ORIGINAL ARTICLE

Comparison of aggressiveness levels in combat sports and martial arts male athletes to non-practising peers

Authors' Contribution:
A Study Design
B Data Collection
C Statistical Analysis
D Manuscript Preparation
E Funds Collection

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Source of support: Departmental sources

Received: 15 May 2012; **Accepted:** 10 June 2014; **Published online:** 20 October 2014

ICID: 1127411

Abstract

Background & Study Aim: Combat sports and martial arts are very popular among young people and adults. Some researchers indicate numerous advantages that come from training, including reduced level of aggressiveness or improved emotional self-control. Other authors present disparate results. The aim of this study was the level of aggressiveness among people practising combat sports and martial arts, compared to their peers, who are not involved in training.

Material & Methods: The research involved 150 males (for 50 participants from each type of the training) practising capoeira, boxing and ju-jitsu. Moreover, a group of 150 non-practising secondary school and university students with the Physical Education major was also examined. In the research, the aggression questionnaire by A.H. Buss, M. Perry was used. Results: Achieved results show differences in aggressiveness levels among the group involved in training. The highest aggressiveness level was recorded in the group practising boxing, whereas the lowest was observed in the group of ju-jitsu athletes. The generation of contemporary Polish boxers is characterized by higher level of the aggressiveness than the earlier generation. The highest level of aggressiveness was expressed in the form of verbal aggression. The overall aggressiveness result should be considered as the most significant one and its highest level was recorded in the control group.

Conclusions: Combat sports and martial arts training gives the possibility to diffuse emotions and relieve tension, which may result in decreasing the level of aggressiveness. Research participants of the control group, being deprived of such possibility, were characterized by the highest aggressiveness level among the researched groups. The aggressiveness level can be conditioned by the specificity of the training, but first of all by the coach qualifications.

Key words: aggressiveness • anger • athletic training • emotion regulation • hostility

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Introduction

Aggression – is defined as behaviour aimed at causing harm or pain, psychological harm, or personal injury or physical distraction.

Verbal aggression – is message behaviour which attacks a person's self-concept in order to deliver psychological pain.

Physical aggression – a forceful action or procedure (as an unprovoked attack) that is hostile, destructive, or violent, and has the potential to inflict injury or damage to the target person or object, especially when intended to dominate or master.

Anger – is an emotional state characterized by antagonism toward someone or something you feel has deliberately done you wrong that varies in intensity from mild irritation to intense fury and rage.

Hostility – is a strong impulse inspired by feelings of anger or resentment that cause intentional harm of injury to another person or object.

Aggressiveness – a human characteristic manifesting itself in inclinations to hurt others, to destructive behaviour. Aggressive = virulent, truculent, attacking [1]

Practicing various types of combat sports and martial arts causes controversy related to the effects of training. Due to the great interest in such forms of physical activity, more and more often they become the subject of research studies in the context of their social influence and aggressiveness level among adolescents [2]. Martial arts, having origin in the centuries-old traditions, are commonly considered as a medium that promotes desirable values functioning in Asian cultures as a method of bringing up young people. Despite the health benefits, they also served as moral education standards, decreasing levels of social brutality, at the same time being a source of self-satisfaction [3-9]. Herrigel [10] emphasizes that combat systems were established not exclusively for military purposes, but primarily for mental development. By describing the benefits of such activities the author mentions: the ability to prevent aggression, the ability of emotional self-control and the ability to remain calm in an emergency. Because of their numerous advantages, martial arts have been included to Physical Education curriculum in schools. According to researchers of the European Physical Education Association (EUPEA), this particular form of physical activity brings many benefits [11]. The specificity of adolescence and numerous educational problems emerging in this period, prompt teachers, educators and social workers to search for effective methods of working with difficult and depraved adolescents.

Combat exercises turned to be one of the effective resocialization methods for reducing aggression and aggressiveness [12-18]. Despite numerous followers of the combat sports and martial arts, many critical opinions can also be found. Research studies conducted in Norway have shown that practising combat sports leads to an increase in anti-social behaviour [19]. It is considered that taking up boxing under the age of 16 should be, due medical, philosophical and ethical reasons, forbidden [20]. Researchers, involved in the subject, believe that negative perception of the analysed disciplines is promoted by the media. For commercial purposes, media brutalize the image of combat sports and martial arts; by losing touch with the traditional assumptions of philosophical, religious and ethical background they create misleading stereotypes. Physical force and violence are continuously endorsed in mass culture. Also, aggressive behaviour is rewarded by the audiences and frequently it becomes the follow-up model for children and adolescents [5,21]. Lu [5] claims that brutalization of martial arts is largely due to the lack of knowledge and understanding of the principles that stand behind these disciplines. The author deems that showbiz promoting actions, during which martial arts are identified as fighting and violence, are extremely harmful.

Taking into consideration the dual nature of social perception of combat sports and martial arts, this research was undertaken, which aim was the level of aggressiveness among people practising combat sports and martial arts, compared to their peers, who are not involved in training.

The following research questions were asked:

Does practising combat sports and martial arts influence the change in aggressiveness levels among athletes, depending on the chosen combat sport discipline?

Does the type of training and fight influence significantly the level of aggressiveness among people involved in training?

Does of the analysed types of aggression is predominant within the researched groups?

Does significant differences in the level of aggressiveness recorded between athletes practising combat sports and martial arts and their non-training peers?

Material and Methods

The research involved 150 males (50 from each type of training) attending three institutions: Capoeira Academy in Opole, 'Junior Boks Poznań' Boxing School – Branch in Opole and Kobudo Kenkyukai Centre in Opole (ju-jitsu athletes). The diversity in combat kind selected for the research was driven by the nature of the training, therefore it was decided that the research study will cover three distinct combat kind that differentiate training goals. It is believed that athletes training in contact sports are characterized by higher aggression level than those who practise non-contact disciplines [5, 22]. Surveys conducted before the research showed different motivators within the respondent groups. The main goal of the male athletes from the boxing group is sport competition and their training focuses on participation in sport competitions. The third researched group was represented by male capoeira athletes. The style is characterized by gentleness, a substantial amount of acrobatic exercises and the use of elements of music and dance in the training. The main aim of this group was to build high levels of shape body and physical fitness. The training was perceived as a form of spending free time for the benefit of health.

Respondents were in the age group 17-23 years, with 3-5 years of training experience. For comparison, a non-practising group of 150 students from secondary schools and universities with the major in Faculty of Physical Education was also analysed. Diagnostic survey method was applied in the study using the aggression questionnaire by A.H. Buss and M. Perry [23]. It consisted of 29 questions designed to measure the tendency for aggressive behaviours, such as physical aggression, verbal aggression, anger and hostility. The task of the respondent was to rank the particular questions using the scale from 1 'does not match my personality' to 5 'fully matches my personality'. The factor analysis includes 4 elements: physical aggression, 9 questions (max 45 pts), verbal aggression, 5 questions (max 25 pts), anger 7 questions (max 35 pts) and hostility 8 questions (max 40 pts). The above mentioned components impinge on the overall level of aggressiveness of the individual and are presented in the form of a point scale. To calculate the statistical significance measuring differences between the researched groups, one-factor analysis of variances was used. The level of statistical significance was established at 0.05.

In order to determine statistically significant difference between groups, the Tukey's post-hoc test was used. The questionnaires used in the research were filled in voluntarily and in compliance with the approval of the Local Bioethics Committee in Opole (Poland).

Results

The gathered data show that the highest indicators of physical aggression is characteristic for those, who practise boxing and representatives from the control group. Both groups received the same value of the aggression index. Lower indicators of aggression (23.1 pts) was recorded in the ju-jitsu group, whereas the lowest indicators was observed in the group training capoeira (19.8 pts), as presented in Figure 1. Contrastive analysis of indicators of physical aggression between particular groups did not show statistically significant differences.

The obtained results indicate the highest indicators of this variety of aggression within the control group (non-training representatives). In the groups of athletes, the highest indicators of verbal aggression was recorded among boxers, followed by those practising ju-jitsu and the lowest indicators among capoeira athletes (Figure 2). The statistical analysis indicate a main effect of group, p=0.00008. The Tukey's post-hoc analysis for unequal samples shows statistically significant differences between: capoeira – boxing (p=0.046), capoeira – non-training (p=0.0054), ju-jitsu – non-training (p=0.0192).

The result analysis that relates to the intensity of anger has showed the highest anger level among the group of non-training representatives. In the groups

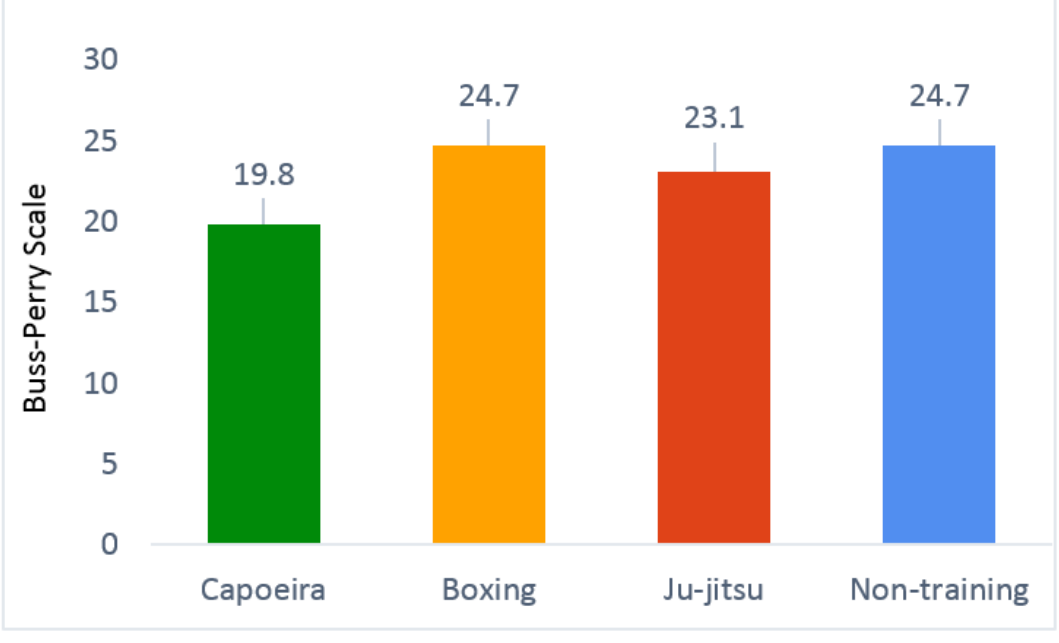

Figure 1. Comparison of physical aggression indicators between the athletes of combat sports and martial arts and their non-training peers.

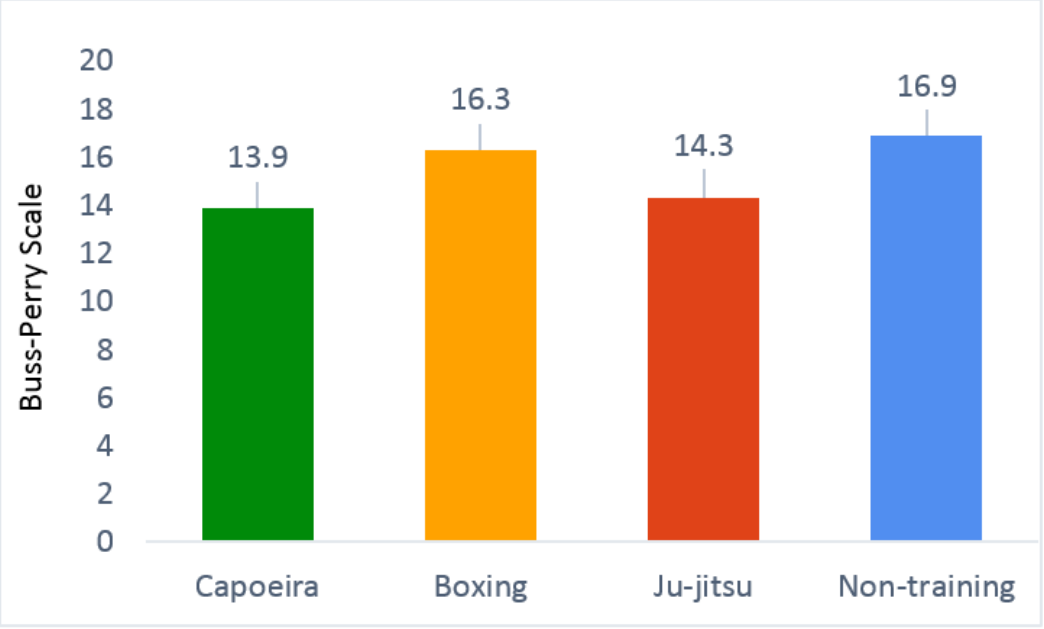

Figure 2. Comparison of the verbal aggression indicators between athletes of combat sports and martial arts and their non-training peers.

of athletes, the highest level was observed among boxers, followed by capoeira athletes; while the lowest indicators was recorded in the ju-jitsu group (Figure 3). The statistical analysis of anger indicators in the researched groups shows statistically significant difference of p=0.0000. The Tukey's post-hoc analysis indicates statistically significant differences between: ju-jitsu – boxing (p=0.0023), capoeira – non-training (p=0.0018) and ju-jitsu – non-training (p=0.0000).

The hostility result analysis shows similar values of this indicator within the boxing and non-training groups, where was the highest one (22 and 21.8 pts, respectively). Lower indicators of hostility was recorded among capoeira athletes, whereas the lowest one in the ju-jitsu group 15.5 pts. (Figure 4). The statistical analysis revealed a statistically significant difference of p=0.00000. The Tukey's post-hoc analysis shows statistically significant differences between the representatives of: capoeira – boxing (p=0.0024), capoeira – non-training (p=0.0309), ju-jitsu – non-training (p=0.0000).

The highest indicators overall aggressiveness was recorded within the group of non-training representatives, followed by the group of boxers, then the capoeira group and ju-jitsu group. Athletes prove the lower indicators of aggressiveness, comparing to the non-training peers (Figure 5). The statistical analysis revealed statistically significant differences between the pairs: capoeira – boxing (p=0.0131), capoeira – non-training (p=0.0007), ju-jitsu – non-training (p=0.0000) and ju-jitsu – boxing (p=0.0031).

Discussion

It is very difficult to explicitly determine the impact of training combat sports and martial arts on the level of aggressiveness among athletes. The problem is complex due to numerous conditions that lead to aggressive behaviours. It is also difficult to say to what extent the aggressiveness is innate or acquired, and what is the impact of various social or situational factors that cause it [22]. Both, in sport and in everyday life the manifestations of uncontrolled aggressive behaviours are undesirable; they provide young people with models of aggressive behaviour thus damaging the image of the discipline and increasing the risk of injuries or damage to health [24]. Far East combat sports and martial arts trainings often start at the age of 8-9 years. The personality and the value system of children in this age group are not formed yet and therefore they are impressionable and can be influenced by personalities, including sports trainers and martial arts masters. Therefore, it is of the utmost importance to carefully examine the particular combat sports and martial arts, because children's involvement in training will determine their future behaviour patterns. The professional literature

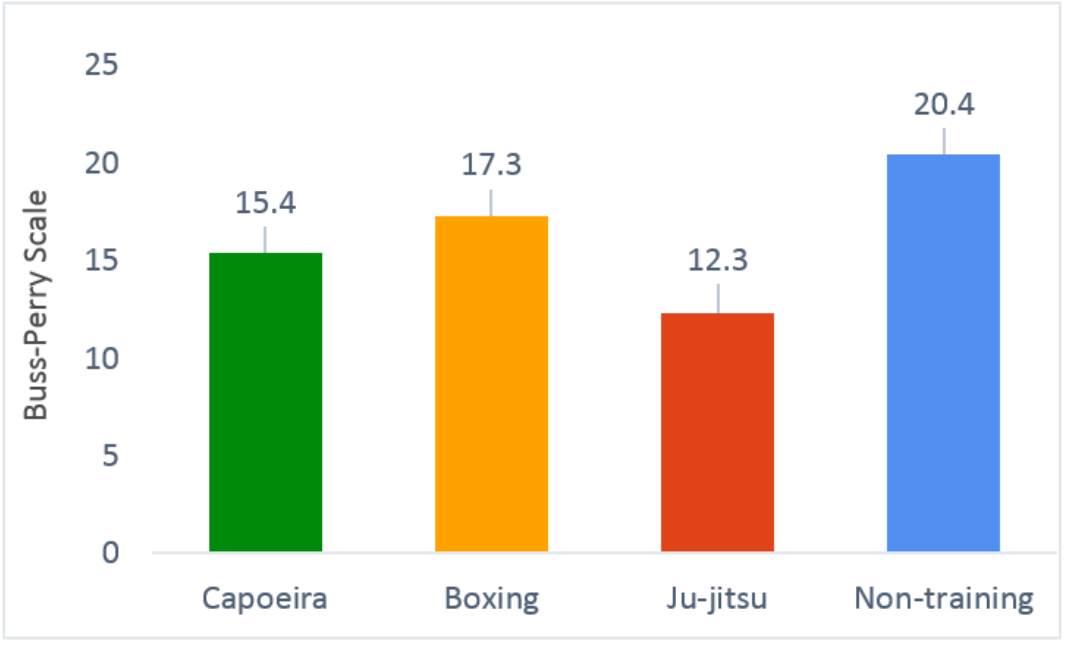

Figure 3. Comparison of anger indicators between athletes of combat sports and martial arts and their non-training peers.

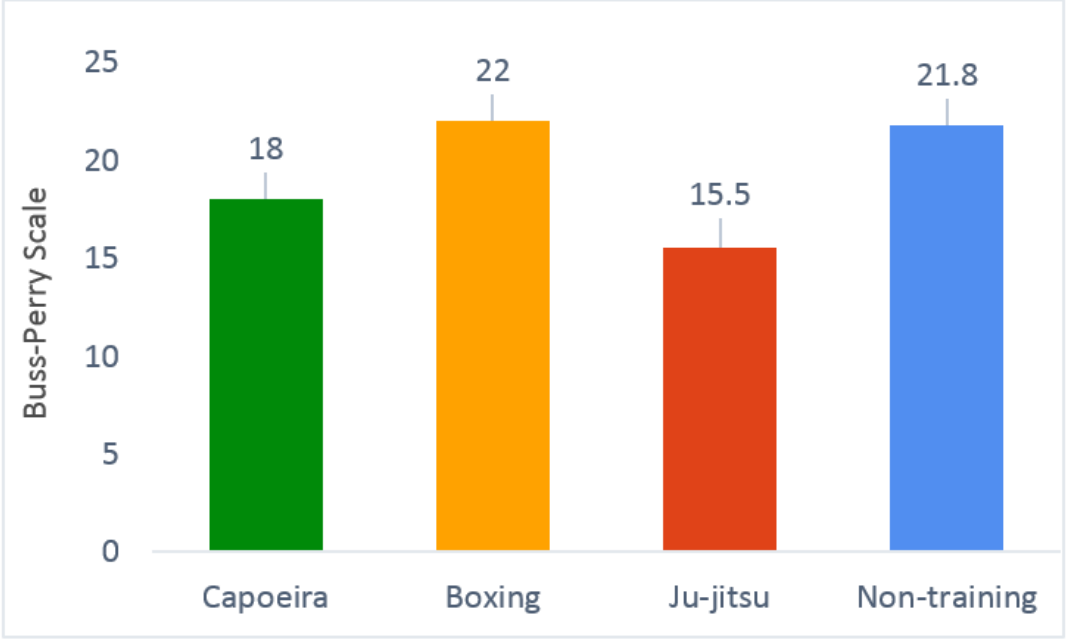

Figure 4. Comparison of hostility indicators between athletes of combat sports and martial arts and their non-training peers.

often shows clear convergence in the obtained results. Lamarre and Nosachuk [4] claim that judo training lowers aggressiveness, while in other studies it caused any changes. Reynes and Lorant [25,26] have used the Buss-Perry Questionnaire to assess the influence of judo training on the level of aggressiveness among primary school students. Their research studies showed an increase in the level of aggressiveness among students practising judo; however, in comparison with the control group, the difference was not statistically significant. Conducting longitudinal studies on the group of karate athletes, the authors did not observe changes in the level of aggressiveness resulting from training. However, they noted the significance of kata exercises

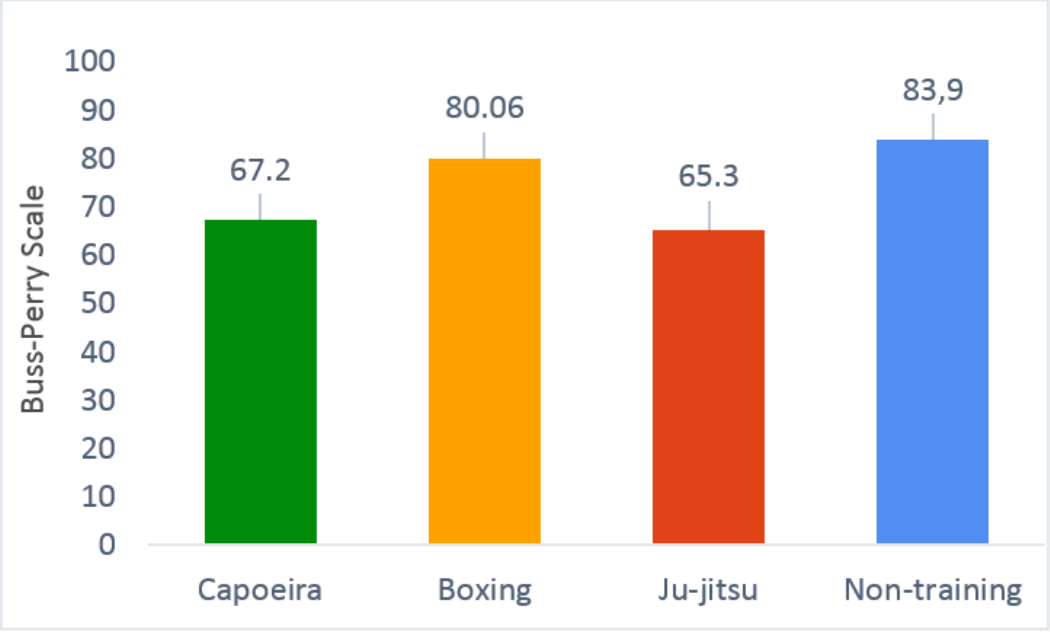

Figure 5. Comparison of overall aggression indicators between athletes of combat sports and martial arts and their non-training peers.

and meditation, which had a positive influence on self-control skills. Szabo and Parkin [27], Boostani et al. [28] in their studies had also shown lower levels of aggressiveness among athletes of martial arts in comparison with the non-athletes. Similar results were also obtained by Mroczkowska et al. [22]. Their research studies had confirmed the positive effects of traditional karate training on the level of aggressiveness.

In typical combat sports, such as boxing, judo or wrestling, training is mainly focused on the development of motor skills and techniques, whereas personality training or the skills for controlling emotions are being neglected. A boxer fighting in the ring often experiences pain, risk of losing health or even life. Such experiences certainly have significant influence on the psychological sphere of the athletes [21]. A characteristic feature of martial arts, such as ju-jitsu, aikido or different types of karate, is to mould personality and enrich the system of values by those in training, according to the ideology which determined the formation of the particular style (frequently based on religion).

Because our study were performed among others on Polish boxers, so it is reasonable to compare them with the results of studies made in the past just on Polish boxers, but also on Polish karateists, judokas, as well as representatives of other sports and martial arts. In our and previous studies Bass & Darkee [23] questionnaire was used. One empirical variable is similar – influences of the social environment, in which the athlete is training. Similarly, but not identically, because in that time in Poland the political system, the quality of life and many factors of the psychosocial and economic nature changed.

The results of our study show that boxers are characterized by higher indicators of aggression than boxers studies several years earlier by Chorążykiewicz [29,30], and Supiński [31].

By the Bass & Darkee questionnaire [23] and also other scientific tools to assess the aggressiveness of the judokas studied Gorący and Żyto-Sitkiewicz [32], while athletes of other combat sports Kłodecka [33] and karateists Siek et al. [34]. Boxers examined by us exceed the level of aggressiveness also these athletes. Aggressiveness of persons practicing capoeira or ju-jitsu is similar to the aggressiveness of athletes described in cited publications [29-34].

The results of our and cited studies by no means lead to the conclusion that the factor determining the diversity level of the aggressiveness of people practicing various combat sports and martial arts is the passing time or the features of certain sport (martial arts). The effects of adaptation (in this case, measured

by the level of aggressiveness) mainly prejudge coach qualifications. A classic example is the Trulson experiment [12] who proved that the same combat sport can be used in two ways. The traditional model of taekwondo training after six months led to a reduction in aggression and a sense of anxiety in students participating in the experiment (also achieved other positive effects on the social adaptation). Training carried out at the same time according to the model called "modern taekwondo" led to the effects extremely different. The results of the Kalina experiment [35] show that already eight-month training based on self-defence exercises, judo exercises, relaxation and concentration exercises and also intentional verbal actions (talks about ethics and agility aspects of behaviour in the situation of being attacked by particular people) may for a long period (the effects examined three years after the end of the experiment) reduce the aggressiveness of young men. Similar effects for young women brought lasting eight months Syska experiment [15, 36]. Syska merged modern gymnastic and dancing forms with elements of self-defence, relaxation and concentration exercises and also intentional verbal actions.

Conclusions

Presentation of the results achieved in this research studies can bring the readers and persons interested in close combat sports with typical characteristics of the three disciplines being analysed. Despite the purely cognitive values, the informed choice made by young people, children or even their parents, undertaking decisions when selecting sports or martial arts discipline, brings also significant benefits. Combat sports and martial arts training gives the possibility to diffuse emotions and relieve tension, which may result in decreasing the level of aggressiveness. Research participants of the control group, being deprived of such possibility, were characterized by the highest aggressiveness level among the researched groups. The aggressiveness level can be conditioned by the specificity of the training, but first of all by the coach qualifications.

Competing interests

The authors declare that they have no competing interests.

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Cite this article as: Kuśnierz C, Cynarski WJ, Litwiniuk A. Comparison of aggressiveness levels in combat sports and martial arts male athletes to non-practising peersg. Arch Budo 2014; 10: 253-260