last test lesson, which included ST and filling the questionnaire. The tested persons were exposed during a scenario training to both verbal and physical attack by a figurant (an attacker) covered with a mask. The role of the figurant was to induce stress conditions in a dynamic environment, which means to attack the person, take control of the situation and defeat the tested person physically.

Results

The quantitative analysis focused on tested persons answers on 19 closed questions. Using the 7 grade scale students expressed their psychological and physiological reaction on stress conditions during ST. In Table 1 data from all tested persons is displayed.

Variable	Ν	Mean	Median	SD	CV
	valid				
1.Did you feel fear?	41	2,4	2,0	1,2	51,1
2. Did you feel tremor?	41	2,0	2,0	1,4	68,0

Table 3. Evaluation of scenario training by all tested persons

3. Did you sweat?	40	2,1	2,0	1,5	73,2
4. Did you have control over the situation?	41	2,8	3,0	1,4	49,3
5. Did you know how you were supposed to act?	41	3,3	3,0	1,3	39,7
6. Was it easy to resist physical attack?	41	2,8	3,0	1,3	47,9
7. Did you feel defenceless?	40	2,2	2,0	1,5	66,8
8.Didyoupanick?	40	1,6	1,0	1,4	89,3
9. Did you feel physical tremor?	41	2,5	2,0	1,3	49,9
10. Did you feel palpitation?	40	3,1	3,0	1,6	51,9
11. Did you feel endangered?	41	3,1	3,0	1,3	39,9
12. Were you frightened during the assault?	41	2,2	2,0	1,5	66,5
13. Did you feel safe?	41	2,6	3,0	1,4	55,9
14. Were you overcome by aggressiveness?	40	2,4	2,0	1,7	72,3
15. Were you overcome by powerlessness?	41	1,4	1,0	1,2	86,6
16. Were you afraid?	41	2,6	2,0	1,3	51,7
17. Did you control your behaviour?	41	3,5	4,0	1,	35,8
18. Were you surprised by your reaction on assault?	41	2,1	2,0	1,6	75,2
19. Did you feel tremor and palpitation after finishing the scenario training?	40	3,2	3,5	1,5	47,0

Most important data for evaluation of stress conditions is the answers to the questions 1, 11, 16. Although students admitted, they felt endangered on the medium level (Q11: M=3,1), the answers on another two questions showed they were rather less afraid and felt fear (Q1: M=2,4; Q16: M=2,6). Both values show that the feeling of fear was under the medium level.

Questions 2, 3, 9, 10. evaluated physiological symptoms of stress described in literature [Křivohlavý 1994]. Also these answersshowed rather lower values (Q2: M=2,0; Q3: M=2,1; Q9: M=2,5) just answers to the question concerning palpitation reached medium level (Q10: M=3,1). The students stated, they felt tremor and palpitation also after finishing ST (Q19: M=3,2).

With questions 4, 5, 17 we obtained the data about rational behaviour and control of tested persons during ST. The students stated they were able to control their behaviour on the medium level (Q4: M=2,8; Q5: M=3,3; Q17: M=3,5).

With questions 7, 8, 14, 15 we obtained the data about irrational behaviour and loss of control. We can see very low values in the whole cluster of questions (Q7: M=2,2;Q8: M=1,6;Q14: M=2,4;Q15: M=1,4).

Questions 12, 18 focused on the surprise of the situation and the students' reaction. We can consider that the situation was not very surprising as values were rather low (Q12: M=2,2; Q18: M=2,1).

Finally, question 6 gathered data about demandingness of defensive action against assault. The tested persons stated that to resist physical attack demanded less then medium level (Q6: M=2,8).

In next tables data divided by sex of the tested personsis displayed (Table 4: Males, Table 5: Females).

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Variable	N	Mean	Media	SD	CV
	valid		n		
1.Did you feel fear?	18	2,2	2,0	1,4	63,8
2. Did you feel tremor?	18	1,4	1,5	0,9	70,5
3. Did you sweat?	18	2,0	2,0	1,7	80,4
4. Did you have control over the situation?	18	2,8	3,0	1,4	47,1
5. Did you know how are you supposed to act?	18	3,6	3,5	1,3	37,6
6. Was it easy to resist physical attack?	18	3,2	3,0	0,9	29,2
7. Did you feel defenceless?	17	1,7	1,0	1,3	76,9
8. Did you panicked?	17	1,1	1,0	1,2	113,1
9. Did you feel physical tremor?	18	2,9	3,0	1,4	48,7
10. Did you feel palpitation?	17	3,7	4,0	1,7	46,4
11. Did you feel endangered?	18	3,1	3,0	1,3	42,7
12. Were you frightened during the assault?	18	2,1	2,0	1,5	75,5
13. Did you feel safe?	18	2,4	2,5	0,9	40,2
14. Were you overcome by aggressiveness?	17	2,9	4,0	2,0	69,5
15. Were you overcome by powerlessness?	18	1,1	1,0	1,1	101,8
16. Were you afraid?	18	2,2	2,0	1,3	61,8
17. Did you control your behaviour?	18	3,7	4,0	1,3	35,1
18. Were you surprised by your reaction on assault?	18	2,1	2,0	1,7	81,1
19. Did you feel tremor and palpitation after finishing scenario training?	18	3,7	4,0	1,4	38,5

Table 4. Evaluation of scenario training by males

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Table 5. Evaluation of scenario training by females

Variable	Ν	Mean	Median	SD	CV
	valid				
1.Did you feel fear?	23	2,6	3,0	1,1	42,1
2. Did you feel tremor?	23	2,5	2,0	1,4	58,2
3. Did you sweat?	22	2,1	2,0	1,4	69,1
4. Did you have control over the situation?	23	2,8	3,0	1,4	51,9
5. Did you know how are you supposed to act?	23	3,1	3,0	1,3	41,3
6. Was it easy to resist physical attack?	23	2,5	2,0	1,6	61,9
7. Did you feel defenceless?	23	2,6	3,0	1,5	58,6
8. Did you panicked?	23	2,0	2,0	1,5	73,8
9. Did you feel physical tremor?	23	2,2	2,0	1,0	47,0
10. Did you feel palpitation?	23	2,6	3,0	1,4	52,6
11. Did you feel endangered?	23	3,2	4,0	1,2	38,6
12. Were you frightened during the assault?	23	2,3	2,0	1,4	61,1
13. Did you feel safe?	23	2,6	3,0	1,7	64,9
14. Were you overcome by aggressiveness?	23	2,0	1,0	1,4	69,9
15. Were you overcome by powerlessness?	23	1,7	2,0	1,3	76,3
16. Were you afraid?	23	2,9	3,0	1,3	43,7
17. Did you control your behaviour?	23	3,4	3,0	1,3	37,1
18. Were you surprised by your reaction on assault?	23	2,1	2,0	1,5	72,1
19. Did you feel tremor and palpitation after finishing scenario training?	22	2,8	3,0	1,5	53,2

Based on descriptive statistics we cannot consider any significant differences between males and females.

The qualitative part of analysis focused on the evaluation of three open questions:

- A. What was surprising for you?
- B. What kind of emotions caused yelling and verbal attack of assailant?
- C. Please evaluate your reaction and behaviour during the attack. Would you change something in the future?

For many students it was surprising that the figurant was not very aggressive at the beginning of ST. They expected more straight away assault. They admitted that in the real situation exactly this course has to be expected (a verbal attack before the physical attack). In that way ST was well structured. On the other hand, some tested persons said that the next aggression was too low. They expected a more violent situation. Although the use of force was not for all students so challenging lots of them were surprised by attack from behind. For these persons ST was good experience from the tactical point of view. As sportsmen they are used to challenging other people and competing with them. Maybe that is the reason why they expected unbiased fight with sports rules and typical street ambush was very surprising for them.

Common impression of yelling is noticeable in the tested persons' answers to the second open question, which is nervousness, anxiety and insecurity. The verbal attack was very disagreeable for students, they were not sure how to react to it. For some people yellingwas irritating and increased their aggressiveness. Although the verbal attack was for most students awkward, they were glad to solve such a situation instead of physical violence. On the other hand the verbal attack was for them a signal that physical attack could occur.

Finally, the last question focused on the overall evaluation of the tested persons' behaviour and their insight into a possible future self-defence situation. Almost all students took lessons from ST. Many of them realized what kind of errors they did, such as wrong distancing and not sufficient communication in the pre-conflict phase, low agility and the wrong choice of technical means in the conflict phase or not adequate effort to escape. Some students admitted they would react almost in the same way because their reaction was more instinctive than rational, they were not able to recall some technical skills for active defence. This means that students need more training to obtain more automatic skills.

Discussion

However, there are big differences between individuals and the average values were rather low. In majority, the monitored factors values did not cross intermediate level according to the Yerkes-Dodson law. Qualitative analysis showed more details why the tested persons were not sufficiently under stress. Some tested persons admittedthat they expected a more violent situation. One possible explanation is that no protective equipment was in use duringST and the figurant was trying to avoid maximal use of force. The observation in-vivo also showed one important factor, which can influence stress conditions. The space used for organisation of ST was too large. It was a combative gym with tatami wherethere was enough space to avoid the attack. The tested persons felt very free in their movement with many possibilities how to solve the situation.

Conclusion

On the basis of the gathered data we can confirm that the tested persons were somehow stressed during ST, they felt fear and they felt endangered. The tested persons admitted they felt fear (M=2,4) and threat (M=3,1), they were afraid (M=2,6). 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 the ST (M=3,2).

Probands were in certain stress conditions during the ST, but considering Yerkes-Dodson law stress conditions setting was not precise in this particular ST. The stress was lower than it should be. UsingST as a training method, theoptimal level of arousal should be set on the intermediate level to arouse optimal performance. For the test purposes stress should be set on the high or maximum level to provoke errors and to test psychological stability in stress conditions. Most values in evaluation were under intermediate level. Both for the training and evaluation purposes the level of stress should be set higher.

There are a few reasons why ST was not so stressful as it should be. One of them is to enlarge space in the gym used for the organisation of ST. The subjects felt very free in their movement with many possibilities how to solve the situation. Another reason is the experience of probands with sports stress conditions. As active players they were used to some stress level and they felt quite comfortable in the physical fight. Also the absence of protective tools could causea lower level of force used for attacking the tested persons, which was not so stressful as they expected. The analysis showed that stress conditions were under a sufficientlevel in this particular case ofST use. According to Yerkes-Dodson law the tested persons should be stressed more. That is why a better setting of stress conditions crossing the intermediate level of arousal according to Yerkes-Dodson lawis recommended for the next self-defence training.

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Movement asymmetry and symmetry in technical and tactical preparation on example of advanced and world elite judoists⁵⁵

Key words: movement symmetry, technical preparation, tactical preparation, judokas, different level of mastership, world elite

Abstract

The equalizing level of judokas preparation and more tough international competition force 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, yet. *Is this possible? Can movement symmetry be a component of comprehensivity in judo?* I will try to answer these questions in the paper. The objective was to determine the appearance of movement symmetry, its extent and importance for sport successes by judokas. Methods and material: General physical fitness tests, interviews, observations. 136 advanced judokas were tested (male and female), mainly juniors (finalists of the Polish Youth Games, reserve of the Polish Junior National Team). The results were given on the background of literature data for 959 judokas from various countries.

Results. Judokas preparation in Japan has been based on cultivating balance between both hands. Training of Polish judokas gives to the right upper extremity to which other movements (e.g. throws to the left) are subordinated. This reduces technical and tactical possibilities, seemingly lowering chances for success. Some Polish judokas have received versatile, including movement symmetry, training. That was their own initiative, and not quite common. The investigation of the large judokas group has shown domination of right-side body activity, especially in young judokas (three-fold in juniors). Over 20% of leading judokas 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 judokas have had higher successes when using right and left throws. This points to the increasing importance of motor versatility at the highest level of sports mastery.

Introduction

There are numerous facts indicating that the dynamic development of competitive sport is coming to an end. If further progress is to be achieved, new reserves should be utilized. The greatest hope lies in the methodology of teaching and improving the technique. One of the reserves that could be used in sport is movements symmetrization understood as the process of equalizing the fitness of both body sides while preserving the dominant one. In

⁵⁵ Symmetry of movements - the symmetrizing effect - equal or similar efficiency of both sides of the body. Symmetrizing of movements - the process of equalizing skills to perform exercises (technique) by the left and right side of the body.

a wider perspective, this movements symmetrization is concerned with the upper and lower limbs and the movements of the whole body with turns (ambidexterity, bidirectionality, double-leggedness). This way of human movement development was rarely adopted, especially, in competitive sport. However, everyone, irrespective of age, follows this process to a lesser or greater extent both in every day and professional life as well as in a form of physical activity pursued in sport, recreation and rehabilitation. Movements symmetrization is most often undertaken by left-handed individuals who want to adapt to the majority of the society, namely to the right-handed.

Judokas preparation in Japan has been based on cultivating balance between both hands. Training of Polish judokas gives to the right upper extremity to which other movements (e.g. throws to the left) are subordinated. This reduces technical and tactical possibilities, seemingly lowering chances for success. Some Polish judokas have received versatile, including movement symmetry, training. That was their own initiative, and not quite common.

The more and more equal level of preparation of judokas and the increasing international competition force to continuous seeking of hidden reserves. The limits attained in biological restitution and fitness preparation direct attention of researchers and coaches to the technical and tactical issues. Some of these achievements are already being successfully implemented by certain coaches and judokas movement symmetry (e.g. equal ability to perform left and right hand throws) is still not uses to full advantage. Preparatory work of Polish judokas rarely includes the stage of technique symmetrizing, i.e. using it as a tactical component. Some wonder whether this is possible at all.

Not only coaches have their doubts concerning symmetrization. The pertinent questions to ask in this respect are: *is symmetry of movements indispensable in versatile preparation of the judokas? Should symmetry of movements be employed in technical preparation, only? How should the balance between symmetrical and asymmetrical preparation work lock like? Are these proportions invariant at the various training stages of judokas? Does symmetrization of movement find an equally important place within the technical preparation model in other countries?*

No conclusive answers have been given, as et, to these questions. Only single research work on this topic are available [Drabik *et al.* 1978; Drabik, Jaremczak 1978; Drabik *et al.* 1981; Drabik, Adam 1983; Lehmann, Muller-Deck 1987; Naumenko, Starosta 1991; Sikorski 1991; Starosta 1975, 1984, 1986, 1988, 1990, 1990a, 1991, 2001, 2003, 2008]. The aims of this work was to: 1. Summarize the research into this topic carried out, up till now, in Poland. 2. Define the extent of movement symmetrization applied in technical preparation of judokas. 3. Explain its importance for their success in sport. It is hoped that this work will point to methods more efficient in symmetrizing technique of judokas.

Material and methods

The research was carried out with 136 judokas (86.8% male) at various advancement stages, from the golden youth class to the international master class. **Leading world judokas were included, too.** Judokas as all training stages were covered by the research, including the cadets (finalists of the Polish National Youth Games), juniors (National Team and its direct reserves), seniors (Polish National Team). The results were supplemented with the research completed together with other authors [Drabik *et al.* 1978, 1981; Starosta 1984], and the data from other works [Drabik *et al.* 1978; Drabik, Jaremczak 1978; Lechmann, Muller-Deck

1987; Sikorski 1991]. A total of 959 judokas were reviewed from other countries, mainly highly advanced (78.9%). **In all 1095 judokas were verified.**

The following methods were employed: set of 7 fitness and coordination tests (n=21), interviews with self-evaluation of movement abilities with consideration of movement symmetry (n=136), observations during competitions (n=938). The observations were carried out during a national level junior classification tournament (n=181), Championship of Poland (n=133), the international tournament in Gdańsk (n=101), Student World Championship (n=106), All-Union National Games of the USRR (n=228), Olympic Games of 1980 (n=182). The work was carried out in the period of 10 years (1977-1987). Arithmetic mean, standard deviation and significance of differences were used as the statistical tools of assessment.

Results

1. Symmetry or asymmetry in fitness preparation of judokas?

The answer to this question was sought in tests carried out in advanced judokas, who performed a set of 7 fitness and coordination tests. These considered the traits necessary for judokas i.e. balance, strength, jumping ability, flexibility, global movement coordination, static and dynamic force of legs (tab. 1). Each test was carried out with stress put on symmetry. Results showed that differences existed between efficiency of body sides, but their extent was dependent on the judokas sports level. The differences were most pronounced (and significant) in the balance test (running with jumps on one leg on an up-side-down bench), flexibility (trunk rotation), global movement coordination test (maximum rotation in vertical jump), and seen least in the strength (speed tests) leg muscle strength, jumping ability, multiple single - leg jumps, static strength - i.e. thrust - of hand muscles). This enables to draw a conclusion that equal efficiency is easier to achieve in tests during which force dominates, and more difficult in tests composed of several abilities, with coordination playing an important role.

The pool research was directed to determine what kind of physical fitness is preferred in preparation of judokas and whether this also involves symmetry. Fitness and especially movement coordination abilities is the basis for technical preparation. If that stage is asymmetrical, it will be more difficult to implement symmetry structure of specialized exercises comprising the judo fight technique.

2. Symmetry or asymmetry of technical preparation (throws) of judokas are different sports level?

The kind of preparation was defined for two situations: during training and during competition. I assumed that during the training cycle better movement symmetry could be expected, since no risk of defeat was involved. The interview method was employed to 136 judokas of different level. All were asked 8 questions on their assessment of asymmetry of lower and upper extremities and of the whole body (Fig. 1). According to their individual assessment, the right side of the body was the stronger and more precise one (77.2-93.4%). Higher domination was stated for the upper extremity. The answer for whole body movement was, however, the opposite. Here, counter-clockwise rotation dominated in throws and expectations of judokas as to value of maximum rotation during an upwards jump (only 36.0% of these expectations became true).

Throws in judo are the most important technical component of the fight. Therefore, the information of the judokas themselves, stating **that 64.4% preferred throws to the left**, and only 34.6% to the right, required verification ⁵⁶.

We wanted to improve the qualitative self - evaluation of the ability to make throws in the other direction. Thus, a supplementary interview was carried out with 63 judokas (Fig.2), 71.4% of them stated their ability to make throws in the other direction, but only 65,1% judokas made a qualitative assessment. That element was carried out well and averagely well by 31.1%, while only 6.3% performed the throws equally well to both sides. All other results were below the average level. It is difficult to conclude whether this assessment was exaggerated or not.

A more objective answer to the question whether symmetry or asymmetry dominates in technical preparation of judokas was sought in observation of judokas during competition. Such observations have been made by J. Drabik et al. during the national level junior classification tournament. A total of 181 judokas were observed. It was concluded that right-side activities dominated by almost 3 to 1 (i.e. domination of the right hand and counter-clockwise rotation). Observations confirmed responses to interviews, i.e. domination of movement asymmetry in the (fitness and technical) training programs of Polish judokas.

3. Symmetry of movements - an element of tactics in judo?

Earlier works in judo [Drabik *et al.* 1978; Drabik, Jaremczak 1978; Drabik *et al.* 1981; Drabik, Adams 1983; Lechmann, Muller-Deck 1987; Naumienko, Starosta 1991; Sikorski 1991; Starosta 1990, 2001, 2003, 2008] **suggested that judokas having symmetrical technical preparation have a higher change of winning.** Investigations conducted on juniors [Drabik *et al.* 1978] supported the following: **of the 7 symmetrically prepared judokas, 4 won medals.** Now, support for this tendency was sought in the highest level competitions. J. Drabik and M. Adam [1983] observed 750 participants in important, mainly international competitions: i.e. Championship of Poland, All-Union National Games in the USRR), Students World Championship, Olympic Games.

A more objective answer to the question whether symmetry or asymmetry dominates in technical preparation of judokas was sought in observation of judokas during competitions. Such observations have been made by Drabik, at all during the national level junior classification competitions. A total 181 judokas were observed. It was concluded that right-side activities dominated by almost 3 to 1 (i.e. domination of the right hand and counter-clockwise rotation). Observations confirmed responses to interviews, i.e. domination of movement asymmetry in fitness and technical training programs of Polish judokas.

Table 2 and Figure 3 show that the Student World Championship was to the highest extent dominated by judokas making right and left hand throws, with the Championship of Poland at the other end of the scale. Technically versatile judokas (i.e. symmetrically prepared) were 15.7 to 34.9% of the total number of athletes, and 4-6 of them won golden medals. This was 50 to 75% of the golden medals available. If the champions are to be an example for others, then asymmetrically prepared judokas should be considered as such.

For example, during the All-Union National Games of the USRR symmetrical throws were made by 157 judokas (20.9%), and 17.3% ended below the first seven, 25.4% took

 $^{^{56}}$ Note: in judo, analysis of throws takes as the basis not the body rotation direction, but the leading hand. Thus, the left throws are lead by the right hand, and judo terminology calls such throws - right hand throws. This was accounted for in analyzis of the results.

places from 5 to 7, and 57.3% won medals. 71,4% of the gold medal winners were symmetrically prepared. Also the open category was dominated by judokas making throws in both directions (e.g. A. Parisi, Solodukhin, J. Pawłowski). Several such prepared judokas in different weight categories took lower places when relying on asymmetric throws (Table 3), while attaining more success in the same or other competitions when throw asymmetry was applied as a tactical component. J. Pawłowski, the bronze Olympic medal winner in 1980 and vice-Olympic champion in 1988 is also an example of a judokas using throw symmetry successfully as an element of tactics. This excellent judoka has introduced throw symmetry himself, already in 1976, when he was a junior. He states that it was just this technical element and tactical manoeuvre which gave him several successes initially in Poland, and later in international competitions, including Olympic Games (two medals). He is convinced that his efficiency would be much lower without this symmetry component [1988].

Summary – Discussion

Own research and data provided in other works suggest that symmetrization, i.e. equalizing left and right hand exercise ability, is one of the important components in improving sport technique. It is also one of the decisive components in improving movement coordination. Thus, maintaining asymmetry of movements will lower the coordination level and defer from full implementation of the judokas abilities. Also, the investigation of functional asymmetry may be indirectly used for following up the changes in the coordination level.

At the same time, it should be borne in mind that not everything in movement symmetry is explicit during judokas observation in contests. Under a stress, they rely on their movement mastery, performing asymmetrical movements. Thus, an erroneous conclusion might be drawn that the judokas manifesting asymmetry has been asymmetrically prepared. Sometimes, this symmetry level is so low (initial symmetrizing stage) that its presentation during contests would be risky.

In implementation of higher symmetrization efficiency in technical judokas training one should bear in mind the following conditioning elements: general physical fitness, i.e. efficiency symmetry, model of movement education employed at home, school and the club.

For example, judokas training in Japan was based on cultivating symmetry and equal abilities of the right and left hand. Polish judokas training prefers the upper right extremity to which other movements are subordinate, e.g. throws with counter-clockwise rotation. This limits the technical and tactical possibilities and seemingly reduces the chance of success. Some top Polish judokas have been trained versatility, including symmetrization (e.g. J. Pawłowski). This, however, was done on the initiative of the judokas themeselves, and the model had little popularity.

Conclusions:

- 1. Physical fitness and coordination test results in judokas show a differentiation in the body sides abilities in particular tests. This differentiation has been the highest in balance, flexibility and movement coordination tests and lowest in the force (speed type tests). It seems that attainment of similar efficiency in the latter group of tests is more easy.
- 2. Interviews carried out with advanced judokas to the right hand side of the body as the more strong and more precise one in 77.2 93.4% persons. The upper right extremity

is distinctly dominant. During body rotation movement the left side of the body dominated, i.e. in throws (64.7%). Self-evaluation of throw quality pointed to a small percentage of good execution (31.1%).

- 3. Observations of a large group of judokas showed dominance of right side activities, particularly in young judokas (three-fold in juniors).
- 4. Over 20% of top judokas performed both side throws. The group of these judokas increased in size with increase in the sport level (57.3% medalists and 71.4% of gold medal winners during competitions of different ranks, including Olympic Games). Symmetrically prepared judokas had higher successes when using right and left side throws. The increasing successes of symmetrically prepared judokas may point to be the increasing importance of movement versatility at the highest sport mastery level.
- 5. Recent cross-sectional study proved that 20% of judoist who were under symmetrization process during preparation for Olympic Games of 1980 won over 50% of medals, including 6 gold among 7 possible. Therefore, the symmetrization process is beneficial for sport performance, professional and everyday movements activity.

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Table 1.

Differentiation of the results for right and left side of the body by advanced judoists upon statistical analisis

n=21

[Drabik, Jaremczak, Starosta 1981]

							Kind	of mo	vement	tests					
Group of competitors (n)		Balance test (walking with jumps on one leg) [cm]		Leg strenght (n - one leg crouches)		Explosive leg strength (one leg standing jump) [cm]		Flexibility (amplitude of trunk body rotation) [°]		Movement coordination (Staroata's test) [⁰]		Strength speed test (multiple one leg jumps) [s]		Static hand strength (thrust) [kg]	
		Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right
	М	166,6	130,0	17,6	23,0	185,0	195,0	99,6	116,6	366,6	350,0	7,4	7,2	88,0	89,0
I-Dan	\$	25,3	40,8	5,77	11,3	50,1	7,0	8,57	9,59	11,7	16,3	0,54	0,14	15,5	14,9
(3)	8M	14,6	23,5	3,33	6,53	28,9	4,04	4,95	5,54	6,76	9,42	0,31	0,08	8,95	6,10
	D/md	1,07		0,60		0,27		1,86		1,16		0,51		0,06	
anossi -	М	137,80	165,7	18,3	17,0	194,9	187,8	105,2	99,5	325,7	312,1	7,3	7,5	98,6	98,2
II-lkyu	S	36,50	68,5	9,98	9,76	15,0	15,6	8,36	9,82	92,4	93,2	1,29	1,14	14,7	19,6
(14)	SM	9,75	18,3	2,66	2,60	4,01	4,17	2,23	2,62	24,7	24,9	0,34	0,30	3,93	5,24
1104952	D/md	1	,29	(),33	1	,18	1,	59		0,37	0,	43	(0,05
	М	182,5	165,0	12,7	13,2	197,5	197,5	97,2	99,2	360,0	373,7	6,9	6,5	102,1	106,1
III-2ky	u S	94,1	51,2	4,5	4,2	14,7	8,3	7,4	9,16	0	46,1	1,09	1,04	11,4	9,60
(4)	δM	47,0	25,6	2,25	2,20	7,35	4,15	3,70	4,58	0	23,0	0,54	0,52	5,7	4,80
0.0	D/md	0	.27	0),14	()	0,	28		0,50	0,	45	1	0.17
Fig.1.



SELECTED ELEMENTS OF FUNCTIONAL ASYMMETRY BY ADVANCED JUDO ATHLETES (WOMEN AND MEN) n=136 [STAROSTA 1990]

Fig.3. Quantity and quality relation of the both-side throws judokas to all participants of the different kind of international competitions (%) n = 750 [Drabik and Adam, 1983,modified by Starosta]



Selected elements of functional asymmetry by advances judo athletes /women and men / /% / n = 136



CAPACITY OF EXECUTING THROWS IN THE NO DOMINANT SIDE BY JUDOIST - JUNIORS AND SENIORS OF THE NATIONAL TEAM BY THEIR SELF-EVALUATION [STAROSTA 1990] n=63



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Table 2. Quantity and quality relation of the both-side throws judokas to all participants of the different kind of international competitions (%) n = 750

Kind of competitions	Number of participants	Percent of both- side throws judokas	Percent of medal winners executing both-side throws	Number of gold medal winners executing both-side throws	Number of analyzed weight categories
1. National Games USSR (1979)	228	20.9	71.0	5	7
2.Intern.Tournament Gdańsk (1980)	101	19.8	70.0	5	7
3. Olympic Games	182	19.7	52.7	6	7
4. Polish Championship (1980)	133	15.7	57.1	5	7
5. Students World Championship (1980)	106	34.9	37.8	4	7
Together (x)	750	(22.2)	(57.7)	(5)	(7)

[Drabik, Adam, 1983; modified by Starosta]

Table 3. Relation between the ranking (place) of world elite judokas in different kind of international competitions and applied technique of throws (one-sided or both-sided) n=7

No	Name	Effective attack one-sided		Effective attack both-sided		
	(Country)	Place	Kind of competition	Place	Kind of competition	
1	S. Khabareli (ex-USRR)	8	National Games USRR 1979	1	Olympic Games 1980	
2	L. Ferer (Cuba)	23-38	National Games USRR 1979	2	Olympic Games 1980	
3	Beridze (ex-USRR)	8	Students World Championship 1980	2	National Games USRR 1979	
4	T. Rey (France)	18-22	National Games USRR 1979	1	Olympic Games 1980	
5	Y. Delwingt (France)	5-6	Olympic Games 1980	2	National Games USRR 1979	
6	A. Parisi (France)	2 (cat. open)	Olympic Games 1980	1 (cat. +95)	Olympic Games 1980	
7	D. Lorenz (ex-DDR)	3 (cat. 95)	Olympic Games 1980	1 (cat. open)	Olympic Games 1980	

[Drabik and Adam, 1983 - modified by Starosta]

cat. - category

Fig. 1. Selected elements of functional asymmetry by advanced judo athletes (women and men) n=136 [Starosta 1990].

Fig. 2. Capacity of executing throws in the dominant side of the body judoists - junior and senior of the Polish national team by their self-evaluation [Starosta, 1990]

Fig. 3. Quantity and quality relation of the body-site throws judokas to all participants of the different kind of international competitions (%) n=750.

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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

Abstract

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.

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. 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. The HR was measured by the wrist blood pressure monitor KH8090 of BALANCE firm, UK.

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. 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. Girls and boys were analyzed separately.

Introduction

The development of aikido in Poland is inseparably connected with Szczecin. Just there in 1976 the first Aikido section is created and it has been existed up today. The founder of this section is Marian Osiński [Wysocki, Rovigatti 1990]. The practicing of aikido influenced advantageously on the motoric features and condition of exercising children [Pańczyszyn, Cynarski 2001]. In this report the martial art, aikido, as a form of shaping physical efficiency in children 9-11 y.o. is described. Aikido has beneficial influence on their psychophysical features.

In the result of physical effort the fatigue status appears. It is determined as a physiological status causing a decrease of capability to continue the physical work. The fatigue arises when the organ function needs more oxygen than it is possible to supply. In the case of increasing fatigue, no liquidated, without rest, it can get to overfatigue status [Jaskólski, Jaskólska 2005]. As a result of physical effort a number of changes of a complex character also arises, and connected with acid-base balance in blood, an energy substrate store, water conditions etc. The possibility to achieve greater deepness of fatigue, without overfatigue or overtraining effects a resultant of improvement performance skills and developmental effect of human being, if one look into the developmental period of a child. Performance determined as a skill to achieve a great fatigue - is simultaneously indicated by a skill to the effective recovery. Recovery is a situation during rest. It is simultaneously a process of restoring the resting

organism homeostasis, it means it is a process of organism regeneration. In a wider meaning it is a complex and active process causing the renewal of energy potential, restoring the function of all organs and systems. Resting processes are accompanied by the enhanced oxygen consumption. This idea is concerned directly to the organism status directly after the end of work (from a few to several dozen minutes), and a rate of rest is proportional to fatigue in a given moment. There are many determinants conditioning a character of resting processes [Suchanowski 2001]. It is due to mention: a type of physical exercise (training), e.g. strength, endurance, then load parameters as volume, frequency, time of duration, intensity, as well, as a level of exercise skill (sport condition), and also a character of rest after previous load, and at last genetic determinants, biological rhythm phase of organism internal processes, work environmentor work organization [Suchanowski 2001]. That's all can be used in aikido training and is applied to children, and children representing the early school stage in it.

The effectiveness of recovery is determined by taking under the consideration the heart rate values. One can calculate the recovery effectiveness coefficient - REC, and its evaluation allows matching up with adequate loads and planning resting intervals [Pytasz 1996].

The early school stage of a child happens on a period from 7 y.o. to the first symptoms of pubescence (about 12–14 y.o., in relation to gender). In this period one cannot observe the huge biological metamorphoses. On the contrary, this stage is characterized by the general development harmony. It is in some extent the preparation to entry in the next, very difficult period of pubescence, called puberty, as well. In the early school period (before puberty) one can distinguish two phases:

- the beginning of school learning, at the I–II class of preliminary school (without a regard to 0 class),

- the full adaptation to school conditions, at the stage of III class of preliminary school – the stage of "a perfect child".

Formerly the beginning of the school learning at the age of 7 y.o. is not accidental because more or less at this age a child achieves a specific self-immunity [Osiński 2003]. It allows in a few next year achieving so-called school maturity. It is manifested by an adequate level of mental, social, physical and biological development. In terms of physical and biological development – on the period of the first school years - there is a quite stabile phase making for the full developmental harmony. Below the most important aspects of this phase are mention [Osiński 1996]:

- a growth of skeleton and muscle system (from 12 y.o. muscle fibers grow thick quickly, and a number of cell nuclei decreases to the number similar as in adult individuals; muscles undergo an improvement manifesting by an increase of strength and by a decrease of time of a reaction),

- a change of silhouette picture in girls and boys (it manifests by a width growth in the hip region in girls, and in shoulder region in boys; chest also growths),

- an improvement of internal organs' work,

- a regulation of heart rate; it gets closer to the level of adult individuals,

- a becoming of blood chemical composition alike to a composition of adult individuals,

- a maturation of nervous centers in central nervous system,

- a sharpening of sense sensitivity to the level of adult individuals (it concerns mainly eyesight and hearing); in some cases a level of sensitivity of these senses prevails in relation to older individuals,

- a significant growth of immunity through the growth of lymphatic system.

Due to these general features as growth proportionality, a high degree of morphological features development, efficiency of functions and systems, sensitivity of senses, a general immunity, a good adaptation to environmental conditions, biological independence, a quite high level of mental development and motoric perfection the early school period one can include to the very harmonious stage in the process of ontogenesis [Denisiuk, Milicerowa 1969].

Long-term observations and numbers of studies [Rój *et al.* 1996; Kopański 1998; Urbańska 1999; Tylka 2002] show that children practicing regularly physical exercises at the stage of an early school age [Rzemieniuk 1996], when there are the best conditions to this activity, passes in consecutive period - puberty- much more changes, without intense leaps, disturbances and developmental disproportions.

Motoric development in the early school period brings also a differentiation between girls and boys. These differences manifest in the following way:

through the not equal in genders interest of the movement type and sport disciplines,

• through the unlike way for both genders of performing movements (in girls the superiority of gracefulness, and in boys the greater rhythmization).

According to many studies boys achieve the superiority in all observed efficiency features in the whole range of age 7–19 y.o. excluding flexibility. One has to underline yet that intergender differences are not so significant and they increase very rapidly only in older children, particularly after finishing 15 y.o. At that moment new transformations are marked, as well, but they concerns to the puberty stage, yet [Osiński 2003].

The character of aikido trainings is based on a learning program adapted to the chronological age and the level of students' advancement, and each coach has an obligation to obey its guidelines. In the chronological age range9-11 y.o. during the first years of learning one can propose to children various coordinative and agilitive exercises, e.g. games and plays (a relation of games and plays to the aikido training is 70-30% in this period). The aim of it is to make exercises more attractive, not to allow the loss of concentration, release the spirit of competition, teach the integration by help in interactions with different colleagues in the group. Aikido as a martial art is taught by necessary bases (falling down, rotations, moving along *tatami*, *dojo* culture, basis and simple techniques, not exposing to injury). These elements can be used in future to perform the adequate training without forgetting of the most important thing, it means safety during exercises. It is understandable that aikido is in compensative position to the all-round focused movement activity in initial years of learning.

Within passage of time (after about 2–3 years, but periods of time are always contractual and they are dependent on progress in in group) one can focus on the aikido training technic aspects (in this period the relation of all-round movement activity to the aikido training is 60-40%). Apart from that the requirements of the type and level of exercise performing are more excessive. It means that exercises are more physically intensive, and from the technic point of view are on the medium level. Over the years' time proportions between all-round movement activity and a martial art begin to be.

After more or less four years of training these proportions are changed to the advantage of technique training. The condition requirements after achieving top individual possibilities are decreased, hence RECincreases but in a smaller degree. The level achieved on this stage should be maintained to promote without obstacles in the age 14–15 y.o. to older groups and differentiated in chronological age.

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 the relation to training experience.

In introduced studies the following theses are put:

1. If the regular practicing of aikido has na influence to the recovery effectiveness in 9-11 y.o. children?

2. Are there significant differences in the recovery effectiveness after the aikido training between genders?

3. Are there significant differences in the recovery effectiveness after the aikido training in relation to the 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. The each child from S and control (C) groups declared also active participation in physical education lessons at school. To the C group 25 children were selected: 8 girls and 17 boys.

In regard to the training experience the division of participating subjects is as following:

- 32 children the two-year period of training experience,
- 27 children the three-year period of training experience,
- 41 children the four-year period of training experience.

The studied group (S)-is a collectivity of children of both genders in the chronological range 9–11 y.o. and:

a) declare the regular participation in school physical education exercises basic, full and unlimited range on by the teaching program at preliminary schools,

b) participate regularly in aikido exercises.

The control group (C)– is a collectivity of both genders in the chronological age 9-11 y.o. and:

a) declare the regular participation in school physical education exercises in basic, full and unlimited range envisaged by the teaching program at preliminary schools,

b) declare non participation in aikido exercises, and practicing any different forms of outschool physical activity.

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.

For statistical calculations t-Student test for uncorrelated groups was used to study the significance of differences between S and C groups, in consecutive months.

Results and discussion

According to research questions three theses are formulated.

Thesis 1: a regular practicing of aikido has an influence of the recovery effectiveness in 9-11 y.o. children.

Below there are introduced separate results of REC for each gender. At the tab. 1 medium values of recovery coefficient (REC) and significance of differences in studied girls from S and C groups in consecutive terms of physical exercises (May, September, February and July) are introduced, and at the tab. 2 - in boys, respectively. Tendencies of shaping percentage values of REC in consecutive months for girls are introduced at the fig. 1, and for boys – at the fig. 2.

Table 1. Medium values of a recovery coefficient (REC) and significance of differences in studied girls from S and C groups in consecutive terms of physical exercises; S group n=24; C group n=8

REC[%]	May		September		February		July	
	S group	C group	S group	C group	S group	C group	S group	C group
x	63.4	52.9	66.1	51.7	66.6	48.1	68.5	43.6
SD	17.3	21.4	13.7	13.8	13.2	12.5	13.4	16.5
min	40.2	17.7	34.4	32.4	42.2	33.3	39.5	19.2
max	95.8	87.5	94.1	68.4	97.9	67.4	98.3	63.8
t	1.402		2.561*		3.489*		4.299**	

* - a statistically significant difference (p≤0.05)

** - a highly statistically significant difference (p≤0.01)



Fig. 1. Changes of a recovery coefficient (REC) during four terms of physical exercises in girls from S and C groups

Table 2. Medium values of a recovery coefficient (REC) and significance of differences in studied boys from S and C groups in consecutive terms of physical exercises; S group n=76; C group n=17

REC	May		September		February		July	
[%]	S group	C group	S group	C group	S group	C group	S group	C group
x	63.7	66.0	65.9	60.3	72.1	61.5	80.2	59.2
SD	24.6	16.2	21.7	17.4	18.1	15.9	21.4	13.6
min	11.1	28.6	23.9	21.1	28.6	24.3	43.6	31.7
max	123.8	90.9	114.3	86.4	110.5	86.7	143.5	74.6
t	0.379	·	1.005	·	2.228*		3.877**	

* - a statistically significant difference (p≤0.05)

** - a highly statistically significant difference ($p \le 0.01$)



Fig. 2. Changes of a recovery coefficient (REC) during four terms of physical exercises in boys from S and C groups

One can consider that it is a strong relationship between recovery effectiveness and a regular practicing of aikido. It is clearly visible the differences between children practicing and not practicing sport, as a recreation (practicing aikido), and in the outschool dimension (differences between S and C groups).Percentage values of these differences for concecutive months are introduced at the fig. 3.

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 boys from the S group (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.



Fig. 3. Differences in percentage values of REC between S and C groups in consecutive months

The second thesis is formulated taking under the consideration gender differences in REC values.

Thesis 2: There are significant differences in recovery effectiveness after aikido training between genders.

At the tab. 3 the comparison of percentage values of REC in consecutive is introduced.

Table 3. The comparison of REC percentage values in consecutive months in girls and boys practicing aikido

REC value [%]	girls	boys
May	63.4	63.7
September	66.1	65.9
February	66.6	72.1
July	68.5	80.2

The comparison of REC percentage values for both genders confirm above thesis. Initially the recovery effectiveness between girls and boys practicing aikido is on an equal level (May and September). The situation is changed in the next two months (February and July) distinctly for the boys benefit. They achieve a level over 80% of REC, and it is very good result. Girls in studies do not cross the level of 70% of REC, and for this gender it is also a good result.

Thesis3: There are significant differences in the recovery effectiveness after the aikido training in relation to the training experience.

At the fig. 4 changes in REC during four terms of physical exercises in consecutive months in children from S group are introduced, regarding the training experience.



Fig. 4. Changes in REC during four terms of physical exercises in consecutive months in children from S group are introduced, regarding the training experience

The highest index of recovery coefficient show children after three finished years of regular training, in the fourth year of training. Children after two or four years of training show quite close increase of recovery effectiveness, with the superiority of the group with the four-year experience. Differences of REC percentage values between groups in consecutive terms of physical exercises are not statistically significant. The highest increase of REC in the each term the group of children with the three-year experience in the aikido training achieve, in the increasing linear trend with the maximum in the last month of the physical exercise term. At the second place the four-year experience in the aikido training children's group is, also with the increasing linear trend and the maximum in the last month of the physical exercise term. At the third place the children's group with two-year experience in the aikido training is, also duplicate a pattern of the increasing linear trend and the maximum in the last month of the physical exercise term.

The above compliance of trends and values of parameters allows concluding that the highest recovery effectiveness at the range of chronological age 9-11 y.o. one can achieve in the fourth year of training, after summer camp, and after the full three years of regular participating in aikido exercises. To find the answer to question why this regularity appears one can take under the consideration two aspects changing during the training: endurance of children's organism and a character of this training. According to endurance within passage of time, due to the aikido training, just endurance, flexibility etc. are shaped, it means the general level of physical performance. These features are developed only during regular physical training. Children train shorter need more time to achieve better physical capacity. This physical capacity is necessary for them later on to face up to more requiring endurance forms of training in adult groups. After that coaches always are required to teach good habits, and what is more difficult – to eliminate bad habits limiting psychophysical development of children, e.g. non proper posture during walking, sitting, inappropriate breathing etc.

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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