

## PEDAGOGY & DIDACTICS

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# Combat versus team sports: the effects of gender in a climate of peer-motivation, and levels of fun and violence in physical education students

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### Abstract

Background and aim. The inclusion of martial arts and combat sports (MA&CS) in formal physical education (PE) has been suggested by many authors, although there is no strong evidence as yet of the benefits of its practice for students. This study aimed to describe the effects of the development of two MA&CS teaching units (judo and capoeira) on the motivational climate, enjoyment and attitudes toward violence of PE students, and to compare these effects with those experienced by students receiving team sports teaching units (football and basketball).

Methodology. A quasi-experimental, pre-post (two groups), longitudinal study design was followed, involving 221 students aged between 13 and 16. The experimental group ( $n = 105$ ) developed MA&CS teaching units, while the control group ( $n = 116$ ) developed team sport, teaching units. A peer motivational climate questionnaire, the amusement/boredom in physical education scale and the attitudes toward violence scale psychological assessment tools were used. Statistical analyses included means and standard deviations, two-way equivalent multifactorial ANOVA and effect sizes Results: MA&CS teaching units significantly improved the classroom motivational climate involving tasks/learning, and students' attitudes toward unjustified violence. The post-test intergroup comparison showed that the experimental group rejected unjustified violence to a higher degree than the control group ( $p = .014$ ,  $d = .81$ ). Improvements in attitudes to unjustified violence were for both males ( $p = .017$ ,  $d = .82$ ), and females ( $p = .021$ ,  $d = .78$ ) in the experimental group, while the climate involving tasks/learning only improved in males ( $p = .037$ ,  $d = .77$ ).

Conclusion. MA&CS teaching units improved students' attitudes toward violence and generated a higher peer motivational climate than, and similar fun as team sports teaching units.

### Introduction

Society raises the question of whether martial arts and combat sports (MA&CS) are suitable for the development of positive educational values [Cynarski, Lee-Barron 2014; Johnson, Ha 2015; Kusnierz, Cynarski, Gorner 2017; Oh 2014; Tadesse 2017; Wasik 2014]. Some of the reasons found are a) General ignorance toward these practices, still minority; b) Great variety of MA&CS and the diversity of approaches to MA&CS practice (e.g., utilitarian, sportive, educational, recreational, etc.); c) Their frequent relationship with unwarranted violence emanat-

ing from media; and d) Dissemination of conventional sports in and outside of school [Theeboom, De Knop, Vertonghen 2009]. In the same way, scientific research on the development of positive psychological and social outcomes through martial arts is still scarce and contradictory [Vertonghen, Theeboom 2010]. According to these authors, accumulated research “has not been able to provide overall conclusive evidence regarding the social-psychological outcomes of martial arts practice” (p. 534).

All these contrasting images surrounding MA&CS have affected their full inclusion in formal education

settings, even though physical education (PE) curricula usually allow their incorporation along different educational stages [Winkle, Ozmun 2003]. Indeed, practical research shows irregular results. In Japan, students are instructed in *budo* (Japanese martial arts) at schools, since *budo* is considered to “contribute to the lifelong sport education through its instructions of seeking true benefits and magnetism” [Sasaki 2006: 13]. In Europe, Theeboom and Knop [1999] collected in their study up to seven out of nine European countries introducing MA&CS during PE classes in secondary schools. Students’ practice of MA&CS per year ranged from 5 to 12 hours and disciplines such as *judo*, *karate* and self-defence were the most popular. Vit and Reguli [2015] also provided detailed explanation on the inclusion of MA&CS (“combatives”, following the authors’ terminology) in the educational programmes of the Czech Republic, the Slovak Republic and France. In contrast, Theeboom and Knop [1999] stated that in the United States MA&CS were not taught during PE classes but just in commercial schools. In a similar way, in Spain Villamon, Gutierrez-Garcia, Espartero *et al.* [2005] observed that only five out of 368 (1.36%) Physical Education and Sport Sciences Degree students had experienced MA&CS in PE classes. In Brazil, Nascimento and Almeida [2008] have also stated that MA&CS are little practised at schools compared to more traditional contents such as team sports [see also Rufino, Darido 2015].

There exists a complex set of instructional, practical and social factors that can make difficult to include MA&CS in PE programmes [see e.g., Camerino, Gutierrez, Prieto 2011; Robles 2015; Rufino, Darido 2015; Winkle, Ozmun 2003]. Following Robles [2015], these factors are (a) Poor or lacking instruction regarding MA&CS in PE teachers’ initial training; (b) PE teachers’ experiences and interests in sport, which are most often focused on team sports; (c) Lack of specific facilities and equipment for MA&CS instruction at the educational centres; (d) Students’ demands and interests, which usually do not address MA&CS but sports which enjoy more popularity at the social level; and (e) Few practical proposals for including MA&CS in PE. In addition, Camerino *et al.* [2011] state that (f) MA&CS have been usually considered as masculine and masculinising practices, being at the same time not attractive and not appropriate for females; and (g) PE teachers tend to think MA&CS could incite aggressive behaviour in students, and this is why they are reluctant to include them in their programmes.

On the contrary, many authors have strongly argued in favour of including MA&CS in PE programmes [see e.g., Brown, Johnson 2000; Vit, Reguli 2015; Winkle, Ozmun 2003], even specific and practical proposals have been published in this regard [see e.g., Castarlenas, Molina 2002; Neide 2009; Vit, Reguli 2015; Winkle, Ozmun 2003]. According to Winkle and Ozmun [2003:

29], “Martial arts can enhance students’ health, performance related to fitness, self-concept and esteem, and cognitive abilities”. Practitioners’ moral development is also a benefit usually linked to MA&CS, including learning about right and wrong, about self-control, the importance of working hard, respecting and helping others or doing the right thing [Lantz 2002]. Particularly, the close link between MA&CS and the development of positive moral values has led to the implementation of specific interventions aimed at reducing violence and aggression in students [Di Zio 2010; Tejero-Gonzalez, Balsalobre-Fernandez, Ibanez-Cano 2011; Twemlow *et al.* 2008; Zivin *et al.* 2001]. In general, these interventions have shown positive outcomes although more research is needed to provide stronger evidence of their effects.

In any case, practice of MA&CS as a content of PE curricula must conform PE aims, methodologies and assessment processes. Also, it must face important time constraints, as regular PE curricula are usually composed of many physical activities (such as sports, physical conditioning exercises, corporal expression techniques or physical activities in nature) and there is little time for students to experience and deepen in each of these activities. For this reason, Theeboom and Knop [1999: 156] considered that

...the introduction of Asian martial arts in physical education should be viewed rather as a way to get to know the possibilities that exist when one wants to become involved in martial arts practice as a leisure activity. Pupils should discover that in essence martial arts are not different from other sports as they also can bring about feelings of enjoyment, sporting competence, and so forth [Boudreau, Folman, Konzak 1995]. The fact that, through martial arts practice, one can also learn how to defend oneself, should be regarded as an important aim, but not as the only aim.

In the same line, Winkle and Ozmun [2003] stressed that enjoyment is also a very important element in order to provide successful instruction in MA&CS in PE. These authors suggested that teaching MA&CS in PE, similarly to teaching any other sport, should be focused on students getting basic knowledge of practice at the beginning level (i.e., rules, history, basic skills instruction and starting to play). It is key to motivate students enjoy MA&CS and appreciate them as a valuable lifelong activity. If students were interested in more advanced instruction they could join any MA&CS school located in the community. However, regardless of content, the methods employed by PE teachers are considered a determining factor to increase students’ motivation, self-concept and peer climate [Hortiguera, Fernandez-Rio, Perez-Pueyo 2016a, 2016b, 2016c]. Especially, MA&CS should be addressed in PE from a learning perspective and mutual collaboration above performance.

On the basis of the foregoing considerations, we developed a quasi-experimental study in which factors

linked to motivation climate, enjoyment and attitudes toward violence were measured during a PE programme where MA&CS or team sports were included. Specifically, the main aim of this study was to describe the effects of the development of two MA&CS teaching units (*judo* and *capoeira*) on motivation climate, enjoyment and attitudes toward violence, and comparing these effects to those experienced by students receiving team sports teaching units (football and basketball).

## Material and Methods

### Participants

This study involved 221 students, 108 males and 113 females aged between 13 and 16 ( $\bar{x} = 15.43 \pm 1.62$  years) of eight natural groups from fourth year of Secondary Education. They all belonged to a high school of Burgos city (Spain). Two groups were considered: a total of 105 students (51 men and 54 women) were assigned to the experimental group, which developed judo and *capoeira* teaching units, while a total of 116 students (57 males 59 females) joined the control group, which received football and basketball teaching units. Both groups were taught by the same teacher, who had seven years of experience in teaching PE at this educational level and high specific knowledge on martial arts and team sports. Convenience sampling was used with students because creating random groups in a formal education context was not possible (i.e., groups previously created by the school board could not be modified).

### Measurements

We used three psychological assessment tools:

(a) *Peers motivational climate questionnaire (PMC)*: The Spanish version validated by Moreno, Lopez, Martinez, Alonso and Gonzalez-Cutre [2006] was used. The original instrument was called *Peer Motivational Climate in Youth Sport Questionnaire* (Peer MCYSQ) [Ntoumanis, Vazou 2005]. The Spanish version is composed of nine items/statements, each of them starting with the following sentence: “My classmates in PE lessons...”. Two factors are measured, the first, *climate involving the task or learning* (five items), including statements such as “My classmates in PE lessons give advice to others to help their progress” (item #6). The second factor, *climate involving ego or performance* (four items), include statements such as “My classmates in PE lessons encourage to be better than the others” (item #4). Responses were collected in a Likert scale ranging from 1 (never) to 5 (always) points. Higher scores are indicative of higher motivational climate. It was obtained high composite reliability (CR) = .89 and Average Variance Extracted (AVE) above .50 (50.31%). Cronbach’s alpha was .83. A confidence level of 95% was applied.

(b) *Amusement/boredom in physical education scale (SSI-EF)* [Duda, Nicholls 1992]. The Spanish version validated by Baena, Granero, Bracho and Perez [2012] was used. This questionnaire is composed of eight items/statements derived from the questions “How were your PE lessons this year up to now?” (for both groups in the pre-test) and “How were the judo and capoeira lessons?” (for the experimental group in the post-test), and “How were the football/basketball lessons?” (for the control group in the post-test)? Two factors are measured, *satisfaction / fun* (five items) and *boredom* (three items). Examples of statements include “I think time has flown” (item #6, factor satisfaction/fun) or “I wanted time to pass quickly” (item #4, factor boredom). Responses were collected in a Likert scale ranging from 1 (never) to 5 (always) points. Higher scores are indicative of higher amusement or boredom. It was obtained high CR = .91 and AVE above .50 (50.73%). Cronbach’s alpha was .82. A confidence level of 95% was applied.

(c) *Attitudes toward violence scale (ATV)* [Tejero-Gonzalez *et al.* 2011]. This scale is composed of ten items/statements and two factors: *unjustified violence* (six items) and *violence linked to self protection* (four items). Examples of statements include “I think hitting ‘informer people’ is correct. They deserve it” (item #9, factor unjustified violence) or “It is right to hit people who hit” (item #4, factor violence linked to self-protection). Responses were collected in a Likert scale ranging from 1 (never) to 5 (always) points. Higher scores are indicative of higher tendency to justify the use of violence. It was obtained high CR = .89 and AVE slightly lower .50 (47.68%). Cronbach’s alpha was .823. A confidence level of 95% was applied.

### Design and procedure

We followed a quasi-experimental, pre-post (two groups), longitudinal study design [Montero, Leon 2007]. The experimental group participated in judo and capoeira teaching units, meanwhile the control group experienced teaching units on football and basketball. The same teacher taught both groups with the same teaching methodology. This methodology was based on comprehensive sport model, giving priority to students’ involvement and flexibility when rules were applied [Lopez-Ros *et al.* 2015].

Judo and capoeira teaching units (experimental group) lasted eight sessions each, for a total of 16 sessions. These martial arts were selected due to their complementarity. Judo is mainly based on grappling and throwing techniques, and *capoeira* is mainly based on kicks and includes dance, music and acrobatics [Gutierrez-Garcia, Perez-Gutierrez, Svinth 2010; Miller 2010]. The main purpose of these teaching units was that the students experienced and enjoyed both martial arts and were able to prepare and show in pairs a pre-arranged *randori* (free practice) and a *jogo* (game) to their class-

mates. During the lessons the teacher taught several techniques and movements and gave students time to develop their "fighting knowledge" [Avelar-Rosa *et al.* 2015; Avelar, Figueiredo 2009; see also Arziutov *et al.* 2016], i.e., learn, adapt and apply *judo* and *capoeira* movements in their *randori* and *jogo*. The teacher paid special attention to presenting both MA&CS under an educational and respectful approach [Menendez, Fernandez-Rio 2014], showing students that in MA&CS partner is not an opponent to overcome by all means but someone who helps the other to learn and become a better person. Full involvement of the students was promoted by encouraging reflection, dialogue and peer assessment during the lessons.

Football and basketball teaching units (control group) lasted 17 sessions in total, nine for football and eight for basketball. These team sports were selected as they are very usually included in Spanish PE programmes [Robles, Gimenez, Abad 2010]. We followed the comprehensive sports models principles. In these models, tactical aspects are worked in the first place whereas technique is considered of secondary importance. Students' full involvement is also encouraged letting them analyse, debate, assess and resolving tactical situations, which include graphical and practical representations.

As mentioned above, three validated questionnaires were used to get data. Participants completed each of these questionnaires twice, during a PE lesson before and after implementing the teaching units. They were encouraged to respond the questionnaires on their own and as honestly as possible. Also they were assured that their responses would remain confidential and would not affect their PE marks.

This study was approved by the Ethics Committee of the University of Burgos, Spain. Also, we obtained permission from the high school board where the study was conducted as well as informed consents from the students' parents.

#### Statistical Analyses

SPSS 22.0 (SPSS Inc., Chicago, IL) was used for all statistical analyses. Descriptive statistics included means and standard deviations. As variables fulfilled normality requirements, we used parametric tests for inferential analyses. A repeated measures design (RMD) was used before and after the development of the teaching units. This required a mixed ANOVA for independent groups. A two-way equivalent multifactorial ANOVA was performed (experimental group and control group) in which the effects of the content (MA&CS or team sports) were measured. Differences between males and females were also compared for each factor. Effect sizes were measured by Cohen's *d*.

## Results

As it can be seen in Table 1, both groups (experimental group and control group) showed in the pre-test high mean values (around 4 points) for climate involving task/learning, satisfaction/fun, unjustified violence and violence linked to self protection, while climate involving ego/performance was medium and boredom was low. No differences were found between groups in the pre-test.

The post-test showed similar results that the pre-test for the control group, in which only the variable climate involving ego/performance increased from medium to high. Despite this, no significant differences were found in the control group between the pre-test and the post-test. With regard to the experimental group, the climate involving task/learning changed from high to very high and the unjustified violence and the violence linked to self protection fell from high to medium. Significant differences with large effect sizes (according to Cohen [1988]) were found between the pre-test and the post-test in unjustified violence ( $p = .021$ ,  $d = .92$ ), and between the control group and the experimental group in unjustified violence ( $p = .014$ ,  $d = .81$ ) and in climate involving task/learning ( $p = .033$ ,  $d = .87$ ).

Regarding subgroups (males and females), there were no differences in the control group. The experimental group showed differences between males and females in the pre-test in climate involving ego/performance, with males achieving higher scores ( $p = .027$ ,  $d = .74$ ). Differences were also found in the experimental group between the pre-test and the post-test in unjustified violence for both males ( $p = .025$ ,  $d = .91$ ) and females ( $p = .018$ ,  $d = .93$ ). Finally, males in the experimental group showed higher scores than males in the control group in the post-test in climate involving task/learning ( $p = .037$ ,  $d = .77$ ) and lower scores in unjustified violence ( $p = .017$ ,  $d = .82$ ), while females in the experimental group showed lower scores than females in the control group in the post-test in unjustified violence ( $p = .021$ ,  $d = .78$ ).

## Discussion

This research was aimed at studying the effects of two MA&CS teaching units on peers motivational climate, enjoyment and attitudes toward violence in a sample of secondary school students, and comparing these effects with those who received two team sports teaching units. Overall results showed that MA&CS teaching units significantly improved classroom motivational climate created by peers involving task/learning and students' attitudes toward unjustified violence (i.e., they reject unjustified violence more clearly). The inter-group comparison only showed differences in students' attitudes toward unjustified violence, with the experimental

**Table 1.** Mean scores for the PMC, SSI-EF and ATV

Measurements	PRE-TEST		POST-TEST	
	M	SD	M	SD
<b>Experimental group (A)</b>				
<b>PMC - Climate involving task/learning</b>	<b>3.93</b>	<b>.67</b>	<b>4.61*<sup>ab</sup></b>	<b>.34</b>
• Males	4.08	.74	4.81* <sup>ab</sup>	.39
• Females	3.84	.62	4.44	.34
<b>PMC - Climate involving ego/performance</b>	<b>3.24</b>	<b>.54</b>	<b>3.03</b>	<b>.39</b>
• Males	3.63	.39	3.16	.41
• Females	2.89* <sup>mf</sup>	.65	2.87	.40
<b>SSI-EF - Satisfaction/fun</b>	<b>4.12</b>	<b>.73</b>	<b>4.32</b>	<b>.62</b>
• Males	4.24	.78	4.36	.65
• Females	4.04	.70	4.31	.62
<b>SSI-EF - Boredom</b>	<b>2.31</b>	<b>.84</b>	<b>2.13</b>	<b>.76</b>
• Males	2.20	.85	2.01	.77
• Females	2.45	.87	2.21	.78
<b>ATV - Unjustified violence</b>	<b>3.92</b>	<b>.82</b>	<b>2.76*<sup>pp: ab</sup></b>	<b>.31</b>
• Males	3.97	.84	2.83* <sup>pp: ab</sup>	.38
• Females	3.87	.80	2.69* <sup>pp: ab</sup>	.24
<b>ATV - Violence linked to self protection</b>	<b>3.87</b>	<b>.64</b>	<b>3.05</b>	<b>.52</b>
• Males	3.98	.74	3.17	.58
• Females	3.70	.60	3.03	.49
<b>Control group (B)</b>				
<b>PMC - Climate involving task/learning</b>	<b>3.97</b>	<b>.83</b>	<b>3.78</b>	<b>.38</b>
• Males	4.07	.86	3.78	.36
• Females	3.91	.94	3.85	.44
<b>PMC - Climate involving ego/performance</b>	<b>3.31</b>	<b>.52</b>	<b>3.71</b>	<b>.65</b>
• Males	3.52	.63	3.84	.73
• Females	3.04	.47	3.62	.61
<b>SSI-EF - Satisfaction/fun</b>	<b>4.23</b>	<b>.54</b>	<b>4.18</b>	<b>.65</b>
• Males	4.31	.64	4.33	.62
• Females	4.07	.50	4.03	.63
<b>SSI-EF - Boredom</b>	<b>2.42</b>	<b>.68</b>	<b>2.36</b>	<b>.63</b>
• Males	2.35	.62	2.39	.61
• Females	2.51	.77	2.49	.68
<b>ATV - Unjustified violence</b>	<b>3.68</b>	<b>.89</b>	<b>3.58</b>	<b>.72</b>
• Males	3.87	.86	3.80	.65
• Females	3.52	.85	3.50	.75
<b>ATV - Violence linked to self protection</b>	<b>3.84</b>	<b>.65</b>	<b>3.72</b>	<b>.59</b>
• Males	3.93	.78	3.92	.54
• Females	3.71	.57	3.66	.67

Note: Mean values have been converted to a 1 to 5 scale. 1 = Very low; 2 = Low; 3 = Medium; 4 = High; 5 = Very High. PMC = Peers motivational climate questionnaire; SSI-EF = Amusement/boredom in Physical Education Scale; ATV = Attitudes toward violence Scale. \* Significant differences at  $p < .05$ . Superscripts: pp = differences between pre-test and post-test; ab = Differences between group A and group B; mf = differences between males and females.

group rejecting unjustified violence to a higher degree than the control group.

Noteworthy, *judo* and *capoeira* teaching units had very similar results in our measurements than football and basketball teaching units. As football and basketball are much more popular in Spain than MA&CS [García-Ferrando, Llopis-Goig 2011], it could be expected these team sports had better results than MA&CS in factors such as the climate created by peers, satisfaction or

boredom. Nevertheless, in the context of PE the impact and educational value of the contents (e.g., sports) is very strongly conditioned by the type, style or instructional model of PE followed by the teacher [Metzler 2011]. For example, despite the competitive and even aggressive nature of professional football it can be modified by PE to enhance collaboration and avoid unhealthy competitiveness [see e.g., Hortiguera *et al.* 2016b; Perez-Pueyo 2010]. Indeed, there exists a variety of instructional models for

the development of PE and its contents, such as Sport Education, Teaching Games for Understanding, Social and Individual Responsibility programmes, Cooperative Learning, Attitudinal Style or Health-based Education, to name a few [Fernandez-Rio *et al.* 2016; Kirk, MacDonald, O'Sullivan 2006]. These models help teachers to develop PE in a comprehensive and coherent manner and "helps teachers to determine the final outcomes before the unit starts, make systematic plans to achieve them, determine space and equipment needs, share the plan with the students, and make progress checks along the way" [Gurvitch, Metzler 2010: 34]

In our research, the results of the pre-tests showed that students already had a quite positive image of PE: high values for the climate involving task/learning and satisfaction/fun, medium values for climate involving ego/performance and low values for boredom. For this reason, improvements in these factors would have been difficult to achieve. Only the climate created by peers involving task/learning improved significantly for the experimental group. This could be due to students' necessity to help their classmates during the learning process of *judo* and *capoeira* (specific movements and techniques). These movements and techniques were probably unknown for most students, while football and basketball movements were probably more known to students due to their popularity and tradition as PE contents [Robles *et al.* 2010]. Also, MA&CS are most often practised by peers requiring close collaboration and respect between both members so that learning takes place without risks [Miller-Lane 2007]. This is one of the main principles of these disciplines. Thus, the "opponent" becomes someone to learn with. This way of understanding and valuing the partner/opponent seems to derive in a positive and pleasant class climate.

The results of the pre-test also showed high mean values for attitudes toward unjustified violence and violence linked to self protection. This is, in our opinion, a clear call for action. Participants in our research, somehow, were lacking in peace education, a field which according to Reardon [2000: 397] has been "so long marginal, as seen from main stream education" but "may, after all, have a significant future". In this way, school violence is, among other forms of violence, a global concern nowadays, as stated by the newest UNESCO report on the topic *School Violence and Bullying. Global Status Report*:

School violence and bullying occurs throughout the world and affects a significant proportion of children and adolescents. It is estimated that 246 million children and adolescents experience school violence and bullying in some form every year. Estimates of the proportion of children and young people affected by school bullying specifically vary between countries and studies, ranging from less than 10% to over 65%. In the 2016 UNICEF U-Report/ Special Representative of the UN Secretary General on Violence against Children (SRSG-VAC) opin-

ion poll, to which 100,000 young people in 18 countries responded, two-thirds of respondents reported that they had been the victim of bullying. [...]

School violence and bullying harms the physical health and emotional well-being of children and adolescents. Physical violence, including corporal punishment, can cause fatal or non-fatal injuries or other physical harm. Sexual violence increases the risk of unintended pregnancy, HIV and other sexually transmitted infections. Reported physical effects of bullying include stomach pains and headaches and difficulty eating and sleeping. Those who are bullied are also more likely than those who are not bullied to experience interpersonal difficulties, to be depressed, lonely or anxious, to have low self-esteem and to have suicidal thoughts or to attempt suicide. [UNESCO 2017: 9]

This report states that school violence and bullying can be reduced by applying comprehensive approaches which prevent and address these problems, including "strong leadership; a safe and inclusive school environment; developing knowledge, attitudes and skills; effective partnerships; implementing mechanisms for reporting and providing appropriate support and services; and collecting and using evidence" [UNESCO 2017: 10]. In other words, school violence is a complex problem which calls for solid and context-specific solutions involving the entire educational community.

PE, due to its specific characteristics, can contribute to prevent and address school violence. In a review on the educational benefits claimed for PE and school sport (PESS), Bailey, Armour, Kirk *et al.* [2009] refer to the development of social positive behaviours through PESS such as cooperation, personal responsibility, empathy, teamwork, school attendance or behaviour and attitude within school. Also they cite PESS as a potential mean to prevent and address problematic issues such as depression, crime, truancy, substance abuse or anti-social behaviour. These authors enhance not the PESS contents but the social and educational processes involved in PESS practice, and cite several PESS models that put great emphasis on socio-moral education (e.g., Siedentop's Sport Education model, Hellison's Teaching Personal and Social Responsibility model or Ennis' Sport for Peace model). They also enhance the importance of the teachers, as they can be positive role models for students. If PE is not worked from an integrative approach, it could become a subject that provokes students' frustration towards physical activity. In this regard, once having completed compulsory education a large percentage of students recognize that they do not practice physical activity outside of the classroom because of their poor experiences and poor emotional well-being derived from PE lessons [Lu, Buchanan 2014].

Specifically, MA&CS distinctive features make them a good content for students to experience and reflect on the topic of violence. According to Parlebas

[1999] the objective of combat sports is the so-called “human target”, i.e., players try to win the game by striking, touching, throwing, holding, strangling, etc. the opponent’s body. This is different to other sports in which the objective is “outside” the body, like for example in football where players try to put the ball into their opponent’s goal. Thus, MA&CS practitioners apply and experience certain levels of violence directly on their bodies, which demands self-control and respect for the others. Not less important, most MA&CS have developed strong moral codes closely linked to peace education [Back, Kim 1982; Simpkins, Simpkins 2007] such as *judo* and *capoeira* [Burt, Butler 2011; Gutierrez-Garcia 2011].

In our research attitudes toward unjustified violence were significantly lower in the experimental group post-test compared to the pre-test, and compared to the control group post-test scores. This shows that martial arts, worked under a suitable educational approach can channel adolescents’ attitude toward violence. This is in line with previous research on the topic. Zivin *et al.* [2001] developed an experimental study in which they assessed a school-linked course in the traditional martial art of Koga Ha Kosho Shorei Ryu Kempo. After the course was finished (10 weeks, 30 sessions x 45’ per session) students had decreased troublesome behaviours (“resists rules”, “impulsive” and “inappropriate social behaviour”, also “violent” but not significantly) according to teachers’ ratings. Importantly, four months after completion of the course the effects remained, and even “violent”, “resists rules”, and “impulsive” improved. Lakes and Hoyt [2004] conducted an experiment in which children from kindergarten through Grade 5 received a self-improvement focused taekwondo programme named Leadership Education through Athletic Development (LEAD) instead of regular PE lessons. After three months (26 sessions x 45’ per session), the taekwondo group showed greater improvements than the PE group in several variables related to violence such as affective self-regulation, pro-social behaviour and classroom conduct. In the same line, Twemlow *et al.* [2008] evaluated the third year of implementation of the Gentle Warrior programme, which was a traditional martial arts-based intervention included in a programme – Creating A Peaceful School Learning Environment (CAPSLE) – aimed at reducing school violence. After just three 45-minute sessions, these authors found positive results for boys and concluded that they “provide preliminary empirical support for the Gentle Warrior programme as a promising intervention for decreasing bullying behaviour and increasing helpful bystander behaviour among boys by changing their capacity to mentalize, or empathize with victims of aggression” [Twemlow *et al.* 2008: 958]. It is important to note that these three studies were school-linked interventions but were not developed within the framework of PE as it was our study.

Specifically within the framework of PE, Tejero-Gonzalez *et al.* [2011] studied the outcomes of a nine-sessions self-defence teaching unit provided for 102 secondary school students. This pre-experimental study (a control group was not included) showed that students improved significantly their attitudes toward gratuitous violence, although the effect size was low. Differences between the pre-test and the post-test were higher when only considering those students with higher attitudes toward violence in the pre-test. Finally, Menendez and Fernandez-Rio [2016] conducted a quasi-experimental study in which they compared the effects of a 16-sessions kick-boxing teaching unit developed under different pedagogical models (model A: Sport Education + Teaching for Personal and Social Responsibility; model B: technical approach) on adolescents’ attitudes toward violence, responsibility, friendship goals and basic psychological needs. Results showed that model A produced significant improvements in the participants’ attitudes toward violence, among other variables, compared to model B. This is in line with those authors that stressed the importance of the processes (“how to do”) over the contents (“what to do”) [Bailey *et al.* 2009]. Indeed, the positive outcomes found in the cited studies and also in ours were related to educational approaches in which moral and peace education were very present.

Similarly to the studies cited in the previous paragraph, ours has some limitations. Firstly, only two teaching units were applied. It would be advisable for future research to develop longer-term interventions and analyse their outcomes. Second, we did not carry out a follow-up of the results of the intervention. Further studies should explore the maintenance of improvements on students’ attitudes toward violence over time. And third, despite the methodological design followed they could have existed unknown educational variables that might have influenced the results of our research. Further studies should also assess the transferability of this kind of MA&CS teaching units to different formal PE contexts such as different educational centres or educational levels.

Our study also provided a gender analysis which showed no differences between males and females in the control group and just one difference (climate involving ego/performance) in the pre-test for the experimental group. This probably has to do with the cited positive image of PE that participants, males and females, previously had. The pre-test – post-test comparison showed that males significantly improved on the variable climate involving task/learning while the variable climate involving ego/performance decreased although not significantly. This is again a reflection of the processes-centred approach followed by the teacher and the novelty of judo and capoeira movements for students. Improvements on unjustified violence were for both males and females of the experimental group. Previous research found higher levels of behavioural problems in males and also higher improve-

ments in these problems after the MA&CS intervention [Lakes, Hoyt 2004; Twemlow *et al.* 2008]. In contrast, in our study, and probably due to contextual factors, both males and females scored high in the pre-test – which is a cause of concern as we said – and this explains why both groups got improvements in the post-test.

## Conclusion

This research adds more evidence of the potential contribution of MA&CS to the formal physical education curriculum. It analysed the influence of MA&CS on involvement, satisfaction and violence compared with conventional sports. In addition, a gender contrast has been established in every factor, which represents some advance on the existing literature. Our study showed that the development of two MA&CS teaching units improved students' attitudes toward violence and generated a higher peer motivational climate than, and similar fun as two teaching units of popular sports such as football and basketball. At the moment, the evidence shows that for MA&CS to contribute positively to students' comprehensive development it is important that teachers follow educational models and/or approaches that enhance moral and social values such as collaboration, self-control and respect for others. These moral and social values can be found in MA&CS practiced under a traditional approach and also in many contemporary PE instructional models.

We believe that our study may be relevant for all professionals in teaching MA&CS, since it has shown the potential of these disciplines for task involvement and the reduction of violence, also for PE teachers who have not yet incorporated MA&CS in their classrooms.

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### **Sporty walki kontra sporty zespołowe: wpływ płci na atmosferę motywacji, zabawy i przemocy wśród uczniów-rówieśników w trakcie zajęć wychowania fizycznego**

**Słowa kluczowe:** sztuki walki, sporty walki, wychowanie fizyczne, motywacja, zabawa, przemoc w szkole, edukacja w pokoju

#### **Abstrakt**

Tło i cel. Wielu autorów proponowało włączenie sztuk walki i sportów walki do formalnych zajęć wychowania fizycznego, chociaż nie ma jeszcze mocnych dowodów świadczących o korzyściach płynących z ich praktyki dla uczniów. Niniejsze badanie miało na celu opisanie wpływu dwóch jednostek dydaktyczno-wychowawczych (*judo* i *capoeiry*) na klimat motywacyjny, przyjemność czerpaną z zajęć i stosunek do przemocy oraz porównanie tych efektów z doświadczeniami uczniów uczestniczących w zajęciach ze sportów zespołowych (piłki nożnej i koszykówki).

Metody. Przeprowadzono quasi-eksperymentalne, długotrwałe badania przed-po (dwie grupy), obejmujące 221 uczniów w przedziale wiekowym od 13 do 16 lat. Grupa eksperymentalna (n = 105) uczestniczyła w zajęciach dydaktycznych sztuk walki i sportów walki, natomiast grupa kontrolna (n = 116) w grach zespołowych. Do psychologicznej oceny odpowiedzi respondentów zastosowany został kwestionariusz dotyczący atmosfery motywacji rówieśników, stopnia rozrywki/nudy w czasie zajęć wychowania fizycznego i postawy wobec przemocy. W analizach statystycznych uwzględniono średnie i standardowe odchylenia, dwukierunkową równoważną wieloczynnikową analizę wariacji ANOVA i zakres rezultatów.

Wyniki. Zajęcia z sztuk walki i sportów walki znacząco poprawiły klimat motywacyjny w klasie obejmujący wyznaczone zadania/naukę i postawy studentów wobec nieuzasadnionej przemocy. Porównawcze badanie przeprowadzone po teście między grupami wykazało, że grupa eksperymentalna odrzuciła nieuzasadnioną przemoc w wyższym stopniu niż grupa kontrolna (p = 0,014, d = 0,81). W grupie doświadczalnej poprawa wyników dotycząca nieuzasadnionej przemocy dotyczyła zarówno mężczyzn (p = 0,017, d = 0,82), jak i kobiet (p = 0,021, d = 0,78), podczas gdy atmosfera związana z zadaniem/nauką nastąpiła tylko u mężczyzn (p = 0,037, d = 0,77).

Wnioski. Zajęcia z sztuk walki i sportów walki poprawiły nastawienie uczniów wobec przemocy i stworzyły lepszy klimat motywacyjny wśród rówieśników i podobną przyjemność czerpaną z zajęć niż w przypadku zajęć sportów zespołowych.