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Physical Activity and Academic Performance in Children and Preadolescents: A Systematic Review

Ramón Chacón-Cuberos[1], Félix Zurita-Ortega[2], Irwin Ramírez-Granizo[2] and Manuel Castro-Sánchez[2*]

[1]Department of Research Methods and Analysis in Assessment, University of Granada, Spain
[2]Department of Art, Music and Body Expression Education. University of Granada, Spain

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***Corresponding author:**
Manuel Castro-Sánchez
manuelcs@ugr.es

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Abstract

Physical activity (PA) is an essential means of improving physical and mental health. Its influence on various cognitive aspects such as attention, memory and concentration has been widely studied and it may have a close relationship with academic performance. The objective of this study was to conduct a systematic review of the relationship between doing physical activity and academic performance in schoolchildren. The Web of Science (WOS) repository was used as the main search engine with the selection of longitudinal and experimental studies published in the last five years as the primary criterion. A total sample of 23 research papers was obtained in which intervention programmes based on physical exercise were used to improve academic performance or related parameters. The main findings include the need for PA or physical exercise to be prescribed with adequate volume and intensity parameters, since an insufficient load is not related to academic and/or cognitive performance. Similarly, gross motor tasks and team sports are more effective as they involve greater cognitive demands. The fields of mathematics and logical thinking benefited most.

Keywords: physical activity, sport, academic performance, cognitive performance, schoolchildren

Introduction

Lifestyles in today's society have changed noticeably among children and are becoming less healthy (Donnelly et al., 2017). The time spent by schoolchildren doing physical activity (PA) has diminished in favour of other types of habits such as sedentary digital leisure which is associated with a high use of television, videogames and mobile phones (Gao et al., 2016). This state of affairs is compounded by higher intakes of processed foods with a high calorie component and large amounts of salt, fat and sugars, leading to increased levels of overweight and obesity, together with other related pathologies (Schmidt et al., 2015).

León et al. (2018) define obesity as a non-standard accumulation of body fat that poses a health risk. This pathology has spread among young people, reaching up to 20% in children and adolescents. It has also been shown to be related to other diseases such as diabetes and cholesterol and cognitive problems including low self-esteem, depression and poor academic performance (Schmidt et al., 2015). In addressing this problem, it is essential to increase levels of PA, defined as any body movement involving energy expenditure (Gao et al., 2016). Indeed, several international organisations recommend that young people do at least 60 minutes of PA a day at moderate or vigorous intensity and with a high aerobic component (Mullender-Wijnsma et al., 2015).

In this respect, Van den Berg et al. (2016) show that doing physical activity and sport generates myriad benefits at a multi-factorial level. In physical terms, higher levels of PA are known to be associated with better body composition, greater bone mineral density and higher insulin sensitivity. Its cognitive benefits have also been widely demonstrated, as an active lifestyle helps to reduce anxiety and stress and enhances self-esteem, attention span and executive functions (Donnelly et al., 2017; Mullender-Wijnsma et al., 2016). In particular, recent studies suggest that doing sport helps to improve academic performance at various educational levels (Krafft et al., 2014).

Similarly, educational failure has also become another major problem for school-age young people, which is why it is advantageous to promote an active lifestyle that indirectly improves academic performance (Mullender-Wijnsma et al., 2015). More specifically, the impact of PA has been evidenced in certain factors influencing academic performance, such as memory, attention span and executive functions (Donnelly et al., 2017), due to the reduction brought about by exercise in cortisol concentrations (a hormone associated with a lower attention span), the production of endorphins in order to create attitudes more conducive to learning and better blood supply to the brain, which enhances the stimulation of neurotrophic factors (Krafft et al., 2014).

Some recent studies have explored this relationship and have yielded significant results. Howie et al. (2015) examined the effect of active break times during regular classes on the executive functions and mathematical performance of schoolchildren, finding that sufficiently lengthy PA led to an improvement in them (Ma et al., 2014). By contrast, studies such as those by Donnelly et al. (2017) and Tarp et al. (2016) indicated, through longitudinal studies, that PA was not related to school performance. This standpoint underscores the need to conduct a review of the existing literature on this subject, especially in longitudinal and experimental research, since opposing and contradictory results are found, which means that greater clarity is called for.

Therefore, the objective of the study was to conduct a systematic review of the scientific literature addressing the impact of doing PA on academic performance in preadolescent young people through longitudinal and experimental studies.

Methodology

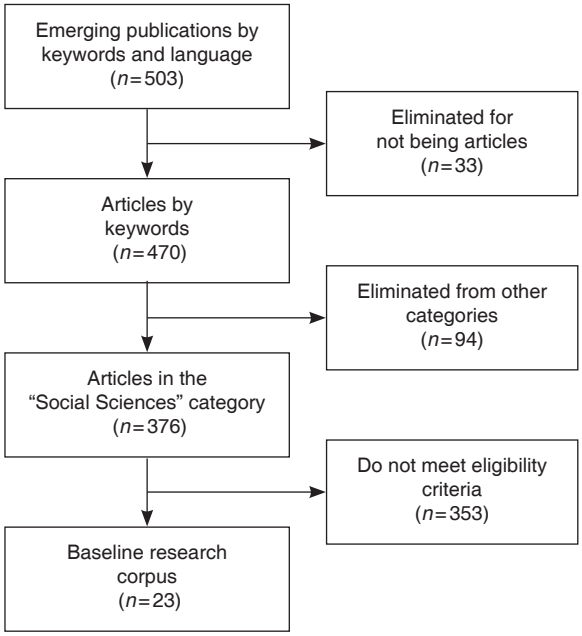
This study followed the PRISMA statement guideline for reporting systematic reviews in order to ensure appropriate structure and development of the paper (Hutton et al., 2015).

Search strategy and procedure

The database used to carry out the proposed systematic review was Web of Science (WOS). The SCOPUS search engine was also used to cross-check the information retrieved from the main database. The review was conducted in July 2018, analysing studies addressing physical fitness and academic performance in school-age children. The search period was from 2014 to 2018, using "Physical activity", "Academic performance" and "Children" as keywords and "and" as the Boolean operator. In the refinement of the search, all the publications in English from the "Web of Science Core Collection" in the "Social Sciences" research domain were considered. Following these guidelines, 470 research papers were obtained.

The inclusion criteria used to specify the research papers that would make up the study sample were: (1) Scientific studies presenting PA and the academic performance of students as variables; (2) Articles using a longitudinal design; (3) Research showing statistical results that allow the analysis of the study variables; (4) Publications subject to peer review.

Figure 1
Flowchart of the selection of the baseline research corpus



Scientific literature population and sample

The population of scientific articles set for this study was 503 documents retrieved from the WOS data repository. The sample making up the baseline corpus of this systematic review corresponds to 23 scientific publications, considered after the eligibility and codification criteria had been applied. (Figure 1)

Results

This section displays the descriptive results of the selected studies ($n=23$) that address the improvement of academic performance through physical activity.

Evaluation of the scientific output

Using the search procedure and strategy, a total of 376 scientific research articles on the influence of PA on academic performance during the period 2014-2018 were registered in WOS considering Social Sciences as the main research area. This accounted for 6.11% ($n=24$) of the global count of scientific literature output on this topic in WOS. A review of the total output points to an upward trend since 2014, peaking in 2017 with 100 publications. There was a decline in 2018 with 51 scientific papers, although it should be noted that this annual cycle was still open when the review was conducted, in July 2018. As for the research corpus, output rose between 2014 and 2016 and then flatlined in 2017 and 2018 with three publications in each period. This confirmed that there was a fall in publications examining the influence of doing PA on the academic performance of school-age children in the last two years.

Results of the studies selected for systematic review

Table 1 shows the results obtained after the systematic review using the aforementioned search criteria and analysing the association between doing PA and academic performance in school-age girls and boys and preadolescents. A total participation of 7,160 subjects between the ages of 7 and 15 was obtained by aggregating the sample of each paper. All of them took part in various kinds of longitudinal studies with some type of control in order to confirm causal relationships between the different forms of doing PA, academic performance and various factors related to it such as attention span, executive functions and cognitive performance. The following coding was used to extract the information in the systematic review: (1) Authors and year of publication; (2) Methodological design of the study; (3) Sample and breakdown of the study into experimental group (EG) and control group (CG); (4) Minimum, maximum and mean age; (5) Basic description of the intervention carried out in terms of load and volume of exercise; (6) Length of the intervention; (7) Dependent variables considered in the longitudinal study (academic performance, attention, etc.); (8) Instruments used to assess dependent variables; and, (9) Conclusions and findings.

Table 1
Baseline corpus of articles addressing doing physical activity and academic performance in children

Authors and year	Design	Sample (E-C)	Age (min-max.)	Intervention	Length	Variables	Instrument	Conclusions
Ardoy et al. (2014)	Randomised controlled intervention	67 (26-41)	13,64 (12-14)	4 PE sessions (55 min) per week and 4 sessions (55 min) at higher intensity	4 months	Cognitive performance Academic performance	IIGF-M Term grades	The schoolchildren who did 4 sessions of PA at higher intensity improved academic performance, although cognitive performance was not improved.
Beck et al. (2016)	Cluster-randomised intervention	165 (110-55)	7.5 (7-8)	Motor-enriched mathematical teaching (60 min 3 times a week)	6 weeks	Mathematical performance Cognitive performance	Ad hoc test (30 items) CANTAB	Greater improvements in subjects with lower maths performance and who perform gross motor tasks. Maintained for up to 8 weeks.
Bugge et al. (2018)	Quasi-experimental study with control group	1181 (680-501)	8.33 (8-9)	Triple Physical Education time (from 90 min to 270 min per week)	6 years	Academic performance	Danish system national test	The schoolchildren were not affected by the intervention, although health parameters such as cardio-respiratory fitness did improve.
Bunketorp et al. (2015)	Quasi-experimental design with control group	349 (182-167)	9.95 (9-11)	2 weekly extracurricular PA sessions lasting 30-45 min	4 years	Academic performance Emotion and behaviour	National results SDQ	Academic performance increased, student behaviour improved and the level of wellbeing increased, especially in girls.
Chen et al. (2017)	Single-blind randomised control trial	66 (33-33)	14.18 (13-16)	Multi-component exercise 3 days a week for 50 min at moderate intensity	12 weeks	Meta-cognitive tasks	TOL	Meta-cognitive capacity was improved in obese adolescents, entailing the capacity to plan and process spatial information.
Donnelly et al. (2017)	Cluster-randomised intervention	584 (316-268)	8.1 (7-9)	Inclusion of 10 minutes of PA per morning and afternoon lesson (100 min/week)	3 years	Academic performance	WIAT-III	The A+PAAC programme neither improved nor reduced academic performance, although it did generate physical and mental health benefits.
Duncan y Johnson (2014)	Cross-longitudinal study	18 (18-NA)	9.8 (8-11)	Fill in WRAT 4 after 20 min at 50% and 75% of HRR on a cycling ergometer	20 min	Academic performance	WRAT 4	Moderate intensity exercise on a cycling ergometer improved reading but not arithmetic. The improvements were not associated with greater intensity.
Fedewa et al. (2015)	Randomised controlled intervention	460 (156-304)	NA (school-age)	Inclusion of 20 min of PA per day (5 times a week) by means of movement card games	8 months	Fluid intelligence Academic performance	SPM National results	The intervention did not improve fluid intelligence. There were improvements in performance in mathematics but not in reading.

Note. Concepts. PA: Physical Activity; PE: Physical Education; NA: Not available; GC: Control group; GE: Experimental group. Instruments: BOSST: Behavioral Observation of Students in Schools Tool; CANTAB: Cambridge Neuropsychological Test Automated Battery; CBB: Costage Brief Battery; NYSTP: New York State Testing Program; d2TA: d2 Test of Attention; LDST: Letter Digit Substitution Test; NDET: Norwegian Directorate for Education and Training; RIAS: Reynolds Intellectual Assessment Scales; IGF-M: Test de Inteligencia Factorial; TOL: Tower of London-Drexel task; TMT: Trail-Making Test; TEIQque-SF: Trait and Emotional Intelligence Questionnaire Short Form; SPM: Standard Progressive Matrices; SDQ: Strengths and Difficulties Questionnaire; WIAT-III: Wechsler Individual Achievement Test-Third Edition; WRAT 4: Wide Range Achievement Test.

Table 1 *(Continuation)*
Baseline corpus of articles addressing doing physical activity and academic performance in children

Authors and year	Design	Sample (E-C)	Age (min.-max.)	Intervention	Length	Variables	Instrument	Conclusions
Gao et al. (2016)	One group pre- and post-test repeated measures	95 (95-NA)	10.31 (10-11)	50 min. weekly school PA + 20 min. daily break based on active videogames	6 weeks	Academic effort On-task behaviour	Validated scale Direct observation	The intervention programme based on active videogames at school slightly improved academic effort and behaviour.
Howie et al. (2015)	Cross-longitudinal study	96 (96-NA)	NA (9-12)	5, 10 and 20 min. of moderate intensity classroom PA breaks	5/10/20 min	Executive functions Memory Academic performance	TMT Digit Recall Maths test	5 minutes of PA did not generate cognitive improvements, although 10 and 20 minutes did improve maths performance. The programme did not negatively affect executive functions.
Krafft et al. (2014)	Randomised controlled intervention	43 (24-19)	9.8 (7-11)	Moderate-intensity aerobic exercise 40 minutes per day (5 days a week)	8 months	Cognition (planning, attention, etc.)	CAS	Physical exercise improved circulation in the anterior cortex in overweight children (decreased supply and greater efficiency) and greater cognitive activation.
Lind et al. (2018)	Randomised controlled intervention	931 (838-93)	11.9 (10-12)	Two 45-minute exercise sessions per week with the FIFA 11 programme (2 football sessions)	11 weeks	Cognitive performance	CBB	The FIFA 11 programme based on high-intensity football games had positive effects on cognitive performance (attention, alertness and working memory).
Ma et al. (2014)	Cross-longitudinal study	44 (44-NA)	NA (school-age)	5 days with "FUNterval" activities (4 min. high intensity PA breaks)	3 weeks	Behaviour observed in the classroom	BOSST	The FUNtervals programme reduced the time spent off-task (motor, passive, and verbal behaviour).
Mullender-Wijnsma et al. (2015)	Randomised controlled intervention	81 (20-61)	8.2 (7-9)	Language and maths activity with 10-15 min. physical exercise 3 times a week	22 weeks	Time spent on tasks	Time spent on tasks	Active language and mathematics activities improved time-on-task in both groups, albeit lower in socially disadvantaged children.
Mullender-Wijnsma et al. (2016)	Randomised controlled intervention	499 (249-250)	8.1 (7-9)	Active maths and language classes from 20 to 30 min. 3 times a week	44 weeks over 2 years	Academic performance in language and mathematics	Global reading and maths ability tests	Doing PA in mathematics and language improved performance in these fields due to the level of motivation and the inherent benefits of PA in cognition.

Note. Concepts. PA: Physical Activity; PE: Physical Education; NA: Not available; GC: Control group; GE: Experimental group. Instruments: BOSST: Behavioral Observation of Students in Schools Tool; CANTAB: Cambridge Neuropsychological Test Automated Battery; CBB: Costage Brief Battery; NYSTP: New York State Testing Program; d2TA: d2 Test of Attention; LDST: Letter Digit Substitution Test; NDET: Norwegian Directorate for Education and Training; RIAS: Reynolds Intellectual Assessment Scales; IGF-M: Test de Inteligencia Factorial; TOL: Tower of London-Drexel task; TMT: Trail-Making Test; TEIQque-SF: Trait and Emotional Intelligence Questionnaire Short Form; SPM: Standard Progressive Matrices; SDQ: Strengths and Difficulties Questionnaire; WIAT-III: Wechsler Individual Achievement Test-Third Edition; WRAT 4: Wide Range Achievement Test.

Table 1 *(Continuation)*
Baseline corpus of articles addressing doing physical activity and academic performance in children

Authors and year	Design	Sample (E-C)	Age (min.-max.)	Intervention	Length	Variables	Instrument	Conclusions
Phillips et al. (2015)	Pre-experimental intervention	72 (36-36)	14.1 (14-15)	Vigorous aerobic PA circuit with 9 activities and a total duration of 20 min	20 min	Maths performance	NYSTP	The mean score in mathematical performance was increased in the group that performed vigorous PA after 30 min. (not at 45 min).
Quinto and Klausen (2016)	Randomised controlled intervention	925 (554-371)	ND (11-13)	HIT training for 20 min. 2 times a week	2 years	Academic performance	Annual grade score	The effect of the intervention was not significant in most fields related to academic performance, and in some cases was even negative.
Resaland et al. (2016)	Cluster-randomised controlled intervention	57 (28-29)	10.2 (10-11)	90 min. a wk. of school PA + active breaks per lesson + 10 min. of home PA	7 months	Academic performance in English, language and mathematics	NDET	No statistical differences in academic performance are shown, although the arithmetic score improved in those with poorest performance at baseline.
Riley et al. (2016)	Randomised controlled intervention	240 (142-98)	11.1 (11-12)	Mild-moderate PA performance in maths lessons (3 x 60 min)	6 weeks	Academic performance in mathematics	Field score + teacher scale	PA levels increase without sacrificing academic performance, which improved through task resolution and observed behaviour.
Ruiz-Ariza et al. (2018)	Randomised controlled intervention	190 (87-103)	13.32 (12-15)	Mild intensity PA performance (walking) through Pokémon Go (40 min a day)	8 weeks	Cognitive performance Emotional intelligence	*Ad hoc* based on RIAS TEIQue-SF	Selective attention, concentration and the ability to socialise were improved by using this active videogame for 40 minutes a day.
Schmidt et al. (2015)	Randomised controlled intervention	181 (126-55)	11.35 (10-12)	PE sessions with team games or aerobic exercise according to experimental group	6 weeks	Executive functions Inhibition	E-Prime Software Flanker Task	The inclusion of cognitive engagement in PA (team games vs. aerobic exercise) leads to greater improvements in cognitive performance.
Tarp et al. (2016)	Cluster-randomised intervention	632 (215-490)	12.9 (12-14)	60 min. moderate school-based PA + 10 min home PA 5 times a week (both)	20 weeks	Cognitive control Academic performance	Eriksen Flanker Task Maths test	There is no PA effect on executive functions and maths performance. The level of PA did not vary, so no causal relationships were established.
Van den Berg et al. (2016)	Randomised controlled intervention	184 (184-NA)	11.7 (10-13)	12-minute aerobic, coordination and strength training by experimental group	2 days (1 control day)	Attention Cognitive performance	d2TA LDST	12-minute aerobic, coordination or strength exercise sessions (mild-to-moderate intensity) have no effect on attention and academic performance.

Note. Concepts. PA: Physical Activity; PE: Physical Education; NA: Not available; GC: Control group; GE: Experimental group. Instruments: BOSST: Behavioral Observation of Students in Schools Tool; CANTAB: Cambridge Neuropsychological Test Automated Battery; CBB: Costage Brief Battery; NYSTP: New York State Testing Program; d2TA: d2 Test of Attention; LDST: Letter Digit Substitution Test; NDET: Norwegian Directorate for Education and Training; RIAS: Reynolds Intellectual Assessment Scales; IGF-M: Test de Inteligencia Factorial; TOL: Tower of London-Drexel task; TMT: Trail-Making Test; TEIQque-SF: Trait and Emotional Intelligence Questionnaire Short Form; SPM: Standard Progressive Matrices; SDQ: Strengths and Difficulties Questionnaire; WIAT-III: Wechsler Individual Achievement Test-Third Edition; WRAT 4: Wide Range Achievement Test.

Current state of the question and discussion

The main conclusions drawn from the systematic review of longitudinal and experimental studies are set out below. The research corpus consisted of 23 scientific papers with randomised designs that address the relationship between doing PA and academic and/or cognitive performance in preadolescents. Various PA prescriptions are used, including active breaks, strength-based training, an aerobics component and multi-component approaches.

Academic performance

Most of the studies that address academic performance using the scores obtained in regular tests show how doing PA results in an improvement in such performance, although this needs to be qualified. In the first place, interventions that involved exercise of greater intensity and length as well as gross motor skills led to more pronounced improvements in academic performance (Beck et al., 2016; Howie et al., 2015; Phillips et al., 2015). This shows the importance of appropriate prescription, as a minimum activation of the body that generates responses which improve cerebral blood supply or endorphin production is required (Krafft et al., 2014).

These findings may also be based on a psycho-pedagogical standpoint. The papers by Mullender-Wijnsma et al. (2015) and Ma et al. (2014) show how the inclusion of tasks that actively work on educational content and the introduction of active breaks improve academic performance in children with lower grades. As underlying reasons for these premises, Quinto and Klausen (2016) demonstrate how the addition of play in academic tasks fosters learning by involving higher levels of intrinsic motivation and less academic stress. Similarly, the inclusion of active breaks makes it possible to restore the attention span and improve cerebral blood supply, leading to cognitive benefits (Krafft et al., 2014). Bunketorp et al. (2015) also report how such programmes promote the perceived wellbeing and behaviour of schoolchildren.

Turning to the fields most closely linked to the advantages of doing PA, the papers by Beck et al. (2016), Fedewa et al. (2015) and Resaland et al. (2016) indicate how the benefits of their intervention programmes were more closely associated with improvements in mathematical performance, with special emphasis on arithmetic, while not finding any relationship with reading comprehension, although Duncan and Johnson (2014) report contradictory findings. The explanation lies in the improvements that doing PA brings about in a number of factors associated with cognitive performance and which are more related to mathematical performance (Donnelly et al., 2017). Finally, no improvements were observed after the guidelines of some studies were applied, although performance did not worsen either. In all of them, the external load involved in terms of length was not high (Bugge et al., 2018; Donnelly et al., 2017; Quinto et al., 2016).

Cognitive performance

Several authors argue that doing PA might not only improve academic performance directly but would also help to enhance cognitive performance, which will have a positive impact on school performance (Donnelly et al., 2017). More specifically, Chen et al. (2017) demonstrate how multi-component training based on strength work, coordination and aerobic capacity enables meta-cognitive development through improvements in attention span and planning which can be explained by better blood supply in the anterior cerebral cortex that results in higher mental activation (Krafft et al., 2014).

The studies analysed indicate the need for PA prescription to meet specific requirements. In particular, Fedewa et al. (2015) did not report any improvement in fluid intelligence when adding 20 minutes of PA per day for 8 months. Similarly, Tarp et al. (2016) and Van den Berg et al. (2016) failed to achieve any changes in executive functions when implementing short-term mild-to-moderate intensity physical exercise programmes. In this respect there are two basic requirements for physical exercise to generate positive changes in cognition. The first is in the load of the intervention performed, involving a minimum of 150 minutes per week of work in which the intensity is moderate (Cheng et al., 2017; Lind et al., 2018). The second requirement lies in the cognitive demands of the task to be performed, since a cooperation sport with an opponent will produce more pronounced cognitive improvements by involving more stimuli, thus helping to improve reasoning ability and selective attention (Ruiz-Ariza et al., 2018; Schmidt et al., 2015).

Physical condition and general health

In addition to the impact of PA on school performance, most of the experimental studies analysed also addressed changes in health status indicator parameters. It was found that regardless of changes in cognitive or academic performance, several components of physical fitness improved in most of the studies, and better levels of cardio-respiratory fitness (Bugge et al., 2018), waist circumference and body mass percentiles (Ardoy et al., 2014; Donnelly et al., 2017) were obtained.

This shows that doing physical activity and sport is an indispensable factor in achieving physical and mental wellbeing from an early age (Mullender-Wijnsma et al., 2015). In fact, Bugge et al. (2018) stress the importance of encouraging an active lifestyle from an early age in order to prevent childhood obesity and several pathologies such as diabetes, cholesterol and cardiovascular problems. Specifically, the World Health Organization (2010) recommends at least 60 minutes of moderate PA a day, a minimum reflected in the load volume in most interventions with positive outcomes.

Study limitations

Finally, the main limitations of this systematic review should be noted. Firstly, the search range should be underlined, as it may be considered both a strength and a limitation. The studies used were confined to the last five years in order to provide an up-to-date picture of the current state of research. However, such a narrow timeframe may have overlooked studies of national and international significance. Another limitation may lie in the selection of only longitudinal and experimental studies. As with the previous limitation, this selection criterion helps to engender relevant conclusions based on results that demonstrate causality. Finally, there is a wide range of instruments for assessing academic and cognitive performance in the studies analysed and this makes it difficult to compare their findings.

Conclusions

Doing PA makes it possible to improve academic performance in preadolescents, yielding higher improvements the greater the volume and intensity of the exercise. The effect of doing PA decreases with time after its discontinuation and the field that benefits most is mathematics and arithmetic.

Cognitive performance also benefits from doing PA. Tasks featuring higher cognitive demands and involving gross motor skills have a greater effect. This makes for improvements in cerebral blood supply, attention and concentration but not in executive functions.

Most of the studies show that regardless of the impact of PA on academic and cognitive performance, improvements are achieved in health status and physical condition, especially through changes in body composition and cardio-respiratory fitness.

Finally, very disparate results are observed in most of the studies, generally due to the existence of a wide diversity of contexts, exercise prescriptions and instruments. Consequently, the criteria for the assessment of the variables analysed need to be standardised.

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Prosocial and Antisocial Behaviour in School Sports

Pedro Ángel Latorre-Román[1], María Teresa Bueno-Cruz[1], Melchor Martínez-Redondo[2] and Jesús Salas-Sánchez[3]*

[1] Department of Body Expression Education, University of Jaen, Spain
[2] Ministry of Education, Regional Government of Andalusia, Spain
[3] Universidad Autónoma de Chile, Chile

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***Corresponding author:**
Jesús Salas-Sánchez
jesussalas644@gmail.com

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Abstract

The purpose of this study was to analyse prosocial and antisocial behaviour in school sport. It involved 247 girls and boys between the ages of 8 and 12 years, organised into five groups: athletics, football, basketball, multisport and sedentary. The results suggest that in the groups of sportspersons, boys present greater antisocial behaviour than girls and girls show greater empathy. The football group presents less perspective-taking and the sedentary group greater empathic concern. In turn, the football group exhibits greater aggression than the other groups, with significant differences in relation to athletics. It may be concluded that participation in competitive children's sport is not directly related to greater prosocial behaviour and less antisocial behaviour.

Keywords: sport, children, socialisation, competition

Introduction

The importance of physical activity (PA) for health is widely recognised. Research indicates physical and psychological benefits when it is performed by children (Ahn & Fedewa, 2011; Janssen & Leblanc, 2010). Furthermore, physical education and sport have been considered to be important instruments in the development of personal and social values, hence their educational and teaching relevance (Ruiz & Cabrera, 2004). Sport is therefore often viewed as an instrument for the moral and social development of children and adolescents (Bortoli et al., 2012) as it is an appropriate means for achieving personal and social development values, a desire for self-improvement, integration, respect for others, tolerance, acceptance of rules, perseverance, teamwork, overcoming limits, self-discipline, etc. (Ruiz & Cabrera, 2004). Gutiérrez (2004) points out the socialising power of sport and as a tool for integrating immigrant groups, teaching responsibility to young people at risk, preventing and treating drug addiction, fostering reintegration in prisons, social recovery of disadvantaged neighbourhoods, furthering the socialisation of the elderly, etc.

However, participation in sport is also associated with negative outcomes, primarily because it is competitive and there is undue pressure to win (Li et al., 2015), which can lead to aggressive and unsportspersonlike behaviour (Pelegrin et al., 2013). In some cases, sportspeople are swept up by the models of entertainment sport and its most negative expressions: aggressiveness, violence, a disproportionate craving for victory and other socially undesirable qualities (Gutiérrez, 2004).

Socialisation through sport is about learning general attitudes, values and skills (fair play, team spirit or aggressive behaviour) which are acquired during sport. It also involves considering how socialisation agents, the organisational structure, the philosophy of sports programmes, the family and the coach's guidance and behaviour can impact the sports experience and the orientation of children's values (Boixadós et al., 1998). This socialising potential of sport can have negative or positive consequences, depending on how the interaction between the socialising person, socialisation agents and social contexts is constructed (Ramírez et al., 2004). Hence, sport is a neutral environment for socialisation where the determining factors in the socialisation process are: 1) socialisation agents (parents, coaches and organisers of sports competitions); and 2) the various socialising situations in children's sport, i.e. time, place, person, circumstances and consequences (Cruz et al., 1996).

Prosocial behaviour involves acting with humanity, while the inhibitory aspect represents antisocial behaviour (Bortoli et al., 2012). For example, verbally encouraging a teammate and physically intimidating an opponent are prosocial and antisocial behaviours in sport, respectively (Hodge & Lonsdale, 2011). In terms of education, it would be preferable for school sport to encourage prosocial behaviour. Both person (goal orientations) and contextual (motivational climate) variables should be considered with respect to prosocial and antisocial behaviours in sport (Hodge & Lonsdale, 2011). Task orientation and mastery climate are positive predictors of prosocial behaviour, while ego orientation and performance climate are positive predictors of antisocial behaviour (Kavussanu, 2006). Accordingly, there is a significant and positive relationship between the highest levels of self-determination, i.e. of intrinsic motivation, which involves an athlete's commitment to an activity due to the pleasure, enjoyment and satisfaction it yields for them and the emergence of prosocial behaviours and intentions (Prat et al., 2019; Sánchez-Oliva et al., 2011).

Consequently, socialisation and moral development are important factors in school sport. However, empirical data are still scant, and more studies would be needed to analyse the potential differences between sports and the age and gender of participants in relation to prosocial and antisocial behaviours in sport. Therefore, the aim of this study was to analyse these behaviours in federation-registered school athletes in relation to gender and compares to girls and boys who do not do sport.

Methodology

Participants

This study included 247 primary education (PE) children (140 boys, 107 girls) aged 8 to 12, selected from a number of sports clubs and PE schools in Jaen province and divided into five groups: athletics ($n = 40$), football ($n = 54$), basketball ($n = 47$), multisport ($n = 52$) and sedentary ($n = 54$). Convenience sampling was used, and the inclusion criteria were going to school and not having any physical and/or intellectual disabilities. Furthermore, children doing athletics, football and basketball had to be registered with a federation. Parents signed an informed consent form for their children's voluntary participation in this research. The study was approved by the Bioethics Committee of the University of Jaen.

Table 1
Socio-demographic results of the children's parents in relation to the analysed group

		Sedentary	Multisport	Football	Athletics	Basketball	*p*-value
Educational level *n* (%)	No formal education	4 (7.4)	2 (3.8)	7 (13)	1 (2.5)	3 (6.4)	.016
	Primary	47 (87)	39 (75)	39 (72.2)	23 (57.5)	32 (68.1)	
	Secondary	3 (5.6)	8 (15.4)	6 (11.1)	14 (35.0)	9 (19.1)	
	University	0 (0.0)	3 (5.8)	2 (3.7)	2 (5.0)	3 (6.4)	
Marital status *n* (%)	Married	48 (88.9)	47 (90.4)	45 (83.3)	32 (80.0)	41 (87.2)	.736
	Separated/divorced	6 (11.1)	5 (9.6)	7 (13.0)	7 (17.5)	5 (10.6)	
	Widow/widower	0 (0.0)	0 (0.0)	2 (3.7)	1 (2.5)	1 (2.1)	
Socioeconomic status *n* (%)	Low	3 (5.6)	3 (5.8)	6 (11.1)	1 (2.5)	4 (8.5)	.533
	Medium	51 (94.4)	49 (94.2)	48 (88.9)	39 (97.5)	43 (91.5)	
Boys/girls		19/35	27/25	36/18	32/8	26/21	<.001

Materials and Instruments

The Spanish version of the Interpersonal Reactivity Index (IRI) was used for the analysis of prosocial behaviour (Pérez-Albéniz et al., 2003). It is a scale consisting of 28 items divided into four subscales which in turn measure four different magnitudes of the general concept of empathy: Perspective-Taking, Fantasy, Empathic Concern and Personal Distress, each one comprised of seven items. This instrument measures the cognitive attitude and emotional reaction of the individual and their empathic attitude and presents appropriate psychometric properties (Cronbach's $\alpha = .70$-$.78$).

The Antisocial Behaviour Questionnaire (*Cuestionario de Conducta Antisocial*, CCA) was used for the analysis of antisocial behaviour (Martorell & González, 2011). It consists of 36 items, including four alternative answers ("never", "sometimes", "often" and "always"). This instrument is divided into three subscales. The first subscale is aggression, which alludes to verbal or physical aggression towards others. The second subscale is isolation, and it evaluates the need to be alone, fleeing from and avoiding situations that involve interacting with others. The last subscale is called anxiety/withdrawal, and it evaluates difficulty in interacting with others, this time taking vital or functional reactions into account. This instrument also presents appropriate psychometric properties (Cronbach's $\alpha = .91$).

Finally, an *ad hoc* socio-demographic questionnaire was used to gather information from the parents (age, marital status, educational level and socioeconomic status).

Procedure

The permission of the school management and the coordinators of the sports clubs was secured prior to the completion of the questionnaires. Once the permission has been given, the questionnaires were administered in small groups in the presence of research staff from the study. The questionnaires were self-administered, all queries were answered and the confidentiality and anonymity of the responses was ensured. The questionnaires took approximately 30 minutes to complete. Data were gathered throughout the 2015-2016 school year.

Statistical Analysis

The data in this study were analysed using the statistical program SPSS v.19.0 for Windows (SPSS Inc, Chicago, USA). The level of significance was set at $p < .05$. The data are presented as descriptive mean, standard deviation and percentage statistics. Normal data distribution and equality of variances were checked by the Kolmogorov-Smirnov and Levene contrast tests, respectively. Differences between genders and types of sport were examined by analysis of variance (ANOVA) with *post hoc* analysis (Bonferroni correction). Finally, a Pearson correlation analysis was performed between prosocial and antisocial behaviour.

Results

Table 1 shows the socio-demographic results of the children's parents in relation to each group analysed and the number of boys and girls per group. There were significant differences in the level of education, and the football group had the highest percentage of parents without academic qualifications.

Table 2 and Figures 1, 2, 3 and 4 present the results of prosocial and antisocial behaviour in relation to

Table 2
Results of prosocial and antisocial behaviour in the groups analysed and in relation to gender

	Sedentary			Multisport			Football			Athletics			Basketball		
	Boys *(M, SD)*	Girls *(M, SD)*	Total group *(M, SD)*	Boys *(M, SD)*	Girls *(M, SD)*	Total group *(M, SD)*	Boys *(M, SD)*	Girls *(M, SD)*	Total group *(M, SD)*	Boys *(M, SD)*	Girls *(M, SD)*	Total group *(M, SD)*	Boys *(M, SD)*	Girls *(M, SD)*	Total groupl *(M, SD)*
Perspective-taking	24.53 (3.58)	25.29 (4.54)	25.02 $(4.21)_{a}$	23.15 (4.89)	28.24 (4.90)>	25.60 $(5.48)_{a}$	23.42 (4.49)	28.11 (5.54)>	24.98 $(5.30)_{b}$	27.75 (5.16)	32.75 (2.18)>	28.75 $(5.11)_{a}$	23.15 (5.06)	30.00 (3.46)>	26.21 $(5.56)_{a}$
Fantasy	22.26 (5.77)	22.40 (5.16)	22.35 (5.33)	23.37 (5.98)	25.00 (5.85)	24.15 (5.91)	21.14 (6.08)	21.78 (7.82)	21.35 (6.64)	18.16 (6.58)	25.88 (6.31)>	19.70 (7.16)	22.27 (7.07)	22.48 (10.35)	22.36 (8.59)
Empathic concern	27.16 (4.65)	28.17 (4.79)	27.81 $(4.73)_{a}$	24.89 (5.48)	28.32 (3.93)>	26.54 $(5.06)_{ab}$	23.19 (6.07)	26.56 (6.09)>	24.31 $(6.23)_{ab}$	21.56 (6.35)	31.75 (1.66)>	23.60 $(7.04)_{ab}$	22.77 (6.11)	25.24 (6.82)	23.87 $(6.49)_{b}$
Personal distress or discomfort	24.84 (4.63)	22.40 (3.79)>	23.26 (4.23)	23.56 (6.72)	25.12 (6.28)	24.31 (6.50)	21.36 (4.18)	26.11 (6.63) >	22.94 (5.55)	20.03 (4.35)	27.25 (4.71) >	21.48 (5.25)	22.27 (4.96)	26.62 (4.90)>	24.21 (5.34)
Total empathy	98.79 (8.93)	98.26 (13.35)	98.44 (11.90)	94.96 (14.41)	106.68 (12.54)>	100.60 (14.61)	89.11 (15.41)	102.56 (17.20)>	93.59 (17.11)	87.50 (12.96)	117.62 (11.92)>	93.53 (17.55)	90.46 (14.28)	104.33 (19.207)>	96.66 (17.88)
Total antisocial behaviour	64.42 (10.76)	64.23 (9.56)	64.30 (9.90)	67.52 (10.48)	61.60 (11.68)>	64.67 (11.37)	72.67 (13.55)	62.50 (8.82)>	69.28 (13.03)	62.91 (11.17)	61.38 (7.80)	62.60 (10.51)	71.38 (13.56)	63.10 (9.95)>	67.68 (12.66)
Aggression	25.00 (6.91)	24.11 (4.75)	24.43 $(5.5)_{a,c}$	27.63 (5.21)	23.20 (4.20)>	25.50 $(5.21)_{a,c}$	29.00 (6.20)	24.56 (4.19)>	27.52 $(5.96)_{b,c}$	24.41 (5.15)	19.63 (3.33)>	23.45 $(5.18)_{a}$	28.58 (6.29)	23.24 (4.85)>	26.19 $(6.24)_{b,c}$
Isolation	18.16 (4.31)	17.23 (4.25)	17.56 (4.25)	18.30 (5.43)	16.80 (4.25)	17.58 (4.91)	20.42 (5.65)	17.33 (5.02)>	19.39 (5.60)	17.84 (4.65)	17.25 (2.55)	17.73 (4.29)	19.96 (4.74)	17.52 (4.28)	187.87 (4.66)
Anxiety/withdrawal	18.26 (5.41)	20.06 (4.98)	19.43 (5.16)	18.70 (4.47)	18.72 (5.36)	18.71 (4.87)	19.81 (5.01)	17.72 (4.76)	19.11 (4.98)	17.25 (4.45)	21.88 (3.39)>	18.17 (4.62)	19.88 (5.92)	19.19 (4.14)	19.57 (5.16)

>: significant differences ($p<.05$) with the boys' group; different letter subscript: significant differences ($p<.05$) between the total sample of each group.

gender and athlete groups. The differences between the genders in prosocial behaviour and its various factors start to become evident in the groups of boy athletes, with girls showing higher levels of empathy, with this difference only existing between genders in the empathic concern factor in the sedentary group. There were no significant differences in antisocial behaviour between genders in the sedentary group, whereas these differences did emerge in the athletes groups, with boys evincing greater antisocial behaviour. In terms of the total group, the football group presented less perspective-taking than the other groups, and the sedentary group showed more empathic concern than the rest of the groups, there being significant differences with the basketball group. In turn, the football group showed more aggression than the rest of the groups, with significant differences in relation to athletics. In the analysis by gender and taking sport and prosocial behaviour into account, the boys in the athletics group presented significantly more perspective-taking than the multisport, football and basketball groups. In addition, the sedentary group presented more empathic concern than the other groups, there being significant differences with the athletics group. Finally, the sedentary group presented more personal distress and discomfort than the rest of the groups, with significant differences in relation to the basketball group (Figure 1).

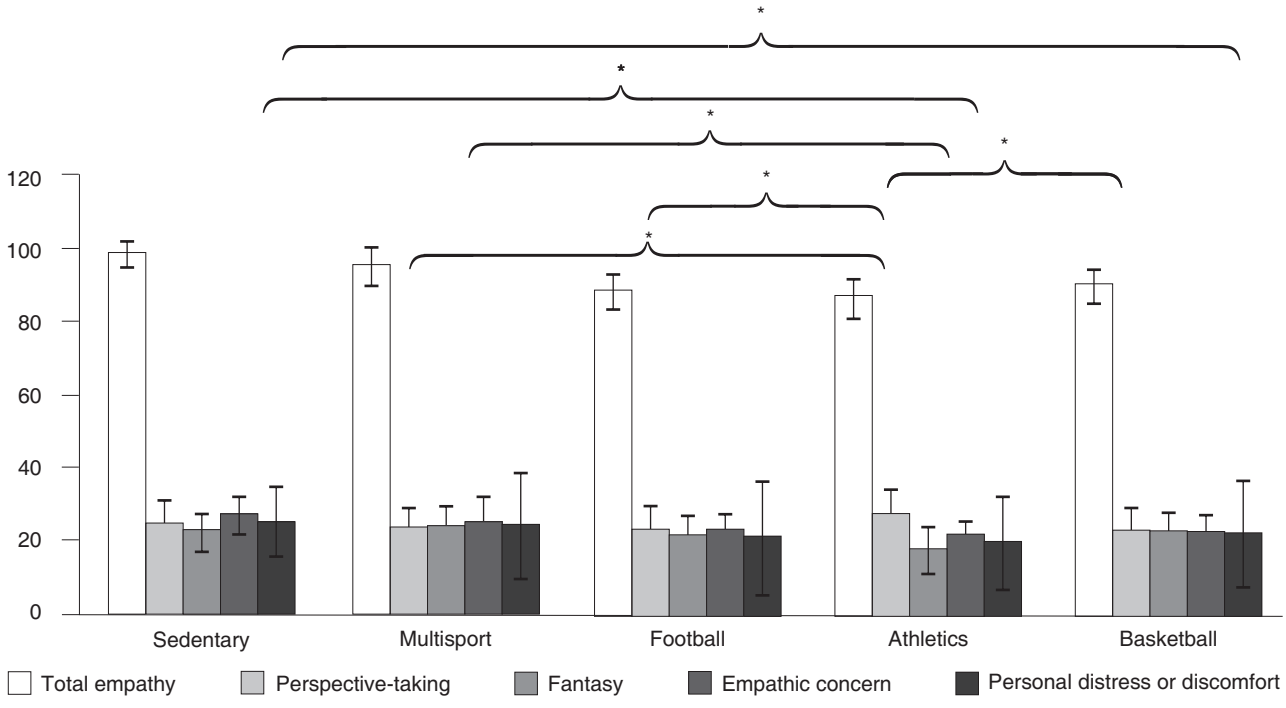
In girls, the sedentary group showed less perspective-taking than the rest of the groups, and significant differences with the athletics and basketball groups. Finally, the sedentary group showed more personal distress and discomfort than the other groups, with significant differences in relation to the basketball group (Figure 2).

In terms of antisocial behaviour, boys who played football had the highest score in antisocial behaviour, with significant differences in relation to the athletics group; in turn, boys in the athletics group showed less aggression than the rest of the groups, with significant differences in relation to the football and basketball groups (Figure 3).

There were no significant differences for girls (Figure 4).

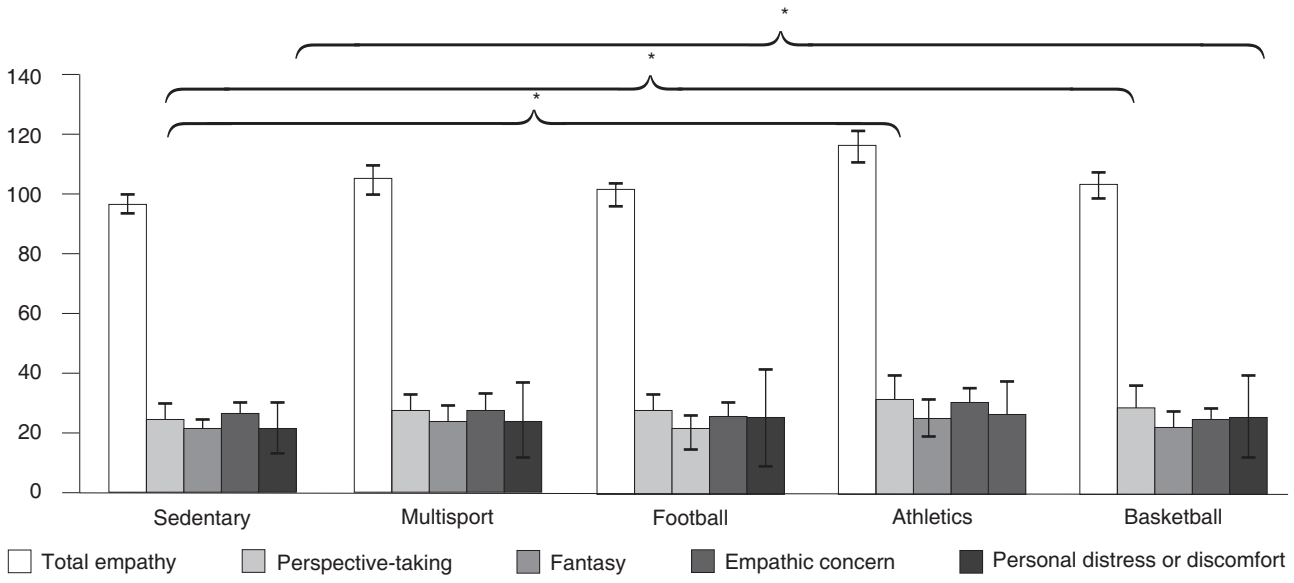
Pearson's correlation analysis shows a negative association between the score in total empathy with aggression ($r = –0.345$, $p < .01$) and isolation ($r = –0.202$, $p < .01$) and a positive one with anxiety/withdrawal ($r = .301$, $p < .01$). In the total antisocial behaviour score, there was only a negative association with perspective-taking (r -.360, $p < .01$).

Figure 1
Differences in empathy in boys depending on the sport played



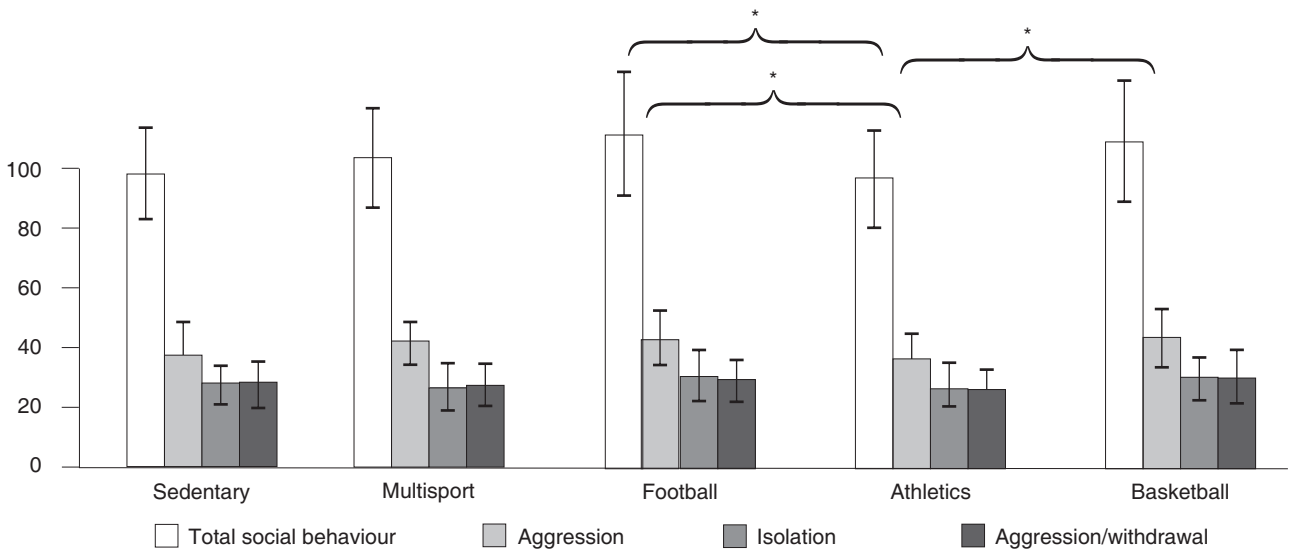
* p<.05.

Figure 2
Differences in empathy in girls depending on the sport played



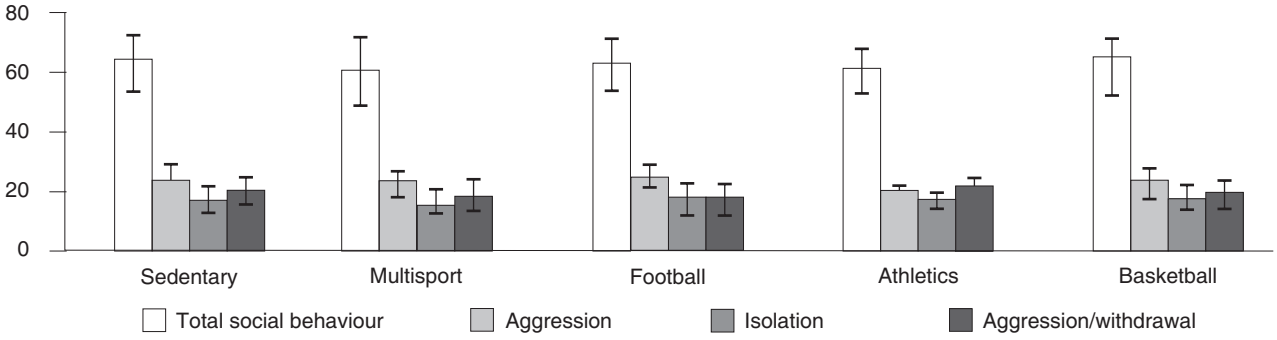
*$p < .05$.

Figure 3
Differences in antisocial behaviour in boys depending on the sport played



*$p < .05$.

Figure 4
Differences in antisocial behaviour in girls depending on the sport played



Discussion

The main purpose of this study was to analyse the prosocial and antisocial behaviour of various school athletes in relation to gender and versus children who do not engage in sport. The most important finding of this study is that children who do sport and are registered with a federation do not develop higher levels of empathy or lower levels of antisocial behaviour than children who do not do sport, although there are some significant differences in these behaviours depending on the sport performed. Therefore, simply taking part in sports competitions does not guarantee the formation of character or the acquisition of sporting behaviour (Cruz et al., 1996).

In terms of gender, differences in prosocial behaviour start to emerge in groups of athletes, with girls showing greater empathy than boys, whereas these differences did not appear in the sedentary group. A similar pattern is observed in antisocial behaviour, in which there were no significant differences between genders in the sedentary group, while there were in the sports group, except in the athletics group, with boys showing greater antisocial behaviour. In children and adolescents, previous studies (Garaigordobil & Galdeano, 2006; Gorostiaga et al., 2014) have found that girls are more empathetic than boys. More specifically in sports, unlike this study, Kavussanu et al. (2009) found no differences in empathy between men and women football players aged 15 to 47, although in line with this study, men presented more antisocial behaviour. Studies on this subject are scarce and sometimes contradictory. Thus, Pelegrín et al. (2010) suggest that young people who do a sport have a lower risk of developing aggressive behaviour as they are more extroverted, sensitive and respectful towards others.

When the groups analysed are considered, the football group presented less perspective-taking than the other groups, while the sedentary group showed more empathic concern than the rest of the groups, there being significant differences with the basketball group. In turn, the football group showed greater aggression than the other groups, with significant differences in relation to athletics. When the socio-demographic factors of the parents were considered, there were significant differences in educational level between the groups, with the highest percentage with no or few academic qualifications being in the football group, although this study cannot address the association between morality and level of education in this group. In addition, a number of factors may influence these results: the introduction to sports model, the approach to competition, environmental pressure in relation to parents, friends, clubs and the influence of the media. In this respect, and based on analyses by several authors, Sáenz et al. (2015) stress that prosocial and antisocial behaviour in sports contexts may be influenced by several factors such as the peer group, physical education teachers, parents and spectators, referees, the media and institutional representatives. According to social learning theory, strong aggressiveness may be triggered in the child merely by exposing them to successful aggressive role models and intermittently rewarding aggressive behaviour (Bandura & Walters, 2002).

In connection with the previous question, the role of entertainment sports in children's sport is significant, as their main objective is victory, financial reward and meritocracy. In this respect, Sáenz et al. (2015) suggest that negative values such as winning at all costs, humiliation, revenge, etc. can be conveyed to educational sport through professional sports. Aggressive behaviour has become all too common in the stands, on the benches and above all on the field of play (Blasco & Orgilés, 2014). Particularly in the context of children's football, and after analysing 240 competitions, Gimeno et al. (2007) report that it is parents who are responsible for 19% of verbal attacks on referees and for 4% of physical attacks on coaches. Parent pressure is therefore a predictor of the intention and performance of antisocial behaviour in child athletes (Sánchez et al., 2014). However, the behaviour of coaches during training and competition has a greater impact on the behaviour of young athletes than the behaviour of their parents (Palou et al., 2013).

Moreover, coaches need to focus on the actual task so that athletes can satisfy their needs for autonomy and social relations better, which in turn would lead to the emergence of more intrinsic motives for practise, greater prosocial behaviour and a reduction in antisocial behaviour (Sánchez-Oliva et al., 2012). A motivational climate associated with the task on the part of peers, coaches and parents will be negatively related to antisocial actions, while an ego-oriented motivational climate created by peers, coaches and parents is positively related to antisocial actions (Leo et al., 2009). Thus, task orientation and mastery climate are positive predictors of prosocial behaviour, whereas ego orientation and performance climate are positive predictors of antisocial behaviour in footballers aged 12 to 17 (Kavussanu, 2006).

In addition, coaches who maintain good relationships with their athletes reduce antisocial behaviour, and exposure to relatively high levels of sociomoral reasoning

in the immediate context of sporting activities promotes prosocial behaviour (Rutten et al., 2007). Therefore, supportive coach-athlete relationships are associated with less antisocial behaviour (Rutten et al., 2011). In this respect, autonomously motivated athletes should therefore be more prone to behaving in line with their sense of self and internalised values, which would include respect for others and themselves and, in turn, be more likely to engage in prosocial behaviour and less likely to engage in antisocial behaviour (Hodge & Lonsdale, 2011).

Conclusion

It is concluded from this research that taking part in competitive children's sport does not guarantee greater prosocial behaviour and less antisocial behaviour than children who do not do sports. Indeed, in certain sports, such as football, antisocial behaviour increases, whereas the sedentary group evinces greater empathic concern.

The greatest limitation of this study is that it did not address certain moral correlates and behaviour of coaches and parents in relation to school sport, which might more clearly underpin its results. Accordingly, when analysing the prosocial and antisocial behaviour of young athletes, few studies have examined the moral values of coaches, parents, peer groups and the principles of the clubs. Future research should address study options that would make it possible to determine the relationship between the moral behaviour of young people and sports more precisely.

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Relationship between Physical Activity in Children and Perceived Support: A Case Studies

Daniel Sanz-Martín[1,2*]

[1] Faculty of Education, Complutense University of Madrid, Spain
[2] Infantes de Lara Infant and Primary School, Soria, Spain

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***Corresponding author:**
Daniel Sanz-Martín
dansanz@ucm.es

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Abstract

The purpose of this study was to ascertain the levels of physical activity, family and peer support for its performance and the relationships between activity and support according to the schoolchildren's gender and year. A total of 81 boys and 73 girls from 3rd to 6th year of Primary Education aged between 8 and 13 (M=9.82, SD=1.35) participated in the study. A behavioural epidemiological case study was designed and the instruments administered were: Parent Support Scale, Peer Support Scale and Physical Activity Questionnaire for Older Children. Boys performed more physical activity (p<.001) and perceived more support than girls, and levels were also higher among 3rd-year pupils compared to their 6th-year counterparts. There was a correlation between the physical activity of girls and family support (p<.001) and between peer support and physical activity according to all the categories of the independent variables (p<.05). In conclusion, boys and 3rd-year pupils performed more physical activity and perceived more support than girls and 6th-year pupils, respectively, and peer support was more related to physical activity than to family support.

Keywords: physical activity levels, social support, family support, peer support, schoolchildren and primary school

Introduction

Physical activity (PA) is "any bodily movement produced by the contraction of skeletal muscle that increases energy expenditure above a basal level" (U.S. Department of Health and Human Services, 2018, p. 29).

There is sufficient scientific evidence to assert that doing recommended physical activity provides physiological, psychological and social benefits to the performer (Sanz, 2018). In the case of children and adolescents, there seems to be an international consensus that they should engage in 60 minutes a day of moderate-to-vigorous physical activity (U.S. Department of Health and Human Services, 2018).

It is not easy to ascertain people's levels of physical activity (Laíño et al., 2017), although there are several methods for doing so, such as surveys. There are numerous questionnaires designed for this latter approach, and two of the most widely employed are the Physical Activity Questionnaire for Older Children (PAQ-C) and the Physical Activity Questionnaire for Adolescents (PAQ-A) (Kowalski et al., 2004).

Although the benefits of physical activity are well documented, most people do not follow the recommended guidelines, as reported, for example, by López et al. (2016) with children aged 8 and 9 in the Region of Murcia, and Sanz (2018) in Soria with adolescents aged 12 to 16.

The levels of physical activity performed by different population groups are shaped by numerous determinants. More specifically, Craggs et al. (2011) cite the existence of 60. In the case of children and adolescents, age and gender are two of the factors most closely related to such levels (López et al., 2016; Sanz, 2018). Awareness of the factors which shape physical activity levels in a specific population makes it easier to undertake interventions to cement and/or increase its performance.

Although there is no single trend in the findings of the different studies, another factor that seems to have some bearing on children's levels of physical activity is social support, in other words help and assistance exchanged through social relationships and interpersonal transactions (Heaney and Israel, 2008). Based on Hardy and Crace (1993, in Bianco & Eklund, 2001) there are eight types of social support which are classified into three categories: emotional, informational and tangible.

Several studies have sought to explore the relationship between physical activity and social support, although the majority of them focus on adolescents or adults. Sanz (2018) conducted a study with adolescents and obtained higher levels of support from families and peers in male pupils compared to female pupils, higher levels in pupils doing the 1st year of lower secondary education (called *Educación Secundaria Obligatoria* or ESO in Spain) compared to the 4th year, and a positive and significant relationship between this support and various physical activity variables.

Another factor determining levels of physical activity and social support is the type of municipality in which the participating population lives (Craggs et al., 2011). Rural municipalities are defined as those with a population density of fewer than 150 inhabitants per km^2 (500 in Japan and Korea) and urban municipalities as those with a population density of more than 150 inhabitants per km^2 (Organisation for Economic Co-operation and Development [OECD], 2011). Since Spain joined the European Union in 1986, its rural areas have been shaped by a boom in industrial agriculture, a fall in population, an increase in the use of technological resources and productivity and the deregulation and internationalisation of agrifood markets (Tolón & Lastra, 2007).

In the study by Sanz (2018), males in urban areas also presented higher levels of mean daily energy expenditure in moderate-to-vigorous physical activities and mean time spent on these activities. The same trend was found in terms of mean daily energy expenditure. Higher levels of family support for physical activity were also reported in urban areas, albeit slightly higher in rural areas in terms of peer support. In addition, the author emphasis the fact that few studies have been carried out in this respect, especially with children.

Based on the foregoing, the purpose of this study was threefold: 1) to ascertain the social support that children in rural areas perceive from families and peers for their performance of physical activity; 2) to ascertain the levels of performance of physical activity by pupils in rural areas; and 3) to identify the type of relationship between levels of physical activity and perceived support. To this end, the results are broken down by the schoolchildren's gender and school year.

Methodology

Design of the study

A behavioural epidemiological case study (Sanz, 2018) was conducted describing physical activity, the support of families and peers perceived by primary school pupils in rural areas for their performance of physical activity and the correlation between activity and support.

Participants

The three participating schools were: Benedicto XIII Infant and Primary Education School (Illueca, Zaragoza); Puerta de Aragón Grouped Rural School (Ariza and Cetina, Zaragoza) and Río Ribota Grouped Rural School (Aniñón, Villarroya de la Sierra and Cervera de la Cañada, Zaragoza). The percentages of pupils from each participating school were 40.9%, 37.7% and 21.4%, respectively.

These schools are considered to be rural because according to data from the National Statistics Institute (INE, 2018) and the Instituto Aragonés de Estadística (IAE, 2018), the municipalities in which they are located have a population density of fewer than 150 inhabitants per km² (OECD, 2011). More specifically, the population density of Aniñón was 13.77 inhabitants per km², Ariza 10.99 inhabitants per km², Cervera de la Cañada 9.79 inhabitants per km², Cetina 7.66 inhabitants per km², Illueca 122.25 inhabitants per km² and Villarroya de la Sierra 5.1 inhabitants per km². In addition, these rural areas are considered remote because they are not close to a city (Goerlich et al., 2016).

The target population was comprised of all the pupils of the two grouped rural schools and one class group per year from 3rd to 6th years at the infant and primary school who were chosen to make it easier for them to answer the questionnaires on the same day.

The participants were 154 primary education pupils (81 males and 73 females). The pupils were in years 3, 4, 5 and 6, and were aged between 8 and 13 ($M = 9.82$, $SD = 1.35$).

The criteria for excluding participants were: 1) the pupil failed to answer the questionnaires administered correctly and 2) the pupil considered the week about which the questionnaire questions were asked to be atypical.

The distribution of participants by year and gender is shown in Table 1.

All the participants in the target population were provided with an informed consent form which was signed by their parents or legal guardians prior to the classroom access phase.

Table 1
Participant characteristics

Year	Gender	*N*	Percentage
3rd	Boys	30	19.48
	Girls	23	14.94
4th	Boys	16	10.39
	Girls	13	8.44
5th	Boys	21	13.64
	Girls	22	14.29
6th	Boys	14	9.09
	Girls	15	9.74

Instruments

Three instruments were used in the research: a scale to ascertain the children's perception of the support received from their families in relation to their performance of physical activity, another similar scale concerning peer support and a questionnaire to ascertain the pupils' levels of physical activity.

The scales used were the ones designed by Prochaska et al. (2002) (Parent Support Scale and Peer Support Scale) which measure parental and peer support during a normal week, and which were translated into Spanish by Sanz (2018). These scales consisted of five items on a 0-4 Likert scale, with 0 being never and 4 being every day. The questions for the families were about: 1) perceived encouragement; 2) joint performance; 3) provision of a means of transport; 4) watching them during physical activity; and 5) comments about whether it was done well. The questions to the peers were about: 1) encouragement given to their peers to do it; 2) encouragement received to do it; 3) joint performance; 4) peers making fun of them, and 5) comments about whether it was done well.

Other studies have used these social support scales (Fernández et al., 2008; Prochaska et al., 2002; Sanz, 2018), obtaining internal consistencies between .68 and .9 in Cronbach's α for the family scale and between .71 and .86 for the peer scale. In this research, the internal consistencies were .74 and .61, respectively.

The physical activity questionnaire used was the Physical Activity Questionnaire for Older Children (PAQ-C), designed for children aged 8 to 14 (Kowalski et al., 2004) and validated for use in Spain by Martínez-Gómez et al. (2009). Nine items on a 1-5 Likert scale were included based on the activity performed during the previous seven days. Each participant was given a final score for their level of physical activity from 1-5 where the higher the level of activity, the higher the score. This questionnaire has been used in many studies, including Manchola-González et al. (2017) and Muros et al. (2017).

Procedures

Firstly, the research project was drawn up and presented to the school management. The project explicitly and meticulously included all the components of the study designed, with particular emphasis on compliance with the applicable legislation and with accepted ethical principles

for the conduct of educational research. According to Pérez et al. (2009), these principles are: voluntary participation and informed consent, the avoidance of any risk of physical or psychological harm, confidentiality, anonymity and minimising disruption as far as possible in the schools.

The project also included the action protocol for the administration of the questionnaires on the day of access to the classrooms and the subsequent processing of the data while safeguarding the principles mentioned above.

The project was approved by the schools' teaching staff and assessment was provided by specialist Physical Education teachers. These specialists and their directors ensured that the conditions agreed to were observed and that they were kept fully apprised of all related events.

Once permission had been secured from the school management, the informed consent forms were given to the target population and had to be returned signed by their parents or legal guardians, thus ensuring that they were aware of the study features and authorised the schoolchild to participate in it.

On the scheduled day of access to the classrooms, each participant responded individually to the questionnaires for 15-20 minutes under the supervision of the principal investigator and the school management.

Data Analysis

Once the questionnaires had been administered, the data analysis was performed with IBM SPSS Statistics, Release 20.

Firstly, the Kolmogorov-Smirnov normality test was performed, which showed that the social support variables did not follow a normal distribution, contrary to the physical activity variable.

In addition, the Mann-Whitney U test was used to compare social support measures by gender and the Kruskal-Wallis H test by year. Levene's test and Student's t-test for independent samples were used to compare the levels of physical activity by gender, and the Welch and Tukey tests were used to compare the levels of physical activity by year. In addition, the Cohen's *d* and eta partial squared statistics related to effect size were included.

Finally, Spearman's rank correlation coefficient was used to study the relationship between the social support and physical activity variables.

Results

Table 2 shows the statistics on family support perceived by the pupils with regard to their physical activity performance. As can be seen, in terms of gender, males perceived greater social support in general and in three of the scale's five items. In addition, a significant difference ($p \leq .01$) was found between the means of the item referring to providing transport according to gender and an effect size of $d = 0.44$.

In relation to the pupils' school year, the 5th year of primary education obtained higher perceived support scores in four items in addition to the mean of the scale. There was also a predominance of higher scores in 3rd year versus 6th year, although there was no progressive decrease in the other years. Significant differences were found at the level of $p \leq .05$ between the means of the items related to carrying out joint physical activity and $p \leq .01$ between the means of the family members telling them they did the activity well and the mean of the scale.

In the subsequent Tukey test, the significance of the item referring to doing physical activity together proved to stem from the difference between primary 5th and 6th years, the one referring to telling them that they did well to the difference between 3rd-5th and 4th-5th, and the mean of the scale between 4th and 5th. These differences were at the level of $p \leq .05$. The sizes of the partial eta squared effect were .06 for the first item mentioned above, .09 for the second and .08 for the mean of the scale, respectively.

Table 2
Descriptive statistics of family support perceived by the children

		They encourage you to do PA *M (SD)*	They do PA with you *M (SD)*	They provide you with transport *M (SD)*	They watch you do PA *M (SD)*	They tell you that you did it well *M (SD)*	Mean scale *M (SD)*
Gender	Boys	2.15 (1.39)	1.93 (1.21)	1.78 (1.45)	2.74 (1.18)	2.58 (1.37)	2.23 (0.91)
	Girls	2.15 (0.94)	1.95 (1.26)	1.16 (1.32)	2.33 (1.36)	2.21 (1.44)	1.96 (0.91)
Year	3rd	2.11 (1.34)	2.11 (1.27)	1.45 (1.42)	2.79 (1.32)	2.25 (1.43)	2.15 (0.87)
	4th	1.83 (1.03)	1.69 (1.28)	1 (0.93)	2.38 (1.35)	1.9 (1.4)	1.75 (0.9)
	5th	2.4 (1.03)	2.21 (0.97)	1.91 (1.57)	2.6 (1.18)	3.05 (1.07)	2.44 (0.83)
	6th	2.17 (0.23)	1.45 (1.32)	1.41 (1.48)	2.17 (1.26)	2.24 (1.6)	1.89 (0.99)

Table 3
Descriptive statistics of peer support perceived by students

		You encourage them to do PA *M (SD)*	They encourage you to do PA *M (SD)*	You do PA together *M (SD)*	They make fun of you *M (SD)*	They tell you that you did it well *M (SD)*	Mean scale *M (SD)*
Gender	Boys	2.4 (1.11)	2.35 (1.21)	3.26 (1.02)	0.69 (1.15)	2.52 (1.22)	1.97 (0.78)
	Girls	2.34 (1.24)	2.19 (1.19)	2.9 (0.99)	0.64 (1.19)	2 (1.19)	1.76 (0.78)
Year	3rd	2.6 (1.25)	2.49 (1.38)	3.47 (0.89)	0.85 (1.39)	2.62 (1.21)	2.07 (0.83)
	4th	1.9 (1.11)	1.83 (1.1)	2.66 (1.08)	0.59 (1.09)	1.49 (1.15)	1.49 (0.72)
	5th	2.56 (0.93)	2.42 (1.1)	3 (0.95)	0.53 (0.91)	2.44 (1.1)	1.98 (0.68)
	6th	2.14 (1.27)	2.1 (0.98)	2.97 (1.09)	0.62 (1.15)	2.21 (1.18)	1.76 (0.75)

Table 3 shows the statistics for support from peers by gender and year. Based on the first variable, boys scored higher on all items on the scale including the mean score. Significant differences were found at $p \leq .01$ in the items referring to doing physical activity together and telling someone that they were doing it well, with effect sizes of 0.36 and 0.43, respectively.

With regard to years, 6th-year pupils achieved lower scores for the items and mean of the scale than their 3rd-year counterparts, although there was no progressive decrease in the intermediate years. Significant differences were found in the items of encouraging peers to engage in physical activity ($p \leq .05$) due to the difference between 3rd and 4th, doing it together ($p \leq .001$) due to the difference between 3rd and 4th, saying they did it well ($p \leq .001$) due to the difference between 3rd and 4th, and 4th and 5th, and the mean score of the scale ($p \leq .01$). The subsequent Tukey test showed that these differences are due to the disparate scores of 3rd and 4th, as well as those of 4th and 5th in the last two comparisons. The effect sizes of the partial eta squared were .06 for the you encourage them to do physical activity item, .09 with regard to doing it together, .12 with regard to saying they were doing it well and .09 for the mean score of the scale.

The analysis of physical activity levels as a function of pupil gender and year (Table 4) showed that boys engage in more physical activity than girls, with a significant difference of $p \leq .001$ and an effect size of $d = 0.72$. By contrast, no significant differences were found when these levels were compared in terms of year.

Table 4
Descriptive statistics of the physical activity of the pupils by gender and year

	Gender***		Year			
	Boys *M (SD)*	Girls *M (SD)*	3rd *M (SD)*	4th *M (SD)*	5th *M (SD)*	6th *M (SD)*
PA	3.23 (0.58)	2.79 (0.64)	3.06 (0.5)	2.93 (0.64)	3.07 (0.62)	2.95 (0.89)

*** $p < .001$.

Table 5 describes the relationships between the items on the family support scale and the children's levels of physical activity according to gender and year. There were significant relationships between the girls' physical activity and the support they perceived in three of the five items as well as in the relationship with the mean score. Conversely, there was only significance with regard to the boys in the telling them that they did physical activity well item.

In terms of pupils' year, while in 3rd year there was a significant relationship between physical activity and all the items on the scale, including the mean, with the exception of encouraging them to do it, in 6th year

Table 5
Correlations between family support and physical activity as a function of gender and year

	They encourage you to do PA	They do PA with you	They provide you with transport	They watch you do PA	They tell you that you did it well	Mean scale
PA boys	0.01	0.03	0.09	0.18	0.33**	0.15
PA girls	0.34**	0.38***	0.12	0.34**	0.14	0.44***
PA 3rd	0.14	0.3*	0.29*	0.27*	0.34*	0.38**
PA 4th	0.22	–0.01	0.01	0.03	–0.06	0.06
PA 5th	0.25	–0.07	0.03	0.16	0.09	0.09
PA 6th	0.09	0.36	0.13	0.73***	0.48**	0.45*

*** $p < .001$; ** $p < .01$; * $p < .05$.

Table 6
Correlations between peer support and physical activity as a function of gender and year

	You encourage them to do PA	They encourage you to do PA	You do PA together	They make fun of you	They tell you that you did it well	Mean scale
PA boys	0.01	0.03	0.09	0.18	0.33**	0.15
PA girls	0.34**	0.38***	0.12	0.34**	0.14	0.44***
PA 3rd	0.14	0.3*	0.29*	0.27*	0.34*	0.38**
PA 4th	0.22	–0.01	0.01	0.03	–0.06	0.06
PA 5th	0.25	–0.07	0.03	0.16	0.09	0.09
PA 6th	0.09	0.36	0.13	0.73***	0.48**	0.45*

*** $p<.001$; ** $p<.01$; * $p<.05$.

this only occurred in two items and in the mean of the scale. No significant relationship was found between support and physical activity in the 4th- and 5th-year pupils.

The relationships of peer support and physical activity (Table 6) were found to be significant in males in all items on the scale, including the mean score, and in females in all the items, except encouraging them and making fun of their performance.

The most important physical activity relationships by year were with the items of encouragement to do it, doing it together and telling them that they were doing it well. Furthermore, this relationship was significant with the mean score of the scale in all the years.

One of the items which had the greatest influence on levels of physical activity was doing it with peers, and this importance increased progressively in one year compared to the previous one.

Discussion

The results of this research show that the support received by these rural primary education pupils from their families is higher than that received from their peers, as is also shown by other studies, such as Fernández et al. (2008) and Sanz (2018). This superiority may be reversed and decrease with age, as Cheng et al. (2014) report support scores from peers superior to families in 14-19 year olds, while Bauer et al. (2008) conducted a longitudinal study with 12-20 year olds which found that the social support score decreased with increasing age. The findings of these studies are also in line with the ones obtained in the towns in Zaragoza, since there are significant differences in higher support by families and peers perceived by males, and this support is higher in the 3rd year than in the 6th year.

When levels of social support are compared with those found by Sanz (2018), by gender, the levels of male pupils in Zaragoza are higher than those of adolescents in the province of Soria (2.23 and 2.15, respectively), although those of females are lower (1.96 and 2.03, respectively).

Physical activity levels differ significantly between boys and girls, but not by year. The gender difference in favour of boys has been widely confirmed in other studies (López et al., 2016; Martínez et al., 2010; Sanz, 2018), which, among other factors, may be due to the existence of gender stereotypes and to the perception of barriers to performance (Fernández et al., 2008). In terms of mean scores, the scores for males are roughly similar to those of children aged 8 to 12 in rural Iowa (USA) (3.2 and 3.23, respectively), although scores for females are higher in Iowa (2.79 and 3.1, respectively) (Joens-Matre et al., 2008).

As a function of the year, pupils in rural areas of Zaragoza engage in less physical activity than their counterparts in rural areas of the Upper Midwest in the USA (Crimi et al., 2009). Fourth-year primary pupils in Zaragoza obtained a score of 2.93, while the same age group in the USA achieved 3.58; 5th year 3.07 and 3.36, respectively, and 6th year 2.95 and 3.02, respectively.

With regard to pupils' year, the results obtained do not match the trend found in Crimi et al. (2009), who reported that the mean physical activity score decreased as the participant age increased (4th-6th year). However, this trend may have been partly supported because four of the six municipalities have fewer than 800 inhabitants and the others fewer than 3,200 inhabitants (INE, 2018), which, added to their high mean age (over 55 years old) and the low percentage of people under the age of 15 years (around 10%) (IAE, 2018) could mean that young people will find it difficult to engage in physical activity in peer groups; the nearness of access to sports facilities could have a greater importance or relative influence. This greater influence may be accounted for by the high levels of activity, low levels of transport on the family support

scale, the importance of engaging in physical activity with family and peers and by the fact that although perceived family support is greater than that of peers, the latter is more related to children's levels of physical activity.

This study has confirmed the importance of social support as a determinant of children's physical activity. In addition, based on its results, the taxonomy of social support formulated by Hardy and Crace (1993, in Bianco & Eklund, 2001) and the contributions of Sanz (2018) about adolescents, it transpires that the different types of social support do not influence children and adolescents to the same extent. With regard to children, the three most closely related types are emotional wellbeing support (encouraging the activity), informational support of task appreciation (telling them that they do the activity well) and tangible support through personal attendance (doing the activity together). By contrast, in adolescence, any type of support, regardless of its kind, significantly promotes the performance of physical activity. It would be useful to increase the as-yet sparse scientific evidence in this regard, while another topic to be addressed is the influence of the pressure (which could also be seen as undue support or influence) brought to bear on young people to be active, since it seems to be a precursor to their low levels of activity, as suggested by Bélanger et al. (2011).

Conclusions

Although the data gathered in the study cannot be mainstreamed, it can be concluded that male participants in the remote rural areas selected engage in more physical activity and perceive more social support for its performance than girls, and 3rd-year primary education pupils more than their 6th-year counterparts.

The types of social support which most influence physical activity in these rural areas are: emotional wellbeing support (encouraging them to do the activity), informational support of task appreciation (telling them that they do the activity well) and tangible support through personal attendance (doing the activity together).

Female physical activity is more related to the support they perceive from their family than from their peers. By contrast, male physical activity is more related to support by peers.

The family support perceived by 3rd-and 6th-year pupils is positively and significantly related to their levels of physical activity. With regard to support by peers, this relationship is maintained in all years from 3rd to 6th.

A longitudinal study is suggested to investigate the variation over time in the various evolutionary stages in order to gain a more detailed understanding of the levels of social support and its influence on levels of physical activity. To this end, the instruments used in this study could be administered annually to both primary and lower secondary schoolchildren. It would also be useful to extend the study to more remote rural municipalities in a number of Spanish provinces.

Finally, the design, implementation and evaluation of a programme to promote physical activity in the rural municipalities of the participants in this study in order to improve the levels of social support and physical activity achieved is suggested by way of an improvement. In view of the differences found, this programme should at least include women. In addition, it should be intergenerational, including the entire female rural population, thus also fostering a potential increase in social support perceived by girls from their families.

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Identity, History and Sport: Genesis of Surfing Magazines in Spain

Daniel Esparza*

Palacky University Olomouc, Czech Republic

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***Corresponding author:**
Daniel Esparza
daniel.esparza@upol.cz

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Abstract

This paper focuses on a topic hitherto ignored in the interdisciplinary framework of the social history of sport and the history of social communication: the forerunners and the genesis of surfing magazines in Spain. It involved intensive research in both public and private archives, uncovering the forerunners of the first surfing magazines in Spain (1972-1976) within the federative communication of the former *Delegación Nacional de Educación Física y Deportes* (1941-1977). Similarly, the birth of the first surfing magazines between 1987 and 1990, when the surfing industry in Spain began to develop further, was determined, dated and described. Magazines were essential in constructing identities in the pre-Internet world. The images that these magazines disseminated among surfers first generated and subsequently reinforced a sense of belonging to a sport and a lifestyle.

Keywords: surfing identity, history of sport, sports magazines

Introduction

The birth of a sports magazine specialising in a specific sport is a relevant and significant event in the history of the sport, especially when it is the first publication in that field. It signals the consolidation of the sport, the existence of a significant number of practitioners and sympathisers, and a developed industry. Moreover, it generates and reinforces the sense of belonging to a group and/or an activity, which is fundamental in forming identities. Furthermore, over the years, specialised sports magazines eventually become documentary archives to study the history of the sport.

The birth of a specialised title in a specific sport is also important in the history of social communication in that it heralds the launch and development of a group of professional communicators specialised in a specific sport and consequently the universe surrounding it. Depending on the characteristics of the sport, this may even mean the introduction of specific technology and techniques. In the case of surfing, it was the use of water cameras and the specialisation of a kind of professional photographer different from others because they have to enter a dangerous, moving sea, which requires a kind of technique and expertise different to that of other sports photographers.

The first sports publications in the Spanish press can be traced back to the 19th century. The origins of Spanish sports magazines are related to the local bourgeoisie's positive identification with their English and French counterparts. In England and France, the beginnings of sports magazines date back to the first half of the 19th century. The study by Torrebadella-Flix and Olivera-Betrán (2013) reveals that the first publications or titles specialising in specific sports in Spain appeared in the second half of the 19th century: magazines on hunting (1865), horseback riding (1878), cycling (1892), pelota (1893), sailing and rowing (1893), chess (1895) and motoring (1899). But sports truly became a mass phenomenon in the 20th century (Pujadas & Santacana, 2012), leading to a considerable increase in the number of generalist sports titles and publications specialising in specific fields or sports (López de Aguileta, 2008; Simón Sanjurjo, 2012). In the 21st century, with the consolidation of the Internet, the phenomenon of sports blogs appeared (Romero Bejarano, 2014), and technological advances also generated an adaptation of specific digital magazines for tablets and mobile phones (Rojas Torrijos, 2015).

Objectives and sources

Football is the sport that has received most attention in the Spanish media. According to Sainz de Baranda (2017, p. 139), it accounts for 61% of the coverage compared to the other sports, with basketball coming in second at 10.2%. This study is aimed at exploring another kind of ball-less sport, less related to competition and associated, instead, with nature, while also embodying a philosophy of life. It is a heretofore unexplored segment: the birth of surfing magazines before the advent of the Internet.

The documentary heuristic methodology was used for this study, and the exploration was conducted in public and private archives. The public centres include the National Library of Spain, the National Historical Archive, the General Administrative Archive and the collections of the National Sports Council. The private archives include those ceded by the presidents, leaders and delegates of the first federated surfing organisation in Spain: the National Surfing Section (Sección Nacional de Surf or SNS,1969-1985).

The primary and most urgent objective was to identify the forerunners and the first magazines in this field, the date they were founded, the composition of their editorial team and contributors, the sports they included and their general topics, as well as to trace the evolution of the magazines. Finally, the second objective was to explain the founding of the first surfing magazines within the historical and evolutionary context of surfing in Spain.

Historical context of surfing

As of the 2020 Tokyo Olympics, surfing will be an Olympic sport. Pociello (1991, pp. 172-173) classified it as a "California sport". Based on the observations of Joel de Rosnay, one of the pioneers of this board sport in France, Pociello also showed that surfing was the parent of other sports, like windsurfing and skateboarding, all of them currently Olympic sports as well. In Spain, there are more than 27,000 federation members (Surfing Spanish Federation, 2019), and the total number of practitioners is estimated to be ten times higher (Esparza, 2015, p. 48). There are more than 150 surfing clubs and 300 surfing schools (Esparza 2015, p. 48). This sport generates major revenues from tourism in numerous towns in Spain and Portugal (Rivera Mateos, 2016).

It is an activity that was born in Polynesia (Finney & Houston, 1996; Nendel, 2009) but adopted in the USA, from where it spread to the rest of the world in the 20th century (Westwick & Neushul, 2013). It reached Spain in the mid-1960s, just as the first reports on this board sport started to appear in the press, films and television (Esparza, 2016). It emerged spontaneously at different spots in different regions along Spain's coastline, oblivious to each other's existence and without any contact with each other for months or even years (Esparza, 2011, 2013). The first federative surfing structure in the history of Spain, the National Surfing Section (SNS), was founded in late 1969, only to disappear in 1985.

Results

The first cover of a sports magazine featuring surfing

The first sports magazine cover to feature surfing in the history of Spain was in the magazine *Deporte 2000* (issue 31, August 1971); it was a report on Pedro Martínez-Albornoz Bonet, president of the SNS. *Deporte 2000* was a popular sports magazine founded by the National Physical Education and Sports Delegation in 1969 and which lasted until 1981.

The magazine cover showed a surfer descending a wave of some four metres high with the headline: "Surfing: Audacity on the Waves". The report consisted of seven colour pages, text and eight photographs of large waves in Hawaii and California. The text provides a detailed description of different facets of surfing: its origins and evolution, an instructional part on how to practise it, another section on the equipment (what the boards were made of, rubber suits), a description of the best surfers at the time, where the best waves in the world were, championships in the USA and finally a section on the status of surfing in Spain: "a fondness for this dynamic, thrilling and spectacular sport has already taken root in Spain", where it provides details on all the progress made in such little time (Martínez de Albornoz, 1971, p. 29).

SNS 'Notas Informativas'

Before the first surfing magazines reached Spain, the international benchmark was *Surfer Magazine*, a California-based title introduced in Spain by foreigner surfers. Those faraway magazines ignited the imaginations of young Spanish surfers and generated a universe of idealised referents with remote places and legendary surfers that turned California, Hawaii and Australia into the Mecca of surfing: places of reverence, and desirable yet inaccessible brands at the time.

This American magazine (and other less renowned counterparts) also served as referents when the forerunner of a surfing magazine was developed in Spain: the *Nota Informativa* published by the SNS between 1972 and 1975 (the last issue came out in 1976 with the title *Surf*). This federated publication improved communication with federated surfers. Fourteen issues were released, along with a summary report of the activity of the first president between March 1972 and June 1976, with a print run of 450 copies. It was only distributed internally, posted to the clubs, regional delegates and federation members who paid on delivery. The newsletters, which were exclusively meant for the small community of federated surfers, covered different topics, such as instructions for clubs, federation matters, dates and organisers of championships, results of championships, funding for championships or equipment purchases, equipment prices, complaints and suggestions, information to register or renew membership, information on medical insurance, information on assemblies and publication of the minutes. The free topics introduced, inspired by the American surfing magazines, included Spanish translations of articles from *Surfer* magazine and contributions from surfers who recounted their travels and described places with good waves.

The first surfing magazines appeared in Spain more than a decade later; there were three of them between 1987 and 1990: *Tres 60* (1987), *Surfer Rule* (1990) and *Marejada Surf* (1990). After 1992, other regional magazines appeared, such as *Rompeolas* in the Canary Islands and *Surfari* in Galicia, although this article only addresses publications with national readerships. In this section, in order to organise and structure the information, the following categories have been created: 1) Genesis, frequency of publication, editorial team and contributors; 2) Content of the sports included in the magazine; 3) General content of the topics; and 4) Evolution of the magazine.

Study of the publications

Tres 60

Genesis, frequency of publication, editorial team and contributors. The *Tres 60* magazine was founded in July 1987 and was published in Santurce (Biscay). Initial frequency of publication: quarterly. After issue 11, July 1989, it started to appear bimonthly. The editorial team was made up of the editor, Roge Blasco; editorial director and graphic design: Jakue Andikoetxea; editorial advisor: Mikel Noya; photography and texts: Javier Amezaga; and administration: Borja Peñeñori. We can count 17 text contributors, including Willy Uribe (who went on to found the magazine *Marejada* in 1990) and up to 14 contributing photographers, in addition to two international agencies.

Sports. Primarily surfing, but also skating, windsurfing and hang-gliding. In the first issue, bodyboards were not yet included (this sport was still incipient in Spain).

Surfing content. The cover consisted of a full-page photo of a surfer inside a curl. There was also a small photo inserted towards the bottom (windsurfing regatta). The headlines mentioned reports on Mundaka, Peniche, Tarifa, Lanzarote and Cantabria. In addition to these magazine contents, there were also letters to the editor,

results of championships (3 pages), a comic, a music section, a section where readers could buy or sell equipment and a part on technical information (how to make a surfboard, physical preparation and sports medicine).

Evolution of the magazine. It started with the title *Tres60* but changed headlines several times, with minor modifications, the most significant ones being in July 1995 (issue 38) when it started to be called *TRES60*. In February 2001 (issue 76), its name was changed to *3SESENTA*, and starting in November 2007 (issue 124), it was called *3sesenta*. As this chapter was being written (September 2017), the magazine *3sesenta* had published a total of 192 issues in its 30 years of life.

The windsurfing topic was dropped permanently in 1991 (windsurfing had its own magazines). In January 1990, the skating version of the magazine appeared (*Tres 60 Skate*); in November 1991, the bodyboarding version appeared (*Tres 60 Bodyboard*); and in January 1993, a version of the magazine that only covered snowboarding appeared. These magazines with different specialities disappeared after just a few years, and only the magazine on surfing remained. The editorial team of the magazine today has hardly changed since its beginnings. Roge Blasco has departed, but Jakue Andikoetxea, Javier Amezaga and Borja Peñeñori remain, in addition to other newer members.

Surfer Rule

Genesis, frequency of publication, editorial team and contributors. This magazine was founded in April 1990. It was published in Irún (Guipúzcoa). The initial frequency was every month and a half, although in 1991 and 1992 it became monthly, and that same year it switched to being bimonthly until it folded. The editorial team that brought this magazine to life was comprised of editor, Marisa Beunza; editorial director, Jon Beunza; and chief photographer: Fernando Muñoz. Furthermore, in the first issue, John Gardner, Marta Molera, Jon Beunza, Carlos Bremón and Yaiza contributed photographs, and Andrés Vega de Seoane, Carlos Bremón, Zalo Campa, Yaiza, Manuel Fernández, Santi del Campo and Kike Fernández contributed texts.

Sports-related content. In its first issue, it only covered surfing and did not include windsurfing, skating or bodyboarding. However, it did report on the results of several bodyboarding championships (within the surfing championships).

Surfing content. Cover of the first issue: Bryce Ellis in Anglet (France), photo: Fernando Muñoz. The contents of the magazine include brief regional reports from contributors in different parts of Spain; a report on the history of the SNS; a report on a professional, Bryce Ellis; a report on Somo (Cantabria); a report on the sea as a source of health; a report on Puerto Escondido (Mexico); a free poster; a report on Asís Fernández (Spanish surfer); a report on a Spanish beach: Lafitenia; an article on surfing techniques; the results of the regional championships in Spain (up to 7 pages of different championships along Spain's entire coastline); and an opinion section (letters to the editor).

Evolution of the magazine. It retained its name throughout its lifetime. In 2014, it disappeared or was discontinued after 148 issues. In 2016, a new digital version came out along with the publication of two paper issues that year (issues 149 and 150). In 1996, the magazine *Surfer Rule Bodyboard* was created for a period, but publication ceased some years later, although the exact year cannot be determined.

Marejada

Genesis, frequency of publication, editorial team and contributors. It was founded in November 1990. Bimonthly publication. It was the brainchild and creation of Willy Uribe and Salvador Artaza (editors). In the first issue, the contributors of texts and photographs were Ángel Losada, Ana Gutiérrez, Martha Molera, J.A. Rodríguez, Iñaki Mintegui, Alex Meabe, Jorge Gómez, Iñaki Inunciaga, Ignacio Suárez, Mikel Eskauriaza, Iñigo Jiménez, Borja Romero, Álvaro Andoin, J. L. Uranga, Félix Morales, Guillermo Almagia and Alberto Urrutia.

Sports-related content. In addition to surfing, the last pages of the magazine included bodyboarding (two pages) and skateboarding (three pages).

Thematic content. It did not include an editorial. The first two pages were dedicated to an ecological cause, the creation of the Planet Surf Initiative (Bio Wave 90). The following pages spoke about the exhibition and description of several prominent surfers, each one accompanied by a photo, including 13-year old Eneko Acero from the Quicksilver team, the future professional star of Basque and Spanish surfing. It also included interviews with José Luis Elejoste (a pioneer in Biscay) and other surfers of the day like Jupa Soler. It covered a trip to Morocco and also featured a report about different waves on Spain's northern coast. It also included an ecological critique of the then-polluted estuary of Bilbao and the results of several local and international championships.

Evolution of the magazine: The magazine never took root. Only two issues appeared and the third one, already laid out and ready to release, was suspended. The project fell through because it was not believed to be economically feasible, perhaps because the market and demand were saturated with a consolidated magazine (*Tres 60*) and another one that had been released that same year (*Surfer Rule*). (Table 1)

Table 1
First surfing magazines in Spain: Genesis and evolution

Magazine	Date created	Date closed	Issues published (until September 2017)	Place of publication	Other sports in issue 1 (in addition to surfing)
Tres 60	June 1987	Still in circulation	192	Santurce (Biscay)	Skating, Hang-gliding, Windsurfing
Surfer Rule	April 1990	Until 2014, relaunched in 2016	150	Irún (Guipúzcoa)	Only surfing
Marejada Surf	November 1990	February 1991	2	Algorta (Biscay)	Bodyboarding, Skating.

Source: prepared by authors.

Discussion

The main objective of this study was to identify the first surfing magazines, the date they were founded, the composition of their editorial team and contributors, the sports they included, the general topics they covered and the evolution of the magazines. Finally, the aim was to explain the founding of the first surfing magazines within a twofold context: the historical and evolutionary context of surfing in Spain.

Between 1987 and 1990, the magazines that subsequently went on to lead the information on surfing in Spain in the 1990s and 21st century were founded. The magazines emerged because there was a large enough audience (and shops) and an increasingly growing number of surfers, to which the successive creation of regional federations (Basque Country, 1989; Cantabria, 1991; Canary Islands, 1992; as well as the Spanish Surfing Federation, 1997) attests. There was a need to fill a communication gap on surfing, although one limitation must be acknowledged: surfing was not a widespread sport and reality showed that the ideal frequency was every two months. Furthermore, the three surfing magazines at the time proved to be too many. *Marejada Surf* disappeared, but *Tres Sesenta* (3sesenta) and *Surfer Rule* still survive, although only *3sesenta* still exists on paper.

The Cantabrian coast pioneered the promotion and development of surfing in the country (albeit along with the Canary Islands to a lesser extent). The first three surfing magazines in Spain were Basque, two from Biscay (*Tres 60* and *Marejada Surf*) and one from Guipúzcoa (*Surfer Rule*). Several factors explain this, although there are also particularities that are outside the scope of this study. On the one hand, the Basque Country was a very economically prosperous autonomous community. By the 1980s, it had a clearly-defined surfing industry with cutting-edge brands like Pukas that organised famous international championships in Mundaka or Zarautz. It is no coincidence that following the demise of the SNS, the Basque Surfing Federation was the first regional federation to be organised (1989). Generally speaking, since the beginning of this sport in the 1960s, the Cantabrian coast had been the epicentre of surfing in Spain in terms of organising clubs and championships. Certainly, in the 1980s, the Basque Country had the edge over all of them due to its proximity to France (as a border region), because surfing was more developed in France and the influence was more direct.

The SNS *Nota Informativa* (1972-1976) was the forerunner of the first surfing magazines in Spain. For historical research, this publication is an essential source of documentation in order to reconstruct the beginnings and the consolidation of surfing in Spain. The SNS reported on federation matters but also served as a testing ground for applying some ideas, which never gained traction, from foreign magazines on surfing. For example, it presented the first attempts at reporting on trips abroad, a report on the Canary Islands (with two photos), a story on championships and a space to sell equipment and showcase the leading local brands, given that there were still no surf shops (the first one opened in Zarautz in 1976) and the lack of a consolidated industry.

A new generation of young people created the first surfing magazines. An examination of the editorial teams and the contributors to the first magazines allows us to conclude that they were founded not by the surfing pioneers (those who had had experience with the SNS's *Nota Informativa*) but rather by a younger generation who began to surf towards the end of the 1970s and early 1980s. Only in the first issue of *Surfer Rule* are there outside contributions from two pioneers: Gonzalo Campa (Cantabria), who had experience in the defunct *Nota Informativa*, and Carlos Bremón (Galicia), both of whom were by then associated with the federated and business world of surfing.

Conclusions

Before the advent of the Internet, surfing magazines were read and perused by the majority of surfers. It

was the only means available to them to get information and stay abreast of the happenings in their sport and lifestyle. The dissemination of images and referents (places, people, championships, shops, brands and opinions) in those magazines was shared by the majority of surfers back then. Those images helped to shape a surfing identity in Spain in the 1980s and 1990s, although the meanings and identifications of those images depended on many circumstances. This overall ensemble of images generated the idea of a group which while it may not have been homogeneous did concur on the idea of a surfing identity which fostered the expression of shared, positive feelings and sensitivities towards the forces of nature, and therefore a sense of protection and conservation of nature, even leading to political and social mobilisation in defence of the waves and the coast.

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Physical Education Teachers' Competencies and Assessment in Professional Practice

Laura Cañadas*, María Luisa Santos-Pastor and Francisco Javier Castejón

Department of Physical Education, Sport and Human Motricity, Faculty of Teacher Training and Education, Autonomous University of Madrid, Spain

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***Corresponding author:**
Laura Cañadas
laura.cannadas@uam.es

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Abstract

Pre-service Physical Education teacher training should develop key competencies that guide graduates in their professional work. The application of the formative assessment at this stage is presented as a way for them to acquire these competencies. This research assesses graduates' perception of the development of key teaching competencies and whether there are significant differences depending on whether or not they are working as teachers. The relationship between some elements of assessment and grading and the development of competencies is also studied. Four hundred and eighty-seven graduates from seventeen Spanish universities participated. The results show that (a) there are no differences in the perception of the competencies acquired depending on whether or not graduates are working; (b) graduates who are working as teachers positively relate the assessment items to two of the three sets of competencies studied, and participative forms of grading to the competencies of development, application and assessment of teaching and learning processes in physical education; and (c) those who are working believe that using formative assessment during their pre-service training has helped them put the teaching competencies into practice in their professional work.

Keywords: pedagogical knowledge, pre-service training, physical education, formative assessment, key competency

Introduction

One of the main goals of the European Higher Education Area (EHEA) is to adapt university degrees to employment demands. Universities should provide training that guarantees jobs for graduates, facilitates their inclusion in the working world and is adapted to its demands (Cardona-Rodríguez et al., 2016). Graduates should positively perceive the suitability of their training to successfully meet employment demands (Elias 7 Purcell, 2004); however, in many cases, the training received is deemed insufficient for this purpose (Gil et al., 2009).

This gap would appear to exist in teacher training (Towers, 2013). The development of the key teaching competencies is fundamental for the teachers' future employability, not only in terms of job opportunities but also in the capacity that they acquire to adapt to the requirements of the educational setting. The reality of the classrooms where they will teach calls for a set of factors and strategies to ensure quality teaching.

The key competencies in teaching are viewed as a convergence of applied knowledge which encompasses content, the way it is taught, the use of technologies, the type of learning, the emotions involved, the organisation of students and other factors. Competencies that fit this context (Zabala & Arnau, 2014) constitute key information that includes the different kinds of knowledge identified by Shulman (1987): knowledge of the content, pedagogical (didactic) knowledge of the content, curricular knowledge, knowledge of the learners, knowledge of the educational objectives, knowledge of other objectives and general pedagogical knowledge. Thus, the key competencies which are limited to knowledge of the content and pedagogical knowledge of the content are expanded to include assessment, the organisation of learning, active student participation, the use of ICT and intercultural communication and the management of feelings and emotions for professional development. However, although these competencies tend to be justified in the university's academic environment, they do not always meet the requirements needed in professional employment. A linear training model is implemented which stands in contrast to the complexity found in education (Lo, 2010). Professional development is systematic and deals with uncertain changes which need adaptive competencies addressed at the university, but without any guarantee that they will be valid for teachers.

In Spain, the competencies that must be developed in the different degree programmes are defined in white papers (National Quality Assessment and Accreditation Agency, 2004a, 2004b). In the case of physical education (PE) teachers, they comprise knowledge related to physical conditioning, body expression, motricity and motor skills, the rules and values of sport, the technical and tactical elements of sports skills, and the transversal knowledge of teaching that is common in pre-service training (Cañadas et al., 2019).

Knowledge of the content and its pedagogical knowledge cannot be understood without referring to the interactive context, in which assessment plays a key role. If we consider that a participative methodology improves students' competencies and is conducive to their professional development, then the assessment component should involve a formative assessment (Magro & Wilson, 2013). The application of formative assessment in teacher training is one possible way for students to acquire the key competencies which lead to better training and professional development, and subsequently to improvements in their teaching, as they are more likely to suit the needs of their job.

Formative assessment is a type of assessment which demonstrates what has been learnt and provides information on what can be learnt (Black & William, 2006). In the case of the assessment and its relationship with the key competencies in pre-service training in PE, there has been a patent trend towards formative assessment in some studies which have demonstrated this shift (Cañadas et al., 2018; Gutiérrez-García et al., 2013). They reveal that key competencies such as mastery of the teaching process, the use of ICT, organisational skills or learning to learn are related to the use of formative assessment (Romero-Martín et al., 2017).

However, there are very few studies comparing the perception after pre-service training of working graduates with those of graduates who are not working regarding the teaching competencies they developed during their degree programme. The studies by Campos et al. (2011) and Gallardo (2006) examine graduates' assessment of the key competencies acquired and their opinion at the end of their degree programmes, asking them about both situations once they are working. However, these studies have only been conducted in small samples of graduates ($n < 105$) and have focused on Teacher Training PE graduates, without including Physical Education and Sport Sciences (PESS) graduates. With regard to assessment, no studies have been found with graduates that assess whether more interaction with the faculty in the assessment, as well as greater participation in establishing the assessment system and tests, or a more active role in the grading process, are perceived as helping to develop professional competencies. Therefore, it seems necessary to establish the influence of the

assessment, and more specifically formative assessment, on the acquisition of the competencies which are developed in pre-service teacher training and whether these competencies are positively assessed by the graduates because of their impact on their professional development.

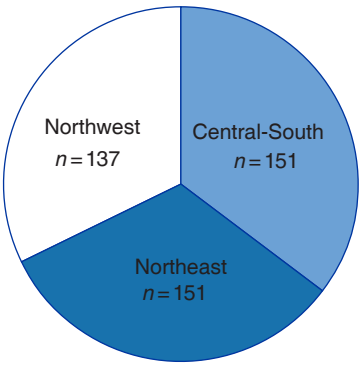
For this reason, the objectives of this study are: a) to assess whether there are differences in the perception of the acquisition of the key competencies between graduates of PE Education and PESS according to whether or not they are working; b) to assess the relationship between the assessment received and the acquisition of teaching competencies according to whether or not they are working; c) to assess the relationship between participation in grading and the acquisition of teaching competencies according to whether or not they are working; and d) to ascertain whether those who are currently working believe that the use of formative assessment during their pre-service training helped them to put teaching competencies into practice.

Methodology

Participants

Non-probabilistic incidental sampling was used to select the participants. A total of 487 graduates participated (40.6% females; 59.4% males) from PE Education degrees at 17 universities all over Spain. To collect the information, three geographic zones were established: a) the Central-South zone (Madrid, Tenerife, Albacete, Córdoba, Granada and Murcia); b) the Northeast zone (Valencia, Barcelona, Huesca, Zaragoza and Lleida); and c) the Northwest zone (Segovia, Valladolid, León, Vitoria and Zamora) (Figure 1). A total of 53.7% of the participants are under the age of 25, 38% are between 26 and 30, 5.7% are between 31 and 35 and 2.7% are 36 or older.

Figure 1
Distribution of graduates by location



Instrument

To collect the information, a questionnaire was used with items referring to the key competencies for PE teachers developed during pre-service training. The participants were also asked about the form of assessment and grading they received during this period and its repercussions on their acquisition of these key competencies. All the questions were answered on a Likert scale from 0 (*not at all*) to 4 (*a lot*). The questionnaire underwent a validation process entailing the following steps (Romero-Martín et al., 2017): a) possible items were selected based on the white papers on the Teaching Primary School and PESS degrees and the creation of a preliminary version of the questionnaire; b) the preliminary version was revised by a group of 10 university instructors who are experts in PE Education with extensive careers in research and publications in Spanish and international journals specialising in this field; c) an initial pre-test was administered to check the degree of relevancy and comprehensibility of the questionnaire; and finally d) reliability was calculated with the Cronbach's , yielding a value of 0.89. Other data were also requested of the participants, such as the degree programmes completed, whether or not they were currently working at a school and how many years of work experience they had.

For this research, specifically the following items were used:

(1) The key competencies: comprised of 22 items with the competencies to be developed during pre-service training of PE teachers.

(2) The usefulness of assessment in acquiring teaching competencies during pre-service training (When formative and continuous assessment was used in your subjects, do you think it helped you to acquire teaching competencies?); on their knowledge of the assessment system and student participation in any aspect of the assessment;

2.a) Interaction between professors and students fosters the assessment process

2.b) Assessment tests were announced sufficiently in advance

2.c) Assessment tests were based on an agreement with the students

2.d) Previous knowledge of the assessment system fostered the learning process

(3) The usefulness of formative and continuous assessment during pre-service training for putting

teaching competencies into practice in active employment (When your professors used formative and continuous assessment in your classes, do you think this helped you to develop teaching competencies in your active practice?).

(4) The forms of grading used by professors during their pre-service training: heterograding, self-grading, dialogued grading and co-grading.

Procedure

The questionnaire used for this study was emailed to the graduates of each one of the degree programmes of the different universities for which data were available. They were asked to participate and were informed of the objective of the study and data confidentiality and anonymity were guaranteed. They were sent the link to the questionnaire. This study follows the ethical guidelines of the American Psychological Association (2010).

Statistical Analysis

The analysis was performed using the SPSS v. 21 statistical package. First of all, a confirmatory factor analysis was performed to find the possible factors that might be grouping the 22 teaching competencies. The principal components method with Varimax rotation was used. To extract the factors, those with eigenvalues over 0.3 were retained (Pallant, 2013). Subsequently, a Student t-test was performed to see the differences between the graduates who are working as teachers and those who are not in the variables studied. To determine the relationship between assessment and grading and teaching competencies, a Pearson's correlation was performed with the sample broken down according to whether or not they are working as PE teachers. A partial correlation was made between these variables, adjusting for "previous work experience". Finally, with the population that said that they are currently working at a school as a PE teacher, a Pearson's correlation was performed between the question "When your professors used formative and continuous assessment in your classes, do you think this helped you to develop teaching competencies in your active practice?" and the specific teaching competencies. The level of significance for all the analyses was set at $p < .05$.

Results

Table 1 presents the results of the factor analysis. The KMO test yields a result of 0.94 (very high), indicating that the correlations between pairs of items can be explained by the remaining items chosen, and Bartlett's sphericity test shows that the items are not independent (4930, 449; *df*. 231 $p < .001$) and therefore that this analysis is appropriate.

The competencies related to the design, development/application, analysis and assessment of teaching intervention and learning processes in PE are clustered around factor 1. We have named this factor "Design, application and assessment of teaching-learning processes in PE". The second factor is related to the contents of motor and sports skills and is defined as "Motor and sport contents". The third factor is associated with physical activity, physical conditioning and health, and it will be called "Physical conditioning and health contents".

Table 2 contains the descriptive statistics of the teaching competencies and the assessment and grading received according to whether or not the respondents are working as teachers. No differences appear in any of the grouping factors of the competencies. In the questions referring to assessment, differences only appear in the "The assessment tests were based on an agreement with the students" item, with a higher rate reported by those who are working. Differences in grading only appear in self- and co-grading, with higher values among those who are working.

Table 3 shows the relationship between the assessment items studied and the teaching competencies factors according to whether or not the respondents are working (model 1, M1) and adjusted according to whether or not they have work experience as teachers (model 2, M2). Model 1 shows that those who are not working find a positive relationship among all the assessment items and the three factors, with the exception of the "Previous knowledge of the assessment system fostered the learning process" item and the factor on physical conditioning contents. However, the relationships are minor (all $r < .400$). Among those who are working, a positive relationship was found between the application of the aspects of formative assessment studied and the factor of "Design, development and assessment of teaching-learning PE" and "Motor and sport contents", with the exception of the "The assessment tests were based on an agreement with the students" item. When the values were adjusted in relation to work experience, the results found in model 1 do not change. Generally speaking, we can say that the design, application and assessment of teaching-learning processes in PE, which would be the subject most closely related to teaching (didactics), has a greater relationship with both models, 1 and 2, while the two columns of contents are, also generally speaking, less related.

Table 1
Results of the factor analysis

Specific competencies	Components			Factors
Designing, applying and analysing teaching interventions in the PE class	.604			Design, application and assessment of teaching-learning processes in PE
Developing and putting PE programmes that facilitate the effective inclusion of students with special educational needs into practice	.667			
Designing, developing and assessing the teaching-learning processes related to physical activity and sport with attention to the individual and contextual characteristics of each person	.685			
Knowing how to use assessment instruments in the PE class	.710			
Promoting complementary activities related to physical activity and sport inside and outside school	.550			
Responding to diversity in PE practices	.693			
Having the capacity to reflect on the teaching-learning process, the different organisational types and the different methodologies within PE classes	.639			
Designing, modifying and/or adapting motor situations geared towards developing and fine-tuning the motor skills to the educational context	.576			
Designing, developing and assessing teaching-learning processes related to motor competency, with attention to the individual and contextual characteristics of each person	.756			
Knowing and promoting the different motor manifestations that are part of your traditional culture		.605		Motor and sport contents
Knowing psychomotor development and its developmental maturation		.777		
Knowing the elements and fundamentals of body expression and non-verbal communication and its formative and cultural value		.672		
Knowing the basic principles of introduction to school sports and designing specific tasks to use them in teaching		.601		
Knowing how to use play as a teaching resource and educational content		.408		
Knowing and understanding body and motor developmental processes		.561		
Knowing the physical capacities and factors that determine their evolution and knowing how to apply the specific technical underpinnings			.537	Physical conditioning and health contents
Knowing the basic biological and physiological principles of the human body in relation to physical activity			.621	
Having strategies to apply the elements of health on hygiene and diet in educational practice			.581	
Having teaching strategies that promote the acquisition of regular physical activity habits			.544	
Knowing how to apply the basic principles (techniques) of physical activities in nature			.439	
Analysing and communicating, critically and with solid foundations, the value of physical education and sport and their possibilities of contributing to people's development and wellbeing			.667	
Identifying and preventing the health risks stemming from the practice of inappropriate physical activities			.768	
Eigenvalues % cumulative explained variance	40.82	47.96	54.26	
KMO: 0.94. Bartlett's sphericity test: 4930, 449; df. 231. $p < .001$.				

Table 2
Competencies developed and forms of assessment and grading received during pre-service training according to whether or not the respondent is working as a teacher

	Is working *M (SD)*	Is not working *M (SD)*	*p*
Competencies	143	344	
Design, application and assessment of teaching-learning processes in PE	–0.12 (1.09)	0.05 (0.96)	.101
Motor and sport contents	0.11 (1.03)	–0.04 (0.99)	.134
Physical conditioning and health contents	0.08 (0.93)	–0.03 (1.03)	.232
Assessment			
The use of formative assessment has helped you to acquire teaching competencies	2.80 (0.95)	2.81 (0.90)	.904
Interaction with professors fosters the assessment process	3.59 (0.65)	3.47 (0.79)	.119
Assessment tests were announced sufficiently in advance	3.17 (0.81)	3.12 (0.82)	.493
The assessment tests were based on an agreement with the students	1.89 (1.31)	1.58 (1.20)	**.013**
Previous knowledge of the assessment system fostered the learning process	3.31 (0.81)	3.22 (0.89)	.330
Grading			
Heterograding	3.22 (0.86)	3.26 (0.80)	.667
Self-grading	1.52 (1.12)	1.22 (1.08)	**.006**
Dialogued grading	1.17 (1.19)	0.99 (1.10)	.116
Co-grading	1.50 (1.05)	1.15 (0.99)	**.001**

Note. The significant differences appear in **bold**.

Table 3
Relationship between the use of formative assessment and the specific competencies developed in pre-service training according to whether or not the respondent is working as a teacher

	Is working			Is not working		
	Design, application and assessment of teaching-learning processes in PE	Motor and sport contents	Physical conditioning and health contents	Design, application and assessment of teaching-learning processes in PE	Motor and sport contents	Physical conditioning and health contents
Model 1						
Assessment						
The use of formative assessment has helped you to acquire teaching competencies	0.341**	0.195*	0.062	0.353**	0.220**	0.176*
Interaction with professors fosters the assessment process	0.197*	0.186*	0.091	0.252**	0.143*	0.132*
Assessment tests were announced sufficiently in advance	0.185*	0.184*	–0.001	0.130*	0.194**	0.131*
The assessment tests were based on an agreement with the students	0.434**	0.101	0.072	0.282**	0.136*	0.221**
Previous knowledge of the assessment system fostered the learning process	0.227*	0.278*	0.039	0.119*	0.159*	0.102
Model 2 (adjusted by teaching experience)						
Assessment						
The use of formative assessment has helped you to acquire teaching competencies	0.341**	0.196*	0.062	0.374**	0.231**	0.187*
Interaction with professors fosters the assessment process	0.200*	0.178*	0.074	0.256**	0.145*	0.134*
Assessment tests were announced sufficiently in advance	0.187*	0.176*	-0.017	0.130*	0.194**	0.132*
The assessment tests were based on an agreement with the students	0.438**	0.093	0.060	0.278**	0.134*	0.219**
Previous knowledge of the assessment system fostered the learning process	0.227*	0.278*	0.038	0.125*	0.162*	0.105

**$p < .001$; *$p < .05$.

Table 4
Relationship between the use of different forms of grading and the specific competencies developed in pre-service training according to whether or not the respondents are working

	Is working			Is not working		
	Design, application and assessment of teaching-learning processes in PE	Motor and sport contents	Physical conditioning and health contents	Design, application and assessment of teaching-learning processes in PE	Motor and sport contents	Physical conditioning and health contents
Model 1						
Grading						
Heterograding	0.059	0.167*	0.035	0.037	0.015	0.037
Self-grading	0.504**	0.146	0.110	0.293**	0.187**	0.031
Dialogued grading	0.431**	0.128	0.055	0.256**	0.140*	0.055
Co-grading	0.442**	0.227*	0.111	0.240**	0.147*	0.084
Model 2 (adjusted by teaching experience)						
Grading						
Heterograding	0.059	0.168*	0.036	0.035	0.014	0.035
Self-grading	0.507**	0.140	0.100	0.298**	0.189*	0.033
Dialogued grading	0.432**	0.124	0.048	0.260**	0.141*	0.056
Co-grading	0.462**	0.218*	0.088	0.246**	0.149*	0.087

**$p < .001$; *$p < .05$.

Table 4 shows the relationship between the different forms of grading used and the factors into which the teaching competencies are grouped. In M1, heterograding is only directly related to "Motor and sport contents" among those who are working, albeit only slightly ($r = .167$). Among both those who are and are not working, participative forms of grading are positively related to "Design, application and assessment of teaching-learning processes in PE", with higher values among those who are working. In terms of "Motor and sport contents", those who are working as teachers only relate it to co-grading, while those who are not working relate it to all three forms of participative assessment, albeit only slightly ($r < .200$). These results remain the same in M2. Once again, generally speaking, there is a greater relationship between the Design column and models 1 and 2 than the contents columns for both populations of graduates.

Finally, a correlation was performed between the "When your professors used formative and continuous assessment in your classes, do you think this helped you develop teaching competencies in your active practice?" item and the teaching competencies only among those graduates who are working. The goal is to assess whether the pre-service training has been useful for professional practice, since only in practice can one truly assess whether the training received is practically helpful in meeting the demands of the working world. A positive correlation was found between the question and the "Design, application and assessment of teaching-learning processes in PE" and "Motor and sport contents" factors ($r = .355$ and $r = .270$; $p < .002$, respectively).

Discussion

The results of this study show that: a) there are no differences in the graduates' perception of the acquisition of teaching competencies according to whether or not they are working; b) the assessment items studied are positively related to the "Design, application and assessment of teaching-learning processes in PE" and "Motor and sport contents" competencies, and for graduates who are not working with "Physical conditioning and health contents" as well; c) among those who are not working, participative forms of grading are related to "Design, application and assessment of teaching-learning processes in PE" and "Motor and sport contents" and, among those who are working, it is only related to "Design, application and assessment of teaching-learning processes in PE"; d) graduates who are working believe that the use of formative assessment during their pre-service training has helped them put the specific teaching competencies into practice in their job.

Given the lack of studies mentioned in the theoretical framework, this study is limited in terms of comparing it to other similar studies. However, the study by Campos et al. (2011), for example, focused specifically on comparing the differences detected by 104 PE

Teaching graduates at the University of Seville in the competencies acquired after completing their university degrees and the use made of them in the job market. Of the 17 specific competencies they studied, significant differences were found in 16, with higher values after graduation. The only competency which showed similar values both after completing pre-service training and in application as a teacher was "detecting anatomical-functional, cognitive and social interaction difficulties". These results do not match those found in this study, in which no significant differences are observed in any of the three factors of the questionnaire among graduates who are not working and those who are. These differences may be due to the authors' small sample size or to the fact that they only used graduates from one degree programme at one university. Gallardo (2006) also focuses on Teacher Training PE graduates, in this case at the University of Granada ($n = 72$). However, in this case the competencies studied are general ones.

Other studies have focused on assessing the competencies of graduates when they are already working as PE professionals in primary and secondary schools (Kovac et al., 2008), and some assess the perceptions of students who are still studying for their PESS degrees (López-Varas, 2015) or compare the perceptions of competencies of students, university faculty and graduates of the Teacher Training and PE degrees (Pazo & Tejada, 2012; Romero, 2009). However, this type of study does not bear in mind the discrepancies which may exist in the assessment among graduates who have completed their degrees and those who have to put the entire set of knowledge and skills used as a teacher into practice, which is when they can really assess whether or not their pre-service training has been useful in their professional development and its impact on their search for employment. In this study, the fact that no differences were found between both groups may indicate that the graduates working as teachers find that their pre-service training helped them to perform their job, just as those who are not working perceive it.

Despite the importance attached to the creation of the EHEA and the changes that its implementation have brought about in higher education in different European countries, it should be noted that there are still only a handful of research studies that seek to ascertain the repercussions of the changes in the training of graduates who have studied in the new degree programmes. It is essential to assess university graduates' opinions of the training they receive with the goal of adjusting the curriculum based on the challenge of employability, both to adapt to the job market and in terms of their ability to meet its requirements and demands. Most importantly, we should acknowledge that there are few studies addressing graduates' perception of their training in competencies and the usefulness of these competencies in their future professional employment.

In pre-service training, university graduates should also learn the key professional competencies that they will need to find employment. Training should be adapted to the requirements of specific areas, in our case PE, and be directly related to key competencies in order to cater to demands from education. Assessment plays a crucial role in this regard, and more specifically the application of formative assessment in the different subjects in the degree programme, leading to more meaningful and profound learning of the subject matter, helping students to develop key professional competencies to adapt the assessment of their students to prevailing needs. In this pre-service training, students' participation in their own assessment and in that of their peers is extremely important, but so too is participation in grading, since such an involvement in this process would herald a transfer of responsibility. However, in this study, as in others conducted previously (Gutiérrez-García et al., 2013; Gutiérrez-García et al., 2011; Hamodi et al., 2015), both graduates and faculty report that forms of grading in which the teaching staff take the decisions continue to prevail at the expense of other alternative approaches related to participative grading.

Conclusion

This study has demonstrated that there is no difference in PE teachers' perception of the competencies acquired according to whether or not they are teaching, which indicates that both at the end of their pre-service training and when embarking upon their professional career they feel that their training is sufficient to rise to the demands of the educational setting; however, this result does not mean that in the future they should not continue to seek training to deal with the challenges that may arise. On the other hand, aspects such as being familiar with the assessment system, how they are going to be assessed before beginning the learning units or being able to interact and dialogue with the faculty on aspects of the assessment, are all positively related to the development of competencies. These aspects are also related to the use of participative forms of assessment. Furthermore, the graduates report that the use of formative assessment during their pre-service training has helped them to develop these competencies and to put them into practice in their professional work. Therefore, according to this

study, it may be concluded that: a) pre-service training of PE teachers helps satisfactorily develop key teaching competencies, and b) the use of formative assessment at this stage seems appropriate for helping them acquire the key teaching competencies and later applying them in the job world.

However, further studies which explore this topic more deeply are needed, assessing the usefulness of the specific competencies developed when they are actually applied in teaching practice, and assessing the repercussions of the application of active methodologies and formative assessment systems during pre-service training on the teacher's professional competencies.

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Affectivity and Motor Interaction in Popular Motor Games at School

Pedro Gil-Madrona[1]*, Lorena Pascual-Francés[1], Andrea Jordá-Espi[1], Felipe Mujica-Johnson[2] and Andrés B. Fernández-Revelles[3]

[1] Albacete Faculty of Education, University of Castile-La Mancha, Spain
[2] School Research and Development Centre CIED, Faculty of Education, Catholic University of Temuco, Chile
[3] Department of Physical and Sports Education, Faculty of Sports Sciences, University of Granada, Spain

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***Corresponding author:**
Pedro Gil-Madrona
Pedro.Gil@uclm.es

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Abstract

Motor interaction and its sociocultural context are aspects that determine the type of motor game, providing it with specific characteristics that make it different in the Physical Education class. Thus, this motor activity should be studied from the emotional perspective to optimise the educational process. This study aims to identify the affective perception of 5th and 6th year primary school students in popular cooperation and cooperation-opposition games in Physical Education classes. The study used a quantitative approach, involving 70 students (35 boys and 35 girls) aged between 10 and 12 from the province of Alicante. The data were collected using the PANAS (Positive and Negative Affect Schedule) survey validated in Spanish for children and adolescents. The main results indicate that positive affects obtained the highest perception in the two types of popular games studied, whereas negative affects obtained the lowest perception. It is concluded that this type of sociomotor games with sociocultural content allows students to develop social skills in a positive learning environment.

Keywords: affectivity, physical education, motor interaction, popular game

Introduction

Physical education in primary education (PEP) should seek to achieve the comprehensive development of students as provided for in Royal Decree 126/2014, which states that its purpose is as follows:

> To develop motor skills in people, where this fundamentally means the integration of knowledge, procedures, attitudes and feelings related to motor behaviour. Mere practice does not suffice to achieve this, as a critical analysis which enhances attitudes and values related to the body, movement and the relationship with the surroundings it also required. In this way, students will be able to control and afford meaning to their own motor actions, understand the perceptive, emotional and cognitive aspects related to these actions and manage the feelings related to them while also integrating knowledge and cross-cutting skills such as teamwork, fair play and respect for the rules (Official State Gazette, 1.3.2014, p. 19406).

As mentioned in the Royal Decree, the affective dimension must be factored into the analysis of teaching practices so as to promote PEP that considers the human being as a person who is sensitive to their surroundings and experiences emotions during class activities. PEP classes in Spain are a good opportunity to generate positive affective experiences, as shown in a study in which 376 6th year students from the city of Albacete took part and whose purpose was to examine emotional self-perception. Specifically, its main results indicate that "the percentage of students who express pleasant emotions in the subject of PE ranges from 84.3% in the case of those who feel 'calm' (somewhat, quite or very calm) to 76.5% for those who feel 'enthusiastic' (somewhat, quite or very enthusiastic)" (Gil-Madrona & Martínez, 2016, p. 187).

Educational processes change, and are constantly updated, and call for students to address new learning venues and challenges which sometimes cause them anxiety and often emotional conflicts. These are the conflicts that teachers need to tackle to avert negative impacts. Anchored in subjective wellbeing, a classification of positive affect and negative affect has been generated in which positive emotions are viewed as favourable and negative emotions as unfavourable for such wellbeing (Redorta, et al. 2006).

On the basis of a theoretical review of the benefits of positive emotions in children's mental health, schools are encouraged to be a strategic and central venue for emotional education. This is because "school institutions make it possible to centralise and unify efforts aimed at promoting health. Similarly, mental health protection factors can be enhanced and promoted for a large number of children" (Greco, 2010, p. 90). With regard to the impact of optimistic thinking on children's health, a study was carried out in the city of Murcia to examine the role of an optimistic explanatory style as a protection factor for child and adolescent depression. 172 pupils from 5th and 6th-year primary education with an average age of 10.7 years took part, and the main results indicate that "pupils with an optimistic explanatory style present fewer depressive symptoms" (Sánchez & Méndez, 2009, p. 276). As such, it reflects the effectiveness of activities rooted in a positive psychology approach for the prevention of mental health illnesses in childhood and adolescence.

Furthermore, motor tasks (MT) have been classified by type of motor communication and are described as follows:

> Those where there is an absence of interaction with other athletes (without teammates and without opponents), called psychomotor; those where there are teammates but no opponents, called cooperation MT; those where there are no teammates but there are opponents, called opposition MT; and finally MT, where there are teammates and opponents, called cooperation-opposition (Serna et al., 2017, p. 37).

Under this classification, there are psychomotor games, cooperation motor games, opposition motor games and cooperation-opposition motor games, which from an affective standpoint present differences depending on their motor communication (Alcaraz-Muñoz et al., 2017). This can be seen in a PEP study in Spain conducted in the municipality of Ceutí in which 21 students aged between 8 and 9 took part. The purpose of this research was to analyse the emotions experienced after performing a specific type of motor interaction and also to relate them to motivation for fields in the curriculum. The results included the finding that "positive emotions predominated in all motor domains" (Medina, 2015, p. 75).

Moreover, a PEP class is an appropriate venue, given the possibilities it can afford for students to interact socially. This was demonstrated in a study in the Region of Valencia which found that "during PE classes. students have more fun being with their peers when working cooperatively rather than in competition" (Gutiérrez & Pilsa, 2006, p. 226). In the same vein, a PEP study conducted in Chile found that the main positive emotion for subjective wellbeing attributed to socialisation in the classroom is fun. Accordingly, this

research concludes that it is of crucial importance for the wellbeing of students "to allow communication in a framework of respect during activities" (Mujica et al., 2016, p. 5).

At the same time, and depending on the sociocultural context, motor games can be classified as popular where this means "games known to and played by the general public" (Rebollo, 2002, p. 3). They are part of the heritage of nations and are, in turn, a symbol of cultural diversity. For the same reason, they can be part of a teaching process that inspires social values and cultural awareness in new generations. Dorado (2011) takes the same view when she points out that "popular games are everyone's heritage which we should be aware of and preserve because we will thus have a global vision of our culture" (p. 33). Similarly, and given that people's affectivity is shaped by interaction with specific cultural environments (Mujica-Johnson & Jiménez, 2019; Puig et al., 2001), it is essential to investigate affects during the performance of popular motor games in order to enhance educational interpretations in PEP.

In short, popular games are distinguished by their widespread presence in a particular geographical area. They are also credited with valuable cultural significance due to their social construction based on the subjectivity of their practitioners, thus making them an excellent teaching resource for PE classes. This means they are valuable in themselves and are geared towards the development of the whole child. Hence "leveraging popular games in PE classes would make an enormous contribution to the intellectual, affective and manual work done by students in the classroom" (Mendoza et al., 2017, p. 82).

Consequently, and with a view to exploring the affective dimension in the abovementioned games, the main purpose of this study was to identify the affective perception of 5th and 6th year primary education students in popular cooperation and cooperation-opposition games.

Methodology

The study followed a quantitative approach with a non-experimental cross-sectional and descriptive design.

Participants

A total of 70 students (35 boys and 35 girls) aged 10-12 doing the second stage of primary education at the state-run San Juan Bosco Infant and Primary School in Cocentaina in the province of Alicante took part in this study.

Instruments and Procedures

In order to achieve the study objective, the positive and negative aspects assessment survey was used in the PANAS (Positive and Negative Affect Schedule) version in PE classes. This survey was validated in Spanish for children and adolescents. A Cronbach's alpha (posar-hi el símbol) coefficient of 0.73 in boys and 0.72 in girls was obtained for the positive affect (PA) variable. As for negative affect (NA), 0.74 was obtained in boys and 0.75 in girls (Sandín, 2003). This survey consists of 20 items and has a two-dimensional structure: positive affect and negative affect, with 10 items on each subscale.

The first step was to contact the school authorities and request their approval for the study. The second was to communicate with the PE teacher, who teaches the third stage, consisting of the 5th and 6th years, to tell her about the research project and secure her cooperation. Subsequently, informed consent was sought from the students, who all agreed to voluntarily engage and cooperate in the study and had a very good attitude towards the research team. The next step was to conduct two 45-minute PE classes. The first class focused on the following popular unopposed cooperation motor games (PUCMG): a) *el pelotón* (skipping rope game); b) *carrera de tortugas* (crawling race with a cushion on your back); c) *el pañuelo* (trying to grab a handkerchief), and, d) *el marro* (a chase and capture game). As for the second session, the following popular cooperation-opposition motor games (PCOMG) were played: a) *el pillao* (tag); b) *la caza del tesoro* (stealing the opposing team's treasure); c) *duelo entre caballeros* (trying to force an opponent out of a circle), and, d) *lucha turca* (trying to wrestle an opponent to the floor). Once each session was over, the students were individually given the PANAS survey to complete.

Data Processing

Statistical analysis was non-parametric and descriptive. The type of statistic used was "the distribution of cumulative relative frequency or cumulative frequency in percentages, which is the cumulative frequency divided by the total frequency" (Spiegel & Stephens, 2001, p. 39). A statistical analysis was performed using Microsoft Office 2010 Excel. The statistical tests used were frequencies and percentages.

Results

The findings obtained in each type of popular game are presented below along with the differences by gender and country of origin. When "never", "sometimes" and "many times" are used to talk about positive and negative affect, they refer to the intensity of perception.

The overall picture in terms of PA and NA is shown in Table 1, where the item "many times" for positive affects obtained the greatest perception in the two types of motor game, as did the "never" intensity in negative affects. Therefore, the perception of PA in popular games may be said to be present to a greater extent than NA. The differences found between the popular games according to their motor interaction are that students in unopposed cooperation games perceived a greater positive affect than in cooperation-opposition games. Nevertheless, in cooperation-opposition games, the students perceived less negative affect than in unopposed cooperation games.

Table 1
Distribution in percentages of the intensity of positive and negative affects in popular unopposed cooperation motor games and in popular cooperation-opposition motor games

Intensity	PA PUCMG	PA PCOMG	NA PUCMG	NA PCOMG
Many times	54.57	54.43	2.57	2.43
Sometimes	39.86	35.86	18.86	16.57
Never	5.57	9.71	78.57	81

Note. PA: Positive affect; NA: Negative affect; PUCMG: Popular unopposed cooperation motor games; PCOMG: Popular cooperation-opposition motor game.

Popular unopposed cooperation motor games

The affective perception results during the popular unopposed cooperation games are presented in Table 2, where it can be seen that PA was more perceived at the "many times" intensity compared to NA. The greatest intensity of perceived PA is found in the item of vitality and interest in the social and environmental surroundings. In addition, a high percentage of students also expressed pride, which may be related to knowledge of and identification with the motor game. Although positive affects were preferred in affective perception, three items predominate in perception at the "sometimes" intensity. They are attention, enthusiasm and animation in the game, indicators that were related to interest and motivation in the games.

In NA perception, the students perceived jitteriness most intensively, followed by nervousness and

Table 2
Distribution by percentages of the perception of affective items in popular unopposed cooperation motor games

Affective item	Never	Sometimes	Many times
I am scared	91.43	7.14	4.3
I am an active child	0	20	80
I feel bodily sensations of being jittery	68.57	24.29	7.14
I am an attentive, caring person	0	52.86	47.14
I am a determined child	5.71	37.15	57.14
I feel nervous	74.29	21.43	4.28
I feel inspired	8.57	58.57	32.86
I am ashamed	65.71	32.86	1.43
I am a sharp, alert child	2.86	40	57.14
I am in a bad mood (get upset or irritated)	82.86	15.71	1.43
I feel proud (of something), satisfied	7.14	31.43	61.43
I am enthusiastic (about things, people, etc.)	20	45.71	34.29
I am angry and furious	82.86	15.71	1.43
I am a frightened boy or girl	82.86	15.71	1.43
I feel guilty	84.29	14.28	1.43
I feel I have vitality, energy	1.43	21.43	77.14
I feel upset or annoyed	74.29	24.28	1.43
I'm an animated person, I usually get excited	5.71	58.57	35.72
I feel tense, overwhelmed, with a sensation of stress	78.58	17.14	4.28
I'm interested in people or things	4.28	32.86	62.86

Table 3
Distribution in percentages of the perception of affective items by gender in popular unopposed cooperation motor games

Intensity	PA (boys)	PA (girls)	NA (boys)	NA (girls)
Many times	52.57	56.57	2.29	2.86
Sometimes	41.72	38	22.57	15.14
Never	5.71	5.43	75.14	82

Note. PA: Positive affect; NA: Negative affect.

in third place stress. Similarly, the students present a low percentage at the "never" intensity of different negative affect items. In addition, the highest percentage of such intensity was found firstly in the feeling of fear and secondly in the guilt item. In third place, three items were identified with the same percentage: anger, self-perception of being frightened and bad mood.

In terms of gender, Table 3 shows that boy and girl students recognised PA most. In addition, the girls perceived the "many times" intensity to a greater extent and the "never" intensity to a lesser extent. As for NA, girls identified themselves more with the "many times" and "never" intensities than boys, while boys obtained a higher percentage than girls for the "sometimes" intensity.

Popular cooperation-opposition motor games

The results for affective perception during popular cooperation-opposition games are shown in Table 4, where PA are more perceived at the "many times" intensity with respect to NA. The item with the highest percentage in "many times" of perceived PA is vitality, as in the other popular game studied, followed by the feeling of being active. Finally, there is the ability to be attentive during the game. This reflects a variation as a function of the motor interaction in the game, since this item presented a low perception in relation to PUCMG. In PA, two items were identified which dominated the "sometimes" perception, namely inspiration and enthusiasm. These indicators are similar to those found in this same situation in PUCMG and which are related to the motivation experienced. Nevertheless, animation and attention are the most perceived items in this type of game.

In NA perception, the students perceived jitteriness and fear with greater intensity. These two perceptions were equal at the highest percentage and were followed by nervousness. By contrast, the "never" intensity presents a high value in the feeling of anger and annoyance. They were followed by the feeling of guilt at high intensity which demonstrated that competition caused little subjective discomfort.

Table 4
Distribution by percentages of the perception of affective items in popular cooperation-opposition motor games

Affective item	Never	Sometimes	Many times
I am scared	90	10	0
I am an active child	4.29	21.43	74.28
I feel bodily sensations of being jittery	71.43	22.86	5.71
I am an attentive, caring person	4.29	30	65.71
I am a determined child	7.14	37.14	55.72
I feel nervous	72.86	24.28	2.86
I feel inspired	21.43	47.14	31.43
I am ashamed	72.86	24.28	2.85
I am a sharp, alert child	10	31.43	58.57
I am in a bad mood (get upset or irritated)	78.57	18.57	1.85
I feel proud (of something), satisfied	5.71	44.29	50
I am enthusiastic (about things, people, etc.)	17.14	48.57	34.29
I am angry and furious	88.57	8.57	2.85
I am a frightened boy or girl	78.57	17.14	4.29
I feel guilty	87.14	11.43	1.43
I feel I have vitality, energy	4.29	20	75.71
I feel upset or annoyed	88.57	10	1.43
I'm an animated person, I usually get excited	12.86	40	47.14
I feel tense, overwhelmed, with a sensation of stress	81.43	18.57	0
I'm interested in people or things	10	38.57	51.43

Table 5
Distribution by percentages of the perception of affective items by gender in popular cooperation-opposition motor games

Intensity	PA (boys)	PA (girls)	NA (boys)	NA (girls)
Many times	51.71	57.14	2.29	2.57
Sometimes	38.57	33.14	18	15.14
Never	9.72	9.72	79.71	82.29

Note. PA: Positive affect; NA: Negative affect.

Similarly, the results in Table 5 show that both boys and girls recognised PA most and, as in the other type of popular game, girls perceived PA most strongly at the "many times" intensity. In addition, the "never" intensity presents similar figures in terms of the gender perspective since the same percentage is obtained in both genders. The same trend is repeated for NA as in PUCMG, where girls perceived the "many times" and "never" intensities more than boys, while boys have a higher percentage than girls in the ''sometimes" intensity.

Discussion and conclusions

The findings presented in this study show that students perceive mostly PA in popular cooperation games and popular cooperation-opposition games. However, it should be noted that students also perceive negative affect, albeit to a lesser extent. By motor interaction, popular unopposed cooperation games produce a greater perception of PA than cooperation-opposition games. Hence it could be said that in such games the objective of playing as a team and without having to outplay other players is an important factor in generating greater positive affect. Indeed, as in another PEP study, it is concluded that "cooperation games triggered greater intensity of positive emotions and, most of all, without competition" (Miralles et al., 2017, p. 92).

These results also coincide with another research study on emotional perception in PEP and unopposed cooperation games. Specifically, this is because the study in question concludes that in cooperation games without victory "there was a relationship between positive and ambiguous emotions, since this type of motor action domain triggers positive and ambiguous emotions, and as there is no result these ambiguous emotions operate as positive ones" (Molina, 2016, p. 128). Accordingly, considering unopposed cooperation motor games in PEP might encourage students to build social skills in an optimal affective learning environment since "the greatest positive emotional intensity is associated with socio-motor domain games and more specifically with those in which the result does not count" (Duran et al., 2015, p. 16).

The socio-motor component of the popular games studied means they can be considered as arenas of great educational value because they fit ideally into PE classes. As such, they can be used to foster positive affect while developing attitudes, values and social skills, since "in this group of games, dialogue, reaching agreements, addressing strategies with peers and resolving unforeseen events associated with the uncertain relationships brought about by the opponents are factors that generate intense emotional experiences" (Duran et al., 2014, p. 29). One interesting observation is that this trend appears in similar fashion in university students studying physical activity and sport in Catalonia, where research which examined the emotional experience generated by cooperation motor expression situations concludes that there was a "connection between the variables that intervene in cooperation motor situations and their relationship with the creation of positive emotional environments for the improvement of harmonious interaction in schools" (Sáez de Ocáriz et al., 2014, p. 323).

In addition, NA was perceived by students to a lesser extent than PA in the popular cooperation-opposition games, a finding that similar to the results of another study conducted in the Region of Murcia. Indeed, this latter study acknowledged that "the educational application of cooperation-opposition motor games generates more positive than negative emotional intensity" (Caballero et al., 2016, p. 132). To understand these results, it is essential to refer to a PEP study which, from a qualitative perspective, investigated the positive emotions for the subjective wellbeing of students during their participation in a cooperation-opposition motor game. More specifically, this study found that students attribute their emotions firstly to internal logic aspects; secondly, to the combination of internal and external logic traits; and finally, to contextual factors (Alcaraz-Muñoz et al., 2017).

Comparing the results showed the relevance of cooperation motor games as a methodological strategy in PE classes, underlining "the importance of designing emotional education programmes in the PE subject and using teaching strategies to guide learning in the affective domain and verify achievements and results" (Gil-Madrona & Martínez, 2015, p. 932). As a result, these games not only achieve conceptual, procedural and attitudinal learning, but are also a tool which generates PA and enjoyment in their participants, thus contributing to subjective wellbeing.

In both types of popular games, students had a lower perception of enthusiasm, hence this motor activity would need to be approached strategically by teachers in order to encourage this affect, mainly because this type of game would be found in the motor and cultural biography of the students and would therefore be less likely to surprise them and attract their attention and, consequently, arouse the interest of teachers. In turn, García and Baena (2017) argue that it is essential to propose innovative games and avoid repeating activities in order to motivate students.

Finally, and as part of PEP that fosters socio-cultural learning, the need to continue building knowledge about popular motor games in Spain and the various nations from various scientific perspectives is acknowledged.

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Factors that Influence Academic Performance in Physical Education

Ismael Giner-Mira[1*] IM, Leandro Navas-Martínez[2] LN, Francisco Pablo Holgado-Tello[3] FT and José Antonio Soriano-Llorca[1] JL

[1] Regional Ministry of Education, Research, Culture and Sports, Spain
[2] University of Alicante, Spain
[3] National Distance Education University, Spain

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***Corresponding author:**
Ismael Giner-Mira
iginerm@hotmail.com

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Abstract

The objective of this study was to determine the predictive function that different variables (physical self-concept, task orientation, engaging in extracurricular physical activity and reasons for engaging in this type of activity) have on academic performance in the physical education class. The participants were 568 primary and compulsory secondary students between the ages of 11 and 16 from eight public primary schools, one public secondary school and two primary and secondary schools in the Region of Valencia who responded to the Physical Activity Questionnaire for Adolescents, the Task and Ego Orientation in Sport Questionnaire, the Physical Self-concept Questionnaire and the Motives for Physical Activity Measure-Revised (MPAM-R) in Spanish. Descriptive, correlational and multiple linear regression analyses were performed and an explanatory predictive model of academic performance in the physical education class was proposed, based on the results. The results of the path analysis indicated that the proposed model showed adequate goodness of fit indices. Thus, the reasons for practicing physical activity and goal orientation towards the task determine the physical activity index and the general physical self-concept, which, in turn, affect academic performance in physical education.

Keywords: physical self-concept, goal orientation, extracurricular physical activity

Introduction

Engaging in extracurricular physical activity is positively related to a person's self-concept (Navas & Soriano, 2016) as well as to physical self-concept (Reigal & Videra, 2011). On the one hand, self-concept is crucial to a person's self-esteem and psychological health and is particularly important in adolescence (Ibarra & Jacobo, 2017). On the other hand, physical self-concept, one of the dimensions of self-concept, presents a strong relationship with the latter, and its influence can be transferred to other spheres of life, such as school, sports or social life (Reigal et al., 2013). Furthermore, physical self-concept correlates with task orientation (Hellín, 2007). It therefore follows that acquiring athletic habits in the integral development of children and adolescents is important.

Another important factor, which is a cause of concern in Spain, is how habits related to academic performance exert a heavy influence on goal orientation (Debicki et al., 2016). Goal orientation in learning, which task orientation is, has been empirically related to improved academic performance (Ruiz & Pieron, 2013). In physical education (PE) classes, task orientation is related to the belief that success depends on effort (Moreno et al., 2008).

Task orientation correlates positively with doing extracurricular sports, and task-oriented people have been found to have more fun when they do sports, while conversely, ego-orientation is correlated with boredom (Cechinni et al., 2008). Many studies that conclude that engaging in sports or extracurricular physical activity regularly is closely related to good academic performance as those of Chaddock et al. (2011), Kamijo et al. (2011) o Pontifex et al. (2011), although few studies examine academic performance in the PE class. One of these studies is by Luis de Cos et al. (2010), which concludes that the more often and the longer that one engages in physical activity and sports, the higher the mark in PE will be.

One important aspect in adolescence in relation to engaging in extracurricular physical activity are the reasons why people do it. According to *García-Ferrando* and *Llopis*-Goig (*2010*), the most oft-cited reason for engaging in sports in the general population is "to do physical exercise", while "to have fun and spend time" comes in second, and the third reason refers to "improving and maintaining health". Another study by Cambronero et al. (2015) in university students found that the main reasons why they engaged in physical activity were first "to be fit", secondly "to release energy" and third "to improve my health". Focusing exclusively on adolescents, the reasons for engaging in extracurricular physical activity found by Fraile and De Diego (2006) are first to improve health and secondly to be with friends.

The objective of this study was to determine the predictive function of different variables (physical self-concept, task goal orientation, engaging in extracurricular physical activity and the reasons for engaging in extracurricular physical activity) in academic performance in the PE class and the intensity with which these predictions occurred.

Methodology

Participants

A total of 568 students participated in this study, 331 males (58.27%) and 237 females (41.73%), who stated that they engaged in extracurricular physical activity. Of the total, 386 students were in the 5th and 6th grades of primary school (68%) and 182 were in the 1st to 3rd years of secondary school (32%). They studied at eight public primary schools, one public secondary school and two publicly subsidised private primary and secondary schools in the Region of Valencia. These schools were preschool/primary, secondary and primary/secondary. Therefore, no school had unique education, special education or specialised programmes. Student age range was from 9 to 18 ($M = 11.89$; $SD = 1.72$). These grades were chosen because the students were in compulsory education and it was thought that students younger than 5th grade might have difficulties reflecting on the topic of this study. Non-probabilistic incidental sampling was used.

Instruments

1) The Physical Activity Questionnaire for Adolescents (PAQ-A) in the version by Martínez-Gómez et al. (2009). It is comprised of 9 questions that assess the adolescent's physical activity during their free time in the last 7 days. The final score was the arithmetic mean of the scores obtained on the first 8 questions. Question 9 revealed whether the adolescent had been sick or whether there were some circumstances that prevented them from engaging in physical activity that week. It yielded a Cronbach's internal consistency coefficient of between .77 and .84, a level of statistical significance of $p < .05$ (Janz et al., 2008) and an ICC test-retest reliability of .71 (Martínez-Gómez et al., 2009).

2) Task and Ego Orientation in Sport Questionnaire (TEOSQ) in the version by Balaguer et al. (1996). This evaluates people's tendency towards task and ego orientation in sports through 13 items. Seven of them reflect a task orientation (TO) (items 2, 5, 7, 8, 10, 12 and 13). The other 6 items reveal an ego orientation (EO) (items 1, 3, 4, 6, 9 and 11). The participants have to respond on a 5-point Likert scale (in which 1 means "strongly disagree" and 5 means "strongly agree"). The questionnaire's factor structure was tested by means of a confirmatory factor analysis using the unweighted least squares method, resulting in adequate goodness of fit indices ($\chi^2 = 129.78$; $df = 64$; $p = .00$; $RMSEA = .04$; $GFI = .98$ and $AGFI = .97$).

3) *Physical Self-concept Questionnaire* (CAF) by Goñi et al. (2006). It has 36 items divided into 6 scales (sports skill or SS, physical condition or PC, strength or S, physical attractiveness or PA, general physical self-concept or GPS, and general self-concept or GS). After each statement, the person completing the questionnaire is asked which of the following options best fits their case: 1 "strongly disagree", 2 "disagree", 3 "indifferent", 4 "agree" and 5 "strongly agree". When the questionnaire is corrected, 20 items are scored from 1 to 5 while 16 are scored from 5 to 1, since they are written indirectly. The reliability coefficient of the questionnaire is .93 (Goñi, 2008), and it was concluded that the model fits the data according to the goodness of fit indices obtained ($\chi^2 = 2307.58$; $df = 579$; $p = .00$; $RMSEA = .06$; $GFI = .97$ and $AGFI = .97$).

4) *Motives for Physical Activity Measure-Revised (MPAM-R)* validated in Spanish by Moreno et. al., 2007. This measures the reasons for engaging in physical activity by means of 30 items divided into five factors (enjoyment or E, appearance or A, socialisation or S, fitness or F and competence or CMP), to which the participants responded on a 7-point Likert scale. The enjoyment factor yielded α Cronbach's reliability coefficient of .84. The appearance factor had a reliability coefficient of .87. The third factor refers to engaging in physical activity as a way of establishing, improving or maintaining social relationships, and its reliability was $\alpha = .81$. The fitness factor, pertaining to engaging in physical activities as a way of maintaining or improving health, yielded an α reliability coefficient of .80. The last factor is competence, which yielded α Cronbach's alpha coefficient of .85. The MPAM-R scale is a valid, reliable instrument (Moreno et al., 2007).

For the marks in PE, we used a copy of the final class evaluations which showed the marks assigned to the students by the different teachers specialising in this subject.

Procedure

The respondents were invited to participate in the study after the management of all the primary and secondary schools in the Region of Valencia had been contacted. Eleven (11) schools ultimately participated. After the school management's authorisation had been secured, the students' parents' authorisation was sought through an informed consent form.

The questionnaires were completed in the classroom. Three of them (PAQ-A, TEOSQ and CAF) were completed by all students, leading to an initial sample of 812 students. After they had finished completing it, they were asked verbally whether or not they were participating in extracurricular sports activities at that time. The students who were participating in extracurricular sports activities were given the Motives for Physical Activity Measure-Revised (MPAM-R); thus, 568 students ultimately took part in this study.

The students from two classes were ruled out, the first one because they did not have their marks and the second because they did not respond to one of the questionnaires. Similarly, to avoid potential contamination of the results, students with significant curricular adaptations were ruled out after the different academic marks they were given had been compared, depending on the reference school.

The procedure was approved by the Ethics Committee of the University of Alicante with reference number UA-2019-03-03.

Design

This study has a basic correlational design, given that there was no random selection of participants or intentional manipulation of the variables by the researcher, and the data were collected using self-reporting techniques.

Data Analysis

Different types of analyses were performed. Descriptive analysis was used to control for possible errors in the data entry phase or for the presence of missing values, in addition to obtaining information about the form of the data, both the possible distribution of likelihood with the centralisation parameters, such as mean, median and mode and the dispersion parameters, such as variance, standard deviation, etc. The symmetry and kurtosis values are important, since they enable us to determine whether or not the directly observed variables fit a normal distribution. Correlation analyses (Pearson's *r*) and multiple linear regression were also performed. Both

Table 1
Descriptive statistics

Variables	*M*	*ETM*	*SD*	Asymmetry	Kurtosis
SS	23.03	.17	4.10	–0.61	0.90
PC	22.61	.20	4.74	–0.45	–0.23
PA	23.14	.19	4.44	–0.64	0.36
ST	20.38	.20	4.88	–0.04	–0.36
GPS	24.65	.18	4.25	–0.88	0.63
GS	25.72	.15	3.56	–1.02	1.02
TO	30.65	.15	3.68	–1.41	3.76
EO	15.27	.24	5.61	0.36	–0.58
MPAQ	2.32	.02	0.54	0.58	0.49
E	41.74	.27	6.43	–1.31	2.46
A	28.25	.36	8.61	–.36	–0.60
S	22.40	.21	5.08	–1.06	0.76
F	29.05	.21	5.10	–1.34	2.57
CMP	33.30	.30	7.01	–0.85	0.47
PEP	7.63	.06	1.53	–0.41	–0.11

Note. SS: Sports skill; PC:Physical condition; PA: Physical attractiveness; ST: Strength; GPS: General physical self-concept; GS: General self-concept; TO: Task orientation; EO: Ego orientation; MPAQ: Index of extracurricular physical activity; E: Enjoyment; A: Appearance; S: Socialisation; F: Fitness; CMP: Competence; PEP: PE performance.

of them enable us to estimate the relations between the key variables in the study. With the correlational analyses, which were performed with latent variables resulting from the previous confirmatory factor analyses, the correlation coefficient matrix (Pearson's *r*) was found in order to obtain a grid of associations among the variables considered, while the regression analyses yielded the equations resulting from the regression. Finally, path analyses were conducted to ascertain the predictive capacity of the variables considered in the study in relation to academic performance in PE. The statistical packages used for the data analysis were SPSS version 20 and LISREL 8.7.

Results

The descriptive statistics of the variables are presented in Table 1.

The variables reasonably fit a normal distribution according to the asymmetry and kurtosis values.

Table 2 shows the correlation matrix among the variables considered in the study. The appearance variable did not correlate with the physical attractiveness, general physical self-concept and PE performance variables, while it did correlate with the ego orientation variable, the one that presented the fewest correlations. Ego orientation showed no correlation with the general physical self-concept, task orientation, engaging in extracurricular physical activity, PE performance, enjoyment, socialisation, fitness and competence variables.

Table 3 shows the results of the multiple linear regression analysis in which the criterion value was PE performance, with the remaining variables being the predictive variables, of which only the sports skill,

Table 2
Bivariate correlations matrix

	SS	PC	PA	ST	GPS	GS	TO	EO	MPAQ	PEP	E	A	S	F	CMP
SS	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
PC	**.69****	–	–	–	–	–	–	–	–	–	–	–	–	–	–
PA	**.49****	**.54****	–	–	–	–	–	–	–	–	–	–	–	–	–
ST	**.42****	**.41****	**.29****	–	–	–	–	–	–	–	–	–	–	–	–
GPS	**.55****	**.63****	**.73****	**.34****	–	–	–	–	–	–	–	–	–	–	–
GS	**.45****	**.43****	**.57****	**.24****	**.67****	–	–	–	–	–	–	–	–	–	–
TO	**.30****	**.34****	**.22****	**.28****	**.27****	**.27****	–	–	–	–	–	–	–	–	–
EO	**.20****	**.14****	**.09***	**.15****	.06	–.02	.02	–	–	–	–	–	–	–	–
MPAQ	**.32****	**.34****	**.28****	**.29****	**.25****	**.18****	**.19****	–.05	–	–	–	–	–	–	–
PEP	**.33****	**.30****	**.22****	**.16****	**.28****	**.24****	**.18****	.05	**.17****	–	–	–	–	–	–
E	**.36****	**.39****	**.31****	**.31****	**.39****	**.33****	**.40****	.02	**.28****	**.19****	–	–	–	–	–
A	**.10***	**.10***	.06	**.19****	–.04	**–.15****	**.10***	**.19****	**.10***	–.04	**.24***	–	–	–	–
S	**.20****	**.21****	**.26****	**.21****	**.27****	**.23****	**.26****	–.00	**.19****	**.18****	**.64****	**.25****	–	–	–
F	**.21****	**.26****	**.25****	**.28****	**.22****	**.10***	**.34****	.07	**.21****	**.09****	**.51****	**.65****	**.47****	–	–
CMP	**.38***	**.41****	**.28****	**.42****	**.30****	**.21****	**.39****	**.09***	**.29****	**.18****	**.67***	**.42****	**.50****	.66**	–

Note. SS: Sports skill; PC: Physical condition; PA: Physical attractiveness; ST: Strength; GPS: General physical self-concept; GS: General self-concept; TO: Task orientation; EO: Ego orientation; MPAQ: Index of extracurricular physical activity; PEP: PE performance; E: Enjoyment; A: Appearance; S: Socialisation; F: Fitness; CMP: Competence.
* $p = .05$; ** $p = .01$.

Table 3
Multiple regression analysis to establish predictive models of the marks or performance in PE

Criterion	Predictors	*t*	*p*	β
	SS	3.30	.00	.19
	PC	1.30	.20	.80
PE performance (PEP)	PA	–0.42	.68	–.03
	ST	–0.26	.80	–.01
R^2 = .15	GPS	0,70	.49	.05
	GS	0.91	.36	.05
S.E. of the estimate = 1.43	TO	0.81	.42	.04
	EO	0.56	.58	.02
	E	–0.93	.36	–.06
	A	–2.07	.04	–.12
	S	2.33	.02	.12
	F	0.33	.75	.02
	CMP	0.71	.48	.05
	MPAQ	1.17	.24	.05

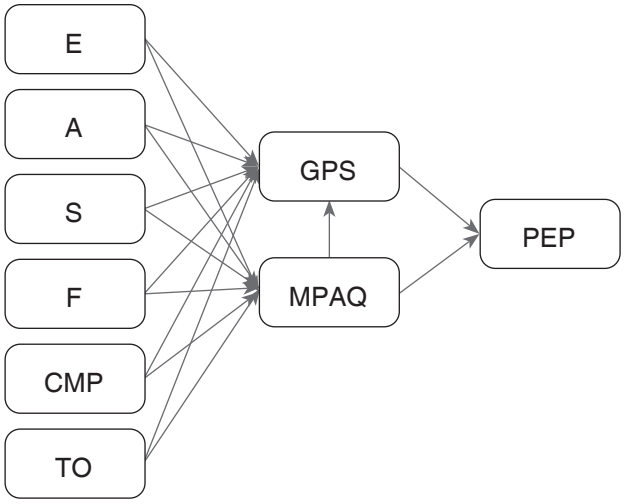
Note. PEP: PE performance; SS:Sports skill; PC: Physical condition; PA: Physical attractiveness; ST: Strength; GPS: General physical self-concept; GS : General self-concept; TO: Task orientation; EO: Ego orientation; E: Enjoyment; A: Appearance; S: Socialisation; F: Fitness; CMP: Competence; MPAQ: Index of extracurricular physical activity.

appearance and socialisation variables, with statistically significant likelihood of *t*, entered the equation ($p < .05$). These variables accounted for 15% of the variance ($R^2 = .15$).

According to the studies examined and the results of the multiple regression analysis, the model in Figure 1 was proposed, in which the variable to be explained was PE performance, while the others were the predictive variables. Engaging in extracurricular physical activity was related to general physical self-concept, while these two variables were shown to be determined by reasons for engaging in physical activity such as enjoyment, appearance, socialisation, fitness or sense of competence, in addition to task goal orientation.

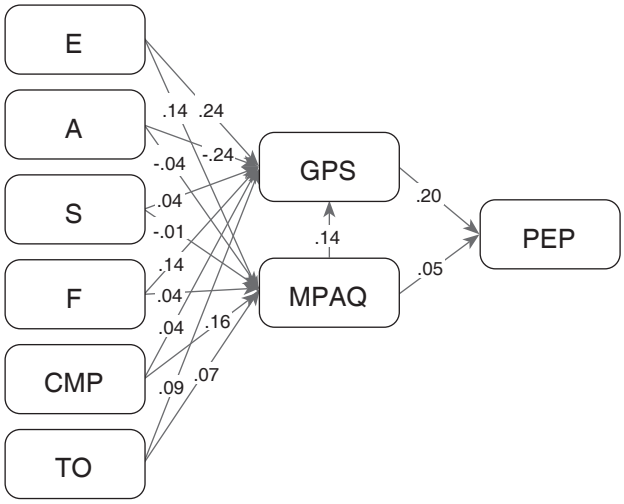
The fit indices that correspond to the completely standardised solution of the model in Figure 2 were: $\chi^2 = 14.25$; $df = 21$; $p = .00$; $RMSEA = .0$; $GFI = 1.00$; $AGFI = .99$. In order to establish the degree of fit, the indices compare the variance-covariance matrix reproduced by the model to the one observed in the sample. The value of the chi-squared statistic is very sensitive to the number of participants, so it is complemented by the calculation of other indices. For RMSEA, values under .05 indicate good fit, and for GFI and AGFI, values equal to or higher than .9 indicate that the model presents goodness of fit.

Figure 1
Hypothetical predictive model for PE marks



Note. E: Enjoyment; A: Appearance; S: Socialisation; F: Fitness; CMP: Competence; TO: Task orientation; GPS: General physical self-concept; PEP: PE performance; MPAQ: Index of extracurricular physical activity.

Figure 2
Completely standardised solution of the hypothesised model for PE marks



Note. E: Enjoyment; A: Appearance; S: Socialisation; F: Fitness; CMP: Competence; TO: Task orientation; GPS: General physical self-concept; PEP: PE performance; MPAQ: Index of extracurricular physical activity.

Discussion

The results obtained from the correlational analyses enable us to confirm that engaging in extracurricular physical activity is significantly related to self-concept, similar to the results of authors such as Navas and Soriano (2016), demonstrating one of the many advantages of engaging in physical activity. From this analysis we also found a somewhat logical relationship between engaging

in extracurricular physical activity and physical self-concept, confirming the results found by Espinoza et al. (2011) or Reigal and Videra (2011). According to these results, physical self-concept is also significantly related to self-concept, in line with the results of Reigal et al. (2013); this relationship also seems logical, bearing in mind that since the 1970s a multidimensional conception of self-concept had been accepted as a construct which encompasses dimensions of physical self-concept, among others. Other conclusions which can be drawn from this analysis are the significant relationships between task orientation and engaging in extracurricular sports, corroborating the results of Cechinni et al. (2008). This relationship could translate into attitudes related more to the process of physical-sport activity and less to the results of these activities. Similarly, the appearance variable is also noteworthy, since according to this correlational analysis, this kind of reason for engaging in extracurricular physical activity does not present statistically significant relationships with the physical attractiveness, general physical self-concept and PE performance variables.

In relation to the explanatory predictive model (see Figure 1), we can assert that the model fits the data according to the physical attractiveness, general physical self-concept and PE performance variables. Engaging in extracurricular physical activity positively predicts PE performance, as found by Luis de Cos et al. (2010) and Fraile et al. (2019), demonstrating that marks in PE are also positively determined by general physical self-concept. This relationship is justified since physical self-concept is a dimension of self-concept, a construct that is clearly related to academic performance. On the other hand, of the scales related to the reasons for engaging in extracurricular physical activity, enjoyment is the most decisive one, identical to the results of Martínez et al. (2012). These results endorse what was discussed above about task orientation and attitudes towards physical activity related to the process. The enjoyment reason is also positively related to general physical self-concept and engaging in extracurricular physical activity, in line with the findings of Reigal et al. (2013). We should note that significant relationships were found in the correlational analyses between the enjoyment reason and PE performance, as in the study by Fraile et al. (2019). Finally, goal orientation to the task was also found to be related to general physical self-concept, as asserted by Hellín (2007).

Conclusions

The data obtained point to several practical implications of the study, such as the importance of extracurricular physical activity in contributing to better physical self-concept (Reigal & Videra, 2011). Both our literature review and this study took weekly frequency of physical activity was into account, it transpiring that the greater the degree of physical activity, the higher the relationship, without such physical activity having to be competitive.

On the other hand, the enjoyment reason is the most decisive one, and it is also related to general physical self-concept and engaging in extracurricular physical activity (Fraile et al., 2019). Physical activity professionals can use this information when planning their activities. Activities removed from the traditional patterns that used to prioritise exercises, repetitions and quantitative aspects and which are closer to pedagogical styles that cater to the emotions can be a valuable element in educating young people.

Some of these data can be used to guide the methodology of physical activity professionals, such as the fact that goal orientation towards the task affects general physical self-concept (Hellín, 2007) and the practice of extracurricular sports (Cechinni et al., 2008).

Finally, the fact that engaging in extracurricular physical activity has a positive effect on PE marks (Fraile et al., 2019; Luis de Cos et al., 2010) can serve as an incentive for families to enrol their children in some kind of extracurricular physical activity or even to reorient family leisure time.

The possibility of mainstreaming these findings is limited by the fact that all the participants were from the same autonomous community and that the instruments used are self-reporting questionnaires, meaning that the data could possibly be contaminated by the social desirability bias. These factors should be borne in mind in future studies.

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Goalkeeper Effectiveness in the Direct Free Hit of Rink Hockey

Guillem Trabal[1]*, Gabriel Daza[2] and Joan Riera[3]

[1] Faculty of Education, Translation and Humanities, University of Vic, Spain
[2] National Institute of Physical Education of Catalonia (INEFC) - Barcelona Centre, University of Barcelona, Spain
[3] GISEAFE-Social and Educational Research Group of Physical Activity and Sport, National Institute of Physical Education of Catalonia (INEFC), University of Barcelona, Spain

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***Corresponding author:**
Guillem Trabal
guillem_tt@hotmail.com

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Abstract

The objective of this research was to analyse the influence of the factors that intervene in goalkeeper-player the interaction on the effectiveness of direct free hits. The observational methodology was used, and an *ad hoc* observation instrument was created with 11 criteria. The sample consisted of 637 direct free hits from the OK Liga 2015-16. A descriptive analysis of the different variables was made and a correlation analysis between goalkeeper and player behaviour variables with regard to effectiveness in finalization. No interaction variable was identified between goalkeeper and player that had a significant relationship in the efficiency of the goalkeeper's saves ($p>.05$). The most efficient player behaviours were: left laterality (33.3%) and zone 3 where the direct free hit (33.2%) is executed. The goalkeeper behaviours that presented the highest percentages of effectiveness were use of the technical ability to move their arms to stop shots (82.7%) and the initial position of squat (73.8%) and knee on the floor (72%). The information obtained is interesting in helping to understand goalkeeper-player interactions and thus be able to intervene to improve both of their playing performances according to the characteristics of the direct free hit.

Keywords: roller hockey, direct free hit, effectiveness, technical skill, goalkeeper

Introduction

The direct free hit (DFH) in roller hockey (RH) is a one-against-one situation between goalkeeper and player involving a reciprocal influence. An asymmetric duel is established in which the player attempts to score a goal and the goalkeeper to prevent it. The importance of these actions in the game is determined by their greater effectiveness over other roller hockey actions, surpassed only by penalty shots (Brazio, 2006; Vaz, 2011), and because more than 60% of them are taken at decisive points in the game, namely in the last 15 minutes (Trabal, 2017; Trabal et al., 2019a).

Different studies in cooperation-opposition sports have examined the goalkeeper-player relationship in penalty situations. The importance of these studies lies in the fact that since the DFH is exclusive to RH, penalties are the actions in other sports that are most similar to the DFH in RH because of their importance and because they are interactions exclusively between the goalkeeper and player. One of the variables analysed was the initial location of the goalkeeper in the football penalty kick. An initial goalkeeper position to one side, as opposed to the centre of the goal, conditions kicker decisions and their likelihood of aiming the kick towards the area where the goalkeeper has left most space (Masters et al., 2007; Weigelt & Memmert, 2012; Weigelt et al., 2012).

Another variable which has been studied is football goalkeepers' predisposal towards action instead of inaction. In penalty kicks, goalkeepers are known to have a preference for diving towards one side even in the knowledge that remaining still in the centre of the goal (De la Vega et al., 2010) is the most effective option. Using a similar approach, Bar-Eli and Azar (2009) demonstrate that players would rather have their penalty kick stopped by the goalkeeper than shoot outside the goal.

In terms of goalkeeper and player laterality, in ice hockey the efficacy of right-handed goalkeepers is not influenced by the laterality of the player striking the puck. Conversely, left-handed goalkeepers let in more goals struck by right-handed players (Puterman et al., 2010).

The influence of goalkeeper movements just before the kick is actually taken has also captured researchers' interest. Wood and Wilson (2010) state that the football goalkeeper's action of waving their arms is a distraction and increases the penalty taker's anxiety. Van der Kamp and Master (2008) hold that the position of the handball goalkeeper in the goal changes perception of their height, thus influencing the precision of penalty shots. When players are negatively influenced, their level of anxiety rises and their effectiveness drops (Wilson et al., 2009).

In RH, the only studies that analyse DFHs address the influence of their effectiveness on final rankings (Trabal et al., 2019b) and goalkeeper-player interaction (Trabal, 2017; Trabal, 2019; Trabal et al., 2019a). The behavioural guidelines in DFHs recommend that players use a feint shot to condition the goalkeeper by putting them off-balance and forcing them to adopt different initial positions (IPs) to contend with the player's action (Trabal, 2019; Trabal et al., 2019a). The IPs used most frequently by Spanish goalkeepers are kneeling (KN) and the half-screen (HS) (Trabal, 2019, Trabal et al., 2019a). In goalkeeper-versus player situations, the goaltender is advised to move forward sufficiently to reduce the angle of the shot while also not leaving too much lateral space to avoid being dribbled (Folguera, 2000; Trabal, 2017; Trabal et al., 2019a). On the other hand, players must strike a balance between not getting too close to the goalkeeper to keep them from stealing the ball with their stick and finding the distance that offers a good angle of shot (Massari, 2017, Trabal, 2017).

The study of DFHs enables us to understand the relational characteristics between goalkeeper and player and sheds light on the factors that determine one of the most important actions in RH. Due to the lack of studies on goalkeeper-player interactions in RH and the enormous importance of the goalkeeper as a crucial element in teams' ultimate performance (Trabal, 2016), the objective of this study was to identify the most-used goalkeeper and player behaviours in DFHs and to ascertain their influence on the effectiveness of DFHs. The emphasis was placed on the behaviours of both goalkeeper and player because there is a reciprocal influence between them in DFH.

Methodology

Design

The observational methodology was used because of the possibilities it affords to analyse goalkeeper-player interaction in its natural context without either one of them feeling conditioned. This allowed us to analyse the behaviours that spontaneously arise in their competitive environment and to quantify the athletes' behaviours (Anguera & Hernández-Mendo, 2013, 2014). The design was periodic, nomothetic and multidimensional.

Participants

The sample was comprised of the 650 DFHs taken in the 240 matches in the OK Liga 2015-16. Thirteen DFHs were ruled out because of poor image quality.

Instruments

An ad-hoc observation instrument was created with a field format combined with a system of categories. The observation instrument was comprised of criteria pertaining to player and goalkeeper behaviour and the outcome of the action (Table 1). The instrument was validated through an expert peer-reviewed procedure involving six coaches, one goalkeeper and one player, all of them with level-3 qualifications in RH and at least ten years' experience in the OK Liga. The consensus surpassed 90% on all criteria and categories. The reliability of the instrument was determined by analysing the 52 DFHs on the first two days of the championship, and intraobserver concordance tests ($k = 0.992$) and interobserver concordance tests ($k = 0.984$) were performed.

Procedure

The DFH sequences were downloaded from the platform of the Royal Spanish Skating Federation and viewed using the Kinovea v. 0.8 (17) software. Excel 13 was used to generate the records. Finally, the data were statistically processed using the SPSS v.23 software.

Statistical Analysis

A descriptive analysis of the variables was performed by calculating the frequencies and percentages, as well as the percentages of effectiveness obtained in each variable, and a correlational analysis using Pearson's chi-squared test among the variables of the goalkeeper's and player's behaviours together with the DFH outcome variable. The players' percentage of effectiveness in the DFHs was calculated (E%) (DFHs which end in goal *100/total DFHs) and the percentage of goalkeeper effectiveness (GE percentage) (DFHs which do not end in goal *100/total DFHs).

Table 1
Criteria and categories of the observation instrument

Criteria	Categories
Player behaviours	
Laterality	Hand the player uses to grip the stick: right-handed/left-handed.
Feints before hit	Possibility of player simulating a direct strike on goal: feint before hit/no feint before hit.
Continuity of movement	The player can execute stick and ball movements without stopping during the direct free hit: there is continuity/there is a pause and no continuity/pause and no continuity.
Technical skill of the player (TSP)	Technical action by the player to shoot at goal: hit/drag or stab/dribble.
Final direction of movement	Final direction by the ball to the player's stick before it is struck from the taker's standpoint in dribbling: from right to left/from left to right.
Finalisation zone of the action (ZFA1 and ZFA2)	ZFAF1= zone of the rink from which the ball it hit: Z1/Z2/Z3/Z4/Z5 and ZFAF2 = right zone/left zone/FD point (Figure 1).
Goalkeeper behaviours	
Initial position of the goalkeeper (PI)	Stance the goalkeeper takes before performing the technical skills: squat (SQ)/kneeling (KN)/half-screen (HS)/stretched out on the ground (SG)/other initial positions.
Technical skill of the goalkeeper (TSG)	Technical action employed by the goalkeeper: screen (SCR)/closing step (CS)/opening legs/arm movements (AM)/pulling the mitt from the stick (PMS)/other technical skills.
Final location of the goalkeeper	Location of the goalkeeper on the rink at the time of the hit: in the goalkeeper area/ the semicircle of the goalkeeper area/in front of the goalkeeper area (Figure 3).
Distance between goalkeeper and player	Separation between goalkeeper and player when the player hits the ball at goal: more than 1.5 metres/less than 1.5 metres.
Result of the action	Result of the hit: goal/no goal.

Ethical Considerations

Since the study was performed within an official competition open to the public, the informed consent of the athletes was not required in accordance with the ethical requirements established by the American Psychological Association (2002).

Results

According to the data shown in Table 2, there was no statistically significant relationship between the goalkeeper and player behaviour variables in relation to DFH effectiveness. GE percentage in the DFHs in the 2015-16 OK Liga was 70.3%, which corresponds to an E% of 29.7%.

Player Behaviours

Table 3 displays all the data resulting from the descriptive analysis of player behaviours. Only in 17.4% of the DFHs did the hitter feint before striking. When the players executed the DFH with a feint before the hit, they scored 31.5% of the DFHs and scored 29.3% when they did not.

Table 2
Relationships between player and goalkeeper behaviours and DFH effectiveness

Criteria	χ^2	Sig.
Player behaviours		
Laterality	1.972	.160
Feints before hit	.223	.637
Continuity of movement	.010	919
Technical skill of the player	.900	.825
Final direction of the movement	4.245	751
Action finalisation zone 1 (zones 1 to 5)	3.300	509
Action finalisation zone 2 (right/left/central)	.003	.999
Goalkeeper behaviours		
Initial position	4.979	.418
Technical skill of the goalkeeper	10.812	.213
Final position of the goalkeeper	3.667	.160
Distance between goalkeeper and player	.230	.632

With regard to the continuity of movement variable, the players presented a preference for executing the DFH continuously in 76.5% of the shots.

Table 3
Characteristics of player behaviour in DFHs

Criterion	Category	DFHs taken	%DFHs taken	Goals from DFHs	E%	GE%
Laterality	Right-handed	430	67.5	120	27.9	72.1
	Left-handed	207	32.5	69	33.3	66.7
Feints before hit	Yes	111	17.4	35	31.5	68.5
	No	526	82.6	154	29.3	70.7
Continuity of movement	Yes	487	76.5	144	29.6	70.4
	No	150	23.5	45	30	70
Technical skill of the player	Hit	110	17.3	30	27.3	73.3
	Drag/stab	56	8.8	17	30.4	69.6
	Dribble	471	74	142	30.1	69.9
Final direction of the movement	Right-left	179	38	52	29	71
	Left-right	292	62	90	30.8	69.2
Action finalisation zone 1	1	48	7.5	15	31.3	68.7
	2	279	43.8	81	29	71
	3	187	29.4	62	33.2	66.8
	4	9	1.4	1	11.1	88.9
	5	114	17.9	30	26.3	73.7
Action finalisation zone 2	Right	343	53.84	102	29.7	70.3
	Left	259	40.66	73	29.6	70.4
	Centre	35	5.5	14	29.8	70.2

Note. DFHs taken: direct free hits taken; %DFHs taken: percentage of direct free hits taken; Goals from DFHs: goals scored from direct free hits; E%: player effectiveness percentage, GE%: goalkeeper effectiveness percentage.

Table 4
DFHs taken and E% in DFHs in relation to player laterality

Criterion	Right-handed			Left-handed		
	DFHs taken	%FDs taken	E%	DFHs taken	%FDs taken	E%
Hit	80	18.6	26.3	30	14.5	30
Drag/stab	46	10.7	23.9	10	4.8	60
Dribble	304	70.7	28.9	167	80.7	32.3
n	430	100		207	100	
			27.9			33.3

Note. DFHs taken: direct free hits taken; %DFHs taken: percentage of direct free hits taken; Goals from DFHs: goals scored from direct free hits; E%: player effectiveness percentage.

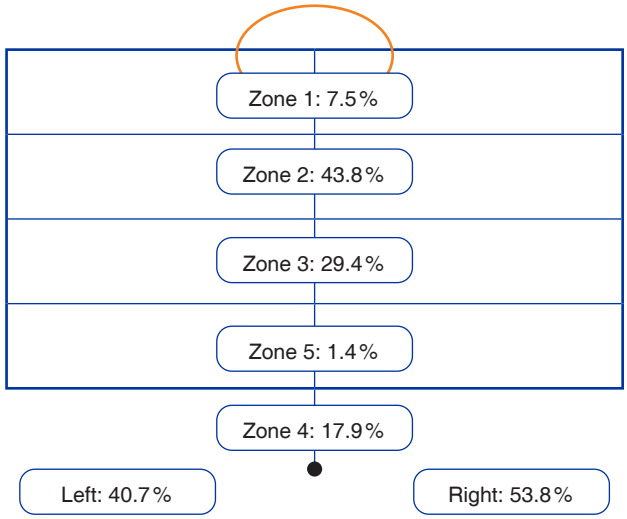
The analysis of TSP shows that dribbling was the most-used skill (74%), followed by hitting (17.3%) and dragging/stabbing (8.8%). Players reached the highest levels of effectiveness (30.4%) when making the DFH by dragging or stabbing the ball. The analysis of the TSP in relation to laterality reveals that dribbling was the preferred technical skill in both groups. Dragging/stabling was the skill used least by left-handed players (4.8%) (Table 4).

DFHs taken: direct free hits taken; %DFHs taken: percentage of direct free hits taken; Goals from DFHs: goals scored from direct free hits; E%: player effectiveness percentage.

The most-used final direction of movement was left-right (62%). These final movements, analysed according to player laterality, show that right-handed players finalised DFHs to their right and to the goalkeepers' left 63.2% of the time, while left-handed players did so in the same way 59.9% of the time.

With zone division according to their being closer to or further away from the goal, ZFA1, we can see that most shots were taken at goal from zones 2 (43.8%) and 3 (29.4%). Zone 4, with only 1.4% of the DFHs taken, was the least favourite. By laterality, ZFA2, 53.8% of the DFHs were made from the right zone, 40.7% from the left and 5.5% from the DFH point (Figure 1).

Figure 1
Percentage of finalisation of DFHs according to finalisation zone



Goalkeeper Behaviours

The IPs used most by goalkeepers were KN (49.1%), HS (28.2%) and SQ (16.8%). Goalkeepers reached the highest levels of effectiveness by positioning themselves in KN (72%) and SQ (73.8%) and the lowest levels in HS (66.1%). In terms of TSG, they used CS in 35.6% of the DFHs and SCR in 24.6%, with a GE percentage of 68.3% and 75.2%, respectively. The TSG with AM is where goalkeepers reached the highest GE percentage, 82.7% (Table 5).

The analysis of the relationship between the IP and the three TSGs most used by goalkeepers enables us to identify three noteworthy combinations. The most important one was KN+CS in 34.1% of the DFHs, the second was SQ+SCR in 12.3% of the DFHs and the third was HS+PMS in 6.6% of the DFHs (Figure 2).

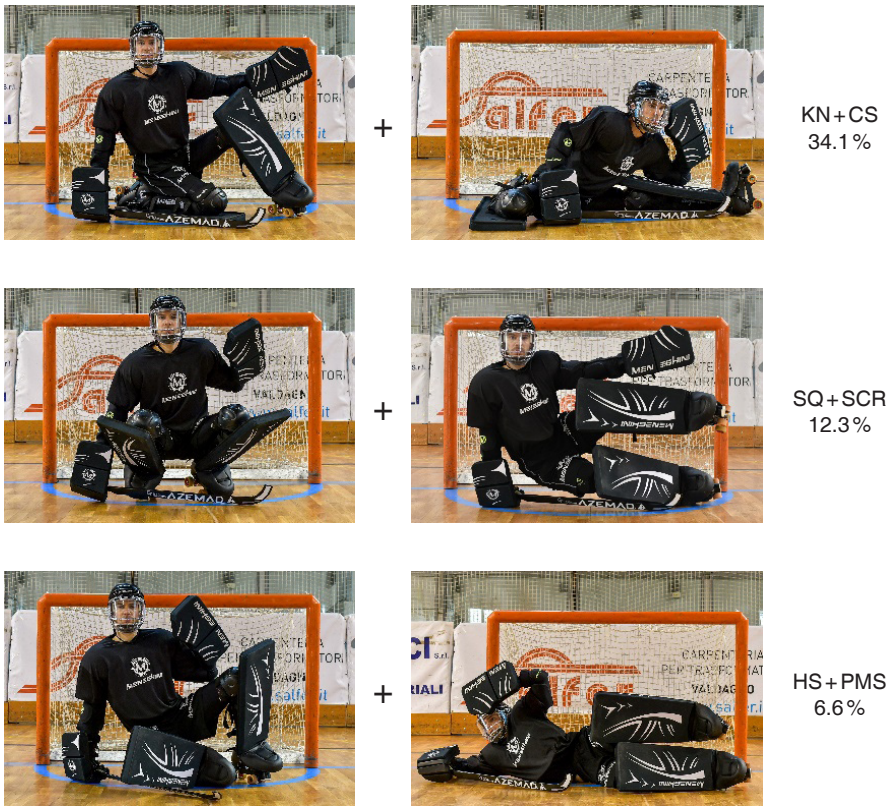
With regard to final goalkeeper position, in 59.2% of the DFHs they were in the semicircle of the goalkeeper area, where the GE percentage was 72.1% (Figure 3). In 18.7% of the DFHs when the goalkeeper was positioned in front of the semicircle of the goalkeeper area, they obtained the highest GE percentage (72.3%). However, when the goalkeeper was located within the goalkeeper area, effectiveness dropped to 63.8%.

Table 5
Characteristics of goalkeeper behaviours in DFHs

Criterion	Category	DFHs taken	%DFHs taken	Goals from DFHs	E%	GE%
Initial position	Squat	107	16.8	28	26.2	73.8
	Kneeling	313	49.1	88	28	72
	Half-screen	180	28.2	61	33.9	66.1
	Stretched out on the ground	23	3.6	8	34.8	65.2
	Other	14	2.2	4	26.6	73.4
Technical skill of the goalkeeper	Screen	157	24.6	39	24.8	75.2
	Closing step	227	35.6	72	31.7	68.3
	Opening legs	43	6.8	13	30.2	69.8
	Arm movement	52	8.2	9	17.3	82.7
	Pulling the mitt from the stick	93	14.6	33	35.5	64.5
	Other	65	10.2	23	35.4	64.6
Final location of the goalkeeper	Within the goalkeeper area	141	22.1	51	36.2	63.8
	Over the semicircle	377	59.2	105	27.9	72.1
	In front of the goalkeeper area	119	18.7	33	27.7	72.3
Distance between goalkeeper and player	More than 1.5 m	409	64.2	124	30.3	69.7
	Less than 1.5 m	228	35.8	65	28.5	71.5

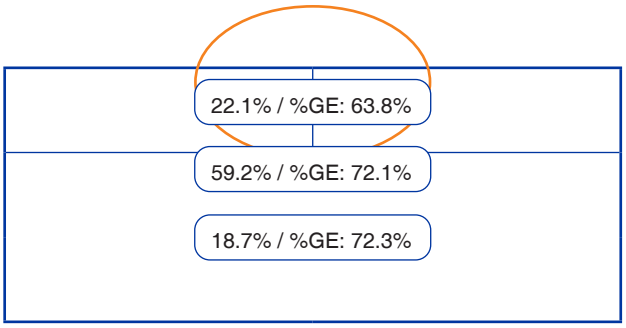
Note. DFHs taken: direct free hits taken; %DFHs taken: percentage of direct free hits taken; Goals from DFHs: goals scored from direct free hits; E%: player effectiveness percentage; GE%: goalkeeper effectiveness percentage.

Figure 2
Percentage of use of the main IP + TSG combinations



Picture source: authors.

Figure 3
Zone of goalkeeper protection area the with percentages of goalkeeper occupation and percentages of GE achieved in each zone



The distance between the goalkeeper and the player at the time of the shot on goal was more than 1.5 metres in 64.2% of the DFHs, while in the other 35.8% of DFHs it was under 1.5 metres. In the latter, the goalkeepers showed an effectiveness of 71.5%, higher than the 69.7% attained when goalkeeper and player were further away from each other.

Discussion

The main objective of this research was to identify the influence of the goalkeeper and player behaviour variables on the effectiveness of DFHs. The results enable us to assert that these variables have no influence on these shots' effectiveness.

DFHs are primarily taken by right-handed players (67.5%), confirming the results found by Kingman and Dyson (1997), who demonstrated that 72.2% of all shots in a RH match were executed by right-handed players. These results make sense considering that the OK Liga has more right-handed players (82%) than left-handers (18%). In DFHs, the effectiveness of left-handed players is higher (33.3) than right-handers (27.9%). The advantage of left-handed players tallies with the results reported by Bauman et al. (2011) in football and those of Puterman et al. (2010) in ice hockey. One explanation which may account for this advantage is the effect of perceptive frequency (Hagemann, 2009). According to this theory, goalkeepers have greater difficulty in perceiving the actions of left-handed players out of lack of habit because they are less familiar with this kind of stimuli, which is why goalkeepers find it more difficult to identify the movements of left-handed players.

In DFHs, dribbling is the TSP used most often (74%), while shots only account for 17.3%. Unlike the TSPs used in a match, within the dynamic of cooperation and opposition of a match, shots proved to be the most-used technical skill, attaining values over 50% (Brazio, 2006; Kingman & Dyson, 1997). This difference can be explained because the DFH is a goalkeeper-player interaction in which the player encounters no opposition from any defender to get near the goal and can dribble the goalkeeper. Conversely, in an RH match, the shot is a necessary resource to score a goal from a distance since defenders take action to prevent someone a player from the rival team getting close to the goal (Vaz, 2011).

The most frequent DFH finalisation zones are zones 2 (43.8%) and 3 (29.4%). They are ideal in terms of precision and distance from the goalkeeper; they are close enough to the goal to make a precise shot using a technical skill, while also being far enough from the goalkeeper to have a good angle and prevent the goalkeeper from intercepting the ball, particularly from zone 3, which is the most effective (33.2%) one. In the zones further away from the goal, player angle of shot is improved to the detriment of precision, as reflected in the E% in zones 4 (11.1%) and 5 (24.3%). It is worth noting that shots from zone 5 are more effective than those from zone 4 even though the zone is further away. This can be explained by the fact that 95.6% of DFHs from this zone are quick shots directed straight at goal, preventing the goalkeeper from coming out and narrowing the angle. It transpired that from zone 1, which is quite close to the goal and has the limitation of having a narrow angle of a shot and a high likelihood of the goalkeeper intercepting the ball (Trabal, 2019), the E% is above average (31.3%). This can be explained by the fact that when the player leaves this zone, they have already tricked the goalkeeper and their shot goes unopposed.

The description made by Trabal (2019) and Trabal et al. (2019a) of Spanish goalkeepers' style is confirmed by the results of this study: the simultaneous use of HS and KN as initial positions and the associations between the initial positions and the KN+CS and HS+SCR technical skills. The use of SQ in DFHs, an IP that is not used in the other actions in the game, can be accounted for by the rules on taking DFHs, which force the goalkeeper to take a SQ at the beginning of the DFH and prevents them from taking up another IP until the player makes contact with the ball. When the TSP is a shot or a drag straight at goal, the goalkeeper has very little time to react and goalkeepers perform the technical skill directly after the SQ to attempt to block the shot. Furthermore, in many cases the technical skill chosen by the goalkeeper to stop shots is SCR, and this technique is easy to pull off from the SQ (Trabal, 2017).

SCR and CS are the two TSGs used most. The high frequency with which SCR is employed is due to the fact that the goalkeeper reacts with this technique in 74.5% of shots at goal. These results tally with theoretical

contributions on the use of SCR to counter shots to create a body position that covers a greater amount of space (Folguera, 2000; Trabal, 2017). The frequent use of CS is understandable because of its association with the KN IP; in 49.1% of DFHs, goalkeepers position themselves with KN, and from this IP it is very easy to move to CS since the goalkeeper only has to drop down on his behind (Folguera, 2000).

Although the results of DFHs have not shown a significant relationship between the goalkeeper's final position and their effectiveness, differences were observed in the GE percentage according to the goalkeeper's position with regard to the line in the goalkeeper area. The goalkeeper's GE percentage increases as they move further away from the goal line. These results support the recommendations of Folguera (2000) and Trabal (2019) in terms of the advantage of goalkeepers moving further out of the goal to narrow down the opposing player's angle of shot. However, the results in terms of the distance between the goalkeeper and the player prevent us from supporting recommendations made to players in one-on-one situations of not to approach goalkeepers too much in order not to lose the angle of shot and subsequently the ball (Folguera, 2000; Massari, 2017; Trabal, 2017).

The tenuous relationship between goalkeeper and player behaviours in the effectiveness of DFHs can be explained by the interaction established based on previous knowledge and the specific conditions of the environment. Goalkeeper and player were seen to maintain an interaction of opposition with mutual influence. Goalkeepers' and players' habits allow them to constantly adapt to the other's actions. This goalkeeper-player adjustment harmoniously establishes a link between skills with opposing objectives, integrated appropriately into the respective activity. This interaction can help us understand why there are no factors that might explain effectiveness based on the capacity to adapt to the changes that occur between opponents. Over the years, numerous major changes have taken place in goalkeeper and player habits alike (Folguera, 2000; Mori, 1988). Every time a goalkeeper or player manages to overcome their adversary, the latter is forced to find a solution to deal with their rival's skills, hence there is a constant flux of disequilibrium and equilibrium. A relational analysis of the interaction between the goalkeeper's and the player's respective technical skills would enable us to address the interactions involved in this opposition to establish causal relationships between goalkeeper-player habits.

The information obtained in this study is of interest in helping us to gain an understanding of goalkeeper and player interactions and thus be able to intervene to improve their skills by designing training sessions and boosting their performance.

Conclusions

In the OK Liga 2015-16, goalkeepers were found to use the initial kneeling position with the technique of stopping with a closed step and the squatting position with the screen as the main chain of actions to counter a DFH.

No statistically significant relationships were found between player and goalkeeper behaviours and the effectiveness of DFHs in RH. The most effective player behaviours were left laterality and executing the DFH from zone 3. Regarding goalkeepers, the highest GE percentages were attained by using the technical skill of arm movements and the initial positions of squatting and kneeling.

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Relationship between School Violence, Sportspersonship and Personal and Social Responsibility in Students

Bernardino J. Sánchez-Alcaraz[1]*, Borja Ocaña-Salas[1], Alberto Gómez-Mármol[2] and Alfonso Valero-Valenzuela[1]

[1]Faculty of Sport Sciences, University of Murcia, Spain
[2]Faculty of Education, University of Murcia, Spain

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***Corresponding author:**
Bernardino J. Sánchez-Alcaraz
bjavier.sanchez@um.es

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Abstract

The purpose of this study is to ascertain the levels of sportspersonship, everyday school violence and personal and social responsibility in primary and secondary school students. The sample was comprised of 672 students (382 boys and 290 girls) between the ages of 12 and 16 ($M \pm SD = 13.99 \pm 1.75$) at 16 schools in the region of Murcia, Spain. The participants were in the 6th grade of primary education and the 3rd year of compulsory secondary education. They completed the Spanish version of the Multidimensional Sportspersonship Orientations Scale to measure this variable; the Questionnaire on Everyday School Violence; and the Spanish translation of the Personal and Social Responsibility Questionnaire to measure this variable. The results indicated medium-high levels of sportspersonship, low rates of violence suffered compared to violence observed, the latter with medium-high variables, and high levels of responsibility, with higher values in social responsibility. Positive and significant relationships were found between the five dimensions of sportspersonship and the two dimensions of responsibility. On the other hand, the violence suffered and violence observed dimensions correlated negatively and significantly with the five dimensions of sportspersonship and the two dimensions of responsibility. This suggests that that pedagogical models geared towards education in values such as responsibility or sportspersonship should be implemented in order to reduce school violence.

Keywords: education in values, physical education, bullying, peaceful coexistence at schoolcolar

Introduction

School violence is currently considered to be one of the most important challenges that the educational system must deal with internationally (Gázquez et al., 2009). According to the Ombudsman's report ([Defensor del Pueblo], 2007) on the situation of secondary schools in Spain, the number of students who state that they have observed different types of violence ranges between 49% and 55.8%. In this sense, the predominant violent behaviour is verbal aggression (insults, using offensive nicknames, badmouthing someone), followed in descending order by threats and blackmail (22.7%), social exclusion (22.5%), direct physical aggression (14.2%), theft (10.5%), material damage (7.2%) and finally sexual harassment, perceived by 1.3% of the respondents.

In an attempt to palliate the negative consequences of school violence on victims, many efforts and initiatives have been implemented nationally and internationally in the course of the last decade to foster peaceful coexistence and the social integration of students in the classroom (Ortega, 2010), given that the experience of suffering from peer violence is associated with negative consequences in personal, social and school adaptation (Beale, 2001), while observed violence is also an important factor because of its implications on mental health and school adaptation (Roeser & Eccles, 1998). Furthermore, high levels of school violence, both suffered and observed, have been associated with lower satisfaction with body self-image (Gómez-Mármol et al., 2017). In this sense, most of these studies and initiatives have focused primarily on schoolchildren in their last years of primary and secondary school, although more recently, studies have also been conducted on this kind of behaviour at younger ages (Albadalejo et al., 2013).

In recent years, some studies have used physical activity and sports as a tool to improve schoolchildren's values and reduce the levels of school violence (Prat et al., 2019; Fernández-Gavira et al., 2018; Sánchez-Alcaraz et al., 2013). In this way, fostering certain values such as personal and social responsibility or sportspersonship through the practice of physical activity seems to lead to a reduction in the levels of school violence (Sánchez-Alcaraz et al., 2013). This practice of physical activity at school focuses on physical education classes, although other proposals prove that interdisciplinary work tends to produce better learnings (Egea et al., 2017).

Regardless of the number of areas involved, lessons in values learned in the educational environment are known to have repercussions beyond it, i.e. in schoolchildren's everyday lives (Sánchez-Alcaraz & Gómez-Mármol, 2014). Furthermore, the development of certain values has been associated with the development of prosocial behaviours; for example, level of sportspersonship has been associated with level of responsibility (Gómez-Mármol et al., 2014) and with a reduction in violent episodes (Sánchez-Alcaraz, 2014). The objective of this study is to determine the levels of sportspersonship, everyday school violence and personal and social responsibility in students and their differences according to sex and educational level, as well as to analyse the possible correlations among the variables.

Methodology

Design

This research is an empirical study using a quantitative methodology, more specifically a descriptive study of populations based on transversal surveys (Montero & León, 2007).

Participants

The sample was comprised of 672 students between the ages of 12 and 16 ($M \pm SD = 13.99 \pm 1.75$); 382 were boys with a mean age of 13.90 ± 1.79, and 290 were girls with a mean age of14.13 ± 1.69. The students were in the 6th grade of primary school and the 3rd year of compulsory secondary school at six schools in the Region of Murcia, Spain. The sample was accessed by incidental non-probabilistic sampling. The administration of each school and the participants' legal guardians signed an informed consent which stated the conditions of the research, including information such as the fact that participation was voluntary, that the data collected would be processed anonymously and that the survey would neither positively nor negatively affect the mark in any class. The study was approved by the Ethics Committee of the University of Murcia.

Instruments

Personal and social responsibility

The Spanish translation (Escartí, Gutiérrez, & Pascual, 2011) of the Personal and Social Responsibility Questionnaire (Li et al., 2008) was used to measure the participants' personal and social responsibility. It is comprised of 14 items divided into two factors with seven

items each one: personal responsibility ("I want to improve", $\alpha = .67$) and social responsibility ("I respect others", $\alpha = .82$). The participants had to respond on a 6-point Likert scale ranging from (1) *totally disagree* to (6) *totally agree*.

Sportspersonship

To measure the level of sportspersonship, the Spanish version of the Multidimensional Sportspersonship Orientations Scale (Martín-Albo et al., 2006) was used, a translation from the English version by Vallerand et al. (1997). This scale is comprised of 25 items organised into five factors with the following introductory phrase: "Which of the following expressions do you think is part of sportspersonship?". A Likert scale with five alternatives, from (1) *totally disagree* to (5) *totally agree*, was used to respond to the factors: personal commitment to sports practice ("I try to participate in all the activities", $\alpha = .51$), social conventions ("congratulating your opponent for having played well", $\alpha = .78$), respect for rules, judges and referees ("respecting the referee even if they are wrong", $\alpha = .67$), respect for opponents ("rectifying an unfair situation for the opponent", $\alpha = .62$) and negative perspective ("making excuses for a bad game", $\alpha = .58$).

School violence

From the 102 items on the California School Climate and Safety Survey (CSCSS) by Rosenblatt and Furlong (1997), Fernández-Baena et al. (2011) chose 14 conceptually appropriate items to evaluate school violence among peers, divided into two factors: violence suffered ("I've been punched or kicked", $\alpha = .84$) and violence observed ("students get into fights", $\alpha = .84$). They were scored on a Likert scale with five alternatives, from (1) *never* to (5) *always*.

Procedure

The schools were chosen according to the regional divisions of the Teacher and Resource Centres (TRC) in the Autonomous Community of Murcia. Two schools within the region of each TRC participated, one primary school and one secondary school, which were chosen by means of intentional non-probabilistic sampling. Furthermore, the schools were chosen to ensure that they were from areas with similar socioeconomic levels. After the consent of the families and the schools had been secured, the students completed (during the class in which the teacher was the group tutor) the questionnaires on personal and social responsibility, everyday school violence and sportspersonship. While the questionnaire was being administered, in addition to the tutor, at least one member of the research team was present in the classroom to guarantee anonymity of responses. The participants, who had no time limit to answer the questionnaires, completed them in approximately 30 minutes, and there were no reports of any completion problems.

Statistical Analysis

First of all, the descriptive statistics (means and standard deviations) of the sportspersonship, school violence and responsibility variables were calculated for the sample as a whole and for the independent variable categories (sex and educational level). The Kolmogorov-Smirnov and χ^2 tests were subsequently performed to check the normality of the data distribution, and the differences between the groups by sex and educational level were analysed using the non-parametric Mann-Whitney U-test. Finally, the correlations among all the dependent variables being studied were calculated using the Spearman Rank test, with significance set at 95%. The results were analysed using the IBM SPSS 21.0 statistical software in its version for Macintosh.

Results

Table 1 presents the level of school violence, sportspersonship and personal and social responsibility for the sample as a whole and broken down by gender. In relation to the sample as a whole, higher levels of violence observed were found than violence suffered, while among all the sportspersonship dimensions, the highest levels were found in commitment to practice and the lowest in respect for the opponent. Furthermore, in terms of responsibility, social responsibility was higher than personal responsibility. On the other hand, and when differences were examined by gender, the data pertaining to school violence showed that boys suffer and observe more violence than girls, although these differences were only significant for the dimension of violence suffered. In terms of levels of sportspersonship, boys showed significantly higher levels in the dimensions of social conventions and respect for the opponent and significantly lower levels in negative perspective of sportspersonship compared to girls. Finally, with regard to responsibility, boys showed higher levels of personal responsibility than girls, the differences being significant.

Table 1
Results of the level of school violence, sportspersonship, personal and social responsibility according to gender

	Total *M* ± *SD*	Boys *M* ± *SD*	Girls *M* ± *SD*	Sig. (*p*)
School violence				
Violence suffered	1.57 ± 0.65	1.66 ± 0.70	1.46 ± 0.57	.000**
Violence observed	2.25 ± 0.90	2.25 ± 0.94	2.24 ± 0.86	.823
Sportspersonship				
Commitment to practice	4.40 ± 0.62	4.40 ± 0.67	4.38 ± 0.55	.061
Social conventions	4.34 ± 0.80	4.38 ± 0.80	4.29 ± 0.80	.018*
Respect for rules and referees	4.36 ± 0.67	4.35 ± 0.71	4.37 ± 0.63	.689
Respect for the opponent	3.45 ± 0.98	3.51 ± 1.01	3.36 ± 0.94	.033*
Negative perspective	3.64 ± 0.99	3.51 ± 0.99	3.80 ± 0.96	.000**
Responsibility				
Personal responsibility	5.02 ± 0.77	5.11 ± 0.78	4.91 ± 0.75	.000**
Social responsibility	5.24 ± 0.71	5.22 ± 0.75	5.27 ± 0.65	.793

* $p<.05$; ** $p<.01$.

Table 2 shows the results on the level of school violence, sportspersonship and personal and social responsibility according to educational level. With regard to the results found in everyday school violence, there were higher levels of violence in compulsory secondary school than in primary school, in both violence suffered and observed, although these differences were only significant for the violence suffered dimension. In terms of sportspersonship, significantly higher values were found in primary school students than in secondary students in all sportspersonship dimensions except negative perspective. In terms of responsibility, higher values were found in primary than in secondary school, and these values were significant in both personal responsibility and social responsibility.

Finally, Table 3 analyses the relationships among the different variables studied. In this sense, the responsibility dimensions correlated positively and significantly with each other, as did the dimensions of violence suffered and observed and the dimensions of sportspersonship, with the exception of negative perspective. Conversely, the dimensions of violence suffered and observed correlated negatively and significantly with the five dimensions of sportspersonship and the two dimensions of responsibility. Furthermore, positive and significant relationships were found between the five dimensions of sportspersonship and the two dimensions of resposibility.

Table 2
Results of the level of school violence, sportspersonship, personal and social responsibility according to educational level.

	Primary *M* ± *SD*	Secondary *M* ± *SD*	Sig. (*p*)
School violence			
Violence suffered	1.41 ± 0.45	1.74 ± 0.80	.000**
Violence observed	2.19 ± 0.98	2.27 ± 0.87	.150
Sportspersonship			
Commitment to practice	1.41 ± 0.45	4.37 ± 0.61	.028*
Social conventions	2.19 ± 0.98	4.27 ± 0.81	.005**
Respect for rules and referees	4.36 ± 0.67	4.27 ± 0.64	.000**
Respect for the opponent	3.45 ± 0.98	3.28 ± 0.98	.000**
Negative perspective	3.64 ± 0.99	3.69 ± 0.92	.648
Responsibility			
Personal responsibility	5.14 ± 0.74	4.92 ± 0.73	.000**
Social responsibility	5.32 ± 0.78	5.17 ± 0.61	.000**

* $p<.05$; ** $p<.01$.

Table 3
Correlations between sportspersonship, school violence and responsibility

		CP	CS	RRA	RO	PN	VS	VO	RS	RP
Commitment to practice (CP)	Correlation coefficient	1.00	.262**	.254**	.229**	.012	-.036	-.067	.263**	.333**
	Sig. (Bilateral)	–	.000	.000	.000	.771	.365	.089	.000	.000
Social conventions (SC)	Correlation coefficient	–	1.000	.401**	.308**	.184**	–.099*	–.112**	.299**	.304**
	Sig. (Bilateral)	–	–	.000	.000	.000	.012	.005	.000	.000
Respect for rules and referees (RRR)	Correlation coefficient	–	–	1.000	.329**	.184**	–.098*	–.118**	.338**	.241**
	Sig. (Bilateral)	–	–	–	.000	.000	.013	.003	.000	.000
Respect for the opponent (RO)	Correlation coefficient	–	–	–	1.000	–.111**	.003	–.086*	.247**	.170**
	Sig. (Bilateral)	–	–	–	–	.005	.939	.029	.000	.000
Negative perspective (NP)	Correlation coefficient	–	–	–	–	1.000	–.130**	–.081*	.123**	.101*
	Sig. (Bilateral)	–	–	–	–	–	.001	.041	.002	.011
Violence suffered (VS)	Correlation coefficient	–	–	–	–	–	1.000	.449**	–.164**	–.036
	Sig. (Bilateral)	–	–	–	–	–	–	.000	.000	.363
Violence observed (VO)	Correlation coefficient	–	–	–	–	–	–	1.000	–.227**	–.071
	Sig. (Bilateral)	–	–	–	–	–	–	–	.000	.071
Social responsibility (SR)	Correlation coefficient	–	–	–	–	–	–	–	1.000	.493**
	Sig. (Bilateral)	–	–	–	–	–	–	–	–	.000
Personal responsibility (PR)	Correlation coefficient	–	–	–	–	–	–	–	–	1.000
	Sig. (Bilateral)	–	–	–	–	–	–	–	–	–

* $p < .05$; ** $p < .01$.

Discussion

The objective of this study was to ascertain the levels of sportspersonship, everyday school violence and personal and social responsibility in primary and compulsory secondary school students, as well as the possible correlations among these variables. Generally speaking, the analysis of the levels of sportspersonship yielded high values in the factors of commitment to practice, social conventions and respect for the rules, and medium values in the dimensions of respect for the opponent and negative sportspersonship, quite similar to the findings of the studies conducted with athletes by Gómez-Mármol et al. (2011) and Vallerand et al. (1997). On the other hand, the values of violence observed by the students were higher than the values of violence suffered at school, with medium values in violence observed, while violence suffered presented lower values. These figures coincide with the studies by Fernández-Baena et al. (2011) and Gómez-Mármol et al. (2017), who analysed levels of violence in schoolchildren. The results related to responsibility showed high values in the dimensions of personal and social responsibility, and were also greater than the values of social responsibility versus personal responsibility, which tallies with the findings of similar studies (Gutiérrez et al., 2011; Sánchez-Alcaraz et al., 2013).

The comparison between the sexes in the sportspersonship variable showed that females were less sportspersonship-oriented than males, given that the former valued respect for the opponent, commitment to practice and social conventions less, while they were more likely to accept certain behaviours regarded as unsportspersonlike. Although these results match those of Sánchez-Alcaraz et al. (2018), they contradict those of Gutiérrez and Pilsa (2006) in their study with athletes, where they found higher levels of sportspersonship among females. This lack of consensus on the issue, proposed as a future research avenue in the study by Sánchez-Alcaraz et al. (2018), may be due to cultural or social factors which may not have been considered. The results in school violence showed higher rates in males, which were significant for violence suffered, matching the studies by Fernández-Baena et al. (2011) and Martínez-Monteagudo et al. (2011), who found lower levels of school violence in females. This greater involvement by males in episodes of school violence can be explained, according to Espelage and Swearer (2010), by their physical strength, which is positively associated with engaging in violent behaviour. In terms of the responsibility variable, girls showed higher levels of social responsibility, although the differences were not significant, while boys showed significantly higher levels in terms of personal responsibility, which concurs with other similar studies (Sánchez-Alcaraz et al., 2013). These results may be due to the fact that males at these ages engage in more regular physical activity and participate more in these activities than their female counterparts, who engage in more sedentary activities (Cano et al., 2011), which therefore do not work on aspects related to socialisation and peaceful coexistence among peers. These situations may explain why male schoolchildren showed higher levels of sportspersonship and personal responsibility.

On the other hand, the influence of educational level on sportspersonship, everyday school violence and responsibility was also studied. Generally speaking, the best results were found in the primary school students, i.e. younger students. The transition from primary to secondary school often entails a change of school, which contributes to the need to create a new circle of friends as part of the socialisation process. Adolescents sometimes participate in episodes of school violence to be admitted into a given group (Tejero et al., 2009), as a need for social recognition. Specifically, for the sportspersonship variable, the results according to the participants' educational level showed significant differences in favour of primary school students in the dimensions of commitment to practice, social conventions, respect for the rules and respect for the opponent, in line with the studies by Gutiérrez and Pilsa (2006) in a sample of young athletes; in these studies, the older students showed lower sportspersonship than the younger ones. These results are quite similar to those of Stuart and Ebbeck (1995), who asserted that older players perceived that their milieu approved anti-sportspersonlike behaviours, given that they presented less mature reasons when taking a moral decision, and were more frequently categorised as those who engaged in unsportspersonlike behaviours by coaches. Many authors also note a gradual increase in aggressiveness and violent and antisocial behaviours from primary to secondary school, until the ages of 15 to 16 approximately, when impulsiveness diminishes and values and norms are internalised (Sánchez-Alcaraz et al., 2014). According to Gómez-Mármol et al. (2014), these ages are characterised by major changes in personality and in the habits of engaging in physical-sports activity (dropping out of sports at these ages is fairly common, and is even more accentuated in girls).

The results of this study showed lower levels of violence observed and suffered among primary school students, confirming the findings of other studies on school violence, where higher levels of violence observed and suffered were found in older students (González-Pérez, 2007). In this sense, Zambrano (2017) stresses the key

role of schoolchildren's milieu, especially the family, in introducing violence, primarily determined by issues related to socioeconomic and cultural level. On the other hand, in the responsibility variable, the results indicated statistically significant higher levels of personal and social responsibility in primary school students, which confirms the suitability of administering the MRPS to students ages 6 to 13 (Escartí et al., 2010). The reasons for these results may be the fact that primary school students present higher levels of physical activity than secondary school students, when higher levels of sedentary activities are recorded (Cano et al., 2011), reducing the opportunity to keep working on prosocial behaviours and peaceful coexistence among peers in favour of more passive activities.

The relationship between the different study variables was also examined, with a significant negative correlation found between the two dimensions of violence, suffered and observed, and the five dimensions of sportspersonship and the two dimensions of responsibility. With regard to these results, we could assert that the practice of sport does not generate violence in students; on the contrary, positive and significant relationships were found between the five dimensions of sportspersonship and the dimensions of responsibility, matching the results of García et al. (2012). Thus, an improvement in the values of responsibility could have positive repercussions on the values of sportspersonship and lower levels of violence without the need for a separate action plan for each of these variables.

This study has several limitations that should be borne in mind when interpreting the results. First of all, the data collection was based on quantitative research techniques through the use of questionnaires. Although these instruments presented adequate levels of reliability and validity, they are based on the participating students' subjective perceptions, not on objective values. Furthermore, only the sociodemographic values related to the students' gender and age were examined, and future studies should consider other variables, such as socioeconomic and educational levels, as crucial in the research.

Conclusions

Based on the results of this study, and with regard to the objectives, we may conclude that while violence does exist in classrooms, the levels are not high, whereas the values reached in positive variables such as sportspersonship and responsibility did present a high degree of development. However, generally speaking, the students in compulsory secondary school had lower scores in all three variables analysed, which could be looked upon considered as a fresh call to conduct intervention programmes with them. In terms of gender, boys presented more developed degrees of sportspersonship and responsibility, although they also suffer from more violence. Finally, the positive correlation between both values and the negative correlation with levels of violence enable us to observe that these intervention programmes focusing on just one of the variables may also influence the other ones. In terms of new research avenues stemming from this study, attention should be drawn to the analysis of the influence of the socialisation process during school age on the formation of personality (reflecting a higher or lower development of values such as responsibility or sportspersonship), as well as to the degree of prediction that can be achieved by variables such as socioeconomic and/or sociocultural level. Finally, we would suggest the performance of studies based on interventions at schools that seek to develop values to mitigate school violence, ultimately reducing social conflict (Sánchez-Alcaraz et al., 2019).

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How do Sportswomen Perceive the Way they are Treated in the Media?

Judit Martínez-Abajo[1]*, María-Teresa Vizcarra[1] and Gema Lasarte[2]

[1] Department of Teaching Musical, Artistic and Body Expression, University of the Basque Country / Euskal Herriko Unibertsitatea (UPV/EHU), Spain
[2] Department of Language and Literature Teaching, University of the Basque Country / Euskal Herriko Unibertsitatea (UPV/EHU), Spain

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***Corresponding author:**
Judit Martínez-Abajo
juditmaab@hotmail.com

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Abstract

This study sets out to examine how elite sportswomen perceive the way that their professional careers and women's sports in general are portrayed in the media. These athletes want to debunk gender stereotypes and have managed to cross barriers and reach the summit in their respective sports. The study aims to understand and interpret a specific social reality, namely that of elite sportswomen, by identifying the meaning or the significance that they attach to media representation of the sport, expressing how their sports careers and identity as athletes were built and how they have been treated by the press. Nineteen interviews and three focus groups were conducted with elite sportswomen. The results show that elite sportswomen believe they are treated differently to men and that they feel invisible and judged through stereotypes linked to beauty, lack of skill or lack of interest in their competitions. They denounce the fact that even their accomplishments are less visible than their male colleagues' defeats. The conclusions underscore the feeling among sportswomen that there is an urgent need for journalistic practices to change in order for them to cease feeling invisible, ignored, objectified and be able to become role models for young girls.

Keywords: media, elite athletes, gender, invisibility and media violence

Introduction

This study examines the different factors that contribute to shaping a stereotyped media image of women, as identified by sportswomen themselves. The studies reviewed clearly show how the way women are depicted in the media leads to a new kind of gender violence, namely media violence (Alfaro et al., 2011; Angulo, 2007; Aspic-Comunicación, 2016; Buchón et al., 2017; Irazusta et al., 2010; Robles, 2012; Sainz-de-Baranda, 2013). This is a visual kind of violence which syncretises different ways of depicting woman as an object of desire, omitted, the passive subject of current policies, or with a stereotyped image of women as victims or guardians of the home, thus shaping the image of women today, configuring one that is far removed from what laws on equality seek to promote.

Legislation on media violence is contained in the Argentinean Law 26485, enacted in April 2009 on the prevention, penalisation and eradication of violence against women, which attempts to eliminate discrimination between women and men in all walks of life, particularly asserting women's right to a violence-free life. This law refers to the term 'media violence' and defines it as one of the manifestations of symbolic violence, meaning the publication of stereotyped images through any medium. This law alludes to slander, offensive remarks, discrimination, humiliation or attacks against the dignity of women, "as well as the use of women, female adolescents and girls in pornographic messages and images, legitimising unequal treatment" (Law 26485, 2009, art. 4). Women are objectified "when the female body is viewed as a consumable object denied subjectivity, will and action, and when male sexuality based on domination and symbolic violence is fostered" (Chaher, 2012, p. 1707). Symbolic violence reproduces domination and inequality by naturalising women's subordination in society and is conveyed subtly through the media (Bourdieu, 2000; Gabarra, 2011).

It could be argued that these sexist microaggressions are also seen in university studies (Corsi, 1995; Serra Payeras et al., 2019). The goal of these practices of male domination is to retain mastery over women and to thwart women's increasing empowerment. They are effective and reduce women's autonomy, go unnoticed and confirm the social order (Bosh & Ferrer, 2002; De-Miguel, 2015). This media violence fulfils the purpose of reinforcing and reproducing the system of sexual inequality, subduing women; thus, Osborne (2009, p. 57) states that "inequality entails violence". Furthermore, the threat of violence is conveyed in films and television, as well as in jokes and flirtatious remarks.

The media have become one of the major barriers to real change; they have become the guardians of the patriarchy since "the media currently perpetuate sexual stereotypes" (Varela, 2013, p. 305). They offer elements on which the perception of reality is built; they provide models; they normalise behavioural patterns; and they grant status to people and institutions, thus legitimising the existing social order (Marín & Ganzabal, 2011; Rubio, 2009).

Sportswomen should be the models whom schoolgirls can look up to through the media. However, the way the media treat women tends to be limited by gender stereotypes and does not always match reality. The media reflect a biased reality; they only report on a very small percentage of female sports, thus serving to legitimise men's status quo (Funkhouser, 1973).

The lack of a female presence makes women invisible; absence leads to oblivion and ignorance; what is not seen cannot be appreciated; what does not appear in the press does not actually happen, it does not exist (López, 2005). Sports news revolves around men and forgets women (Alfaro et al., 2011), relegating them to the category of second-class citizens. The massive dissemination of non-egalitarian images influences women's and men's expectations, helping to maintain gender inequalities and build girls' identities. The European Journalism Code of Ethics, in force for the last 25 years, says that:

> The media can lower the gap that exists in sports by offering news on women on a par with their worth and merit. Giving them more visibility will give girls, female adolescents and women of any age the chance to have sports role models in whom they can see themselves reflected. (Núñez, 1993, p. 1)

The media present female athletes with more physical appeal than athletic accomplishments (Fink & Kensicki, 2002); they are portrayed as sexual objects and as mothers or wives. Rarely in the images and texts are they portrayed as active, positive actors; they appear more as passive agents in the shadow of men, or as victims of misfortune (Marín & Ganzabal, 2011).

The digital world has emerged as an alternative. The presence of women online has increased enormously in recent years (Robles, 2012). There is greater equality in the electronic media, which have been crucial in sharing sports practised by women. Thanks to the social media, the dissemination of female sports has increased, and the number of specific websites continues to grow. It is important to reflect a positive, diversified image of athletes

in the media, devoid of gender stereotypes and portraying them as models of personal, professional and social success, because that will be the mirror in which schoolgirls see themselves reflected (Angulo, 2007; Vega & Ábalos, 2016). This study seeks to give sportswomen a voice and to inquire into the image that they perceive in the media, more specifically:

- To analyse the way they are treated in the press: whether they perceive sexism or gender stereotypes.
- To understand the power of media information, whether it has conditioned their lives as elite sportswomen.

Methodology

This study was approached from a qualitative perspective, in which the researcher immerses themselves in the context and seeks to go beyond merely understanding the facts. Only by understanding the processes and the meanings can action be taken that helps to understand the changes called for in each social context. Responses were sought in praxis so that the sportswomen could express themselves freely with intentional, methodical actions (Barbour, 2013; Flick, 2014). Similarly, we sought to promote processes of reflection around sexism and symbolic violence to gain awareness of sportswomen's perceptions of the media.

Participants and information-collection instruments

Nineteen in-depth interviews with elite sportswomen and three focus groups were held. The athletes interviewed included 7 from Álava, 7 from Guipúzcoa, 4 from Biscay and 1 from Navarre. In terms of sports, 3 were footballers, 3 were pelota players, 2 handball players and one representative from karate, wrestling, curling, track and field, handball, tug-of-war, cycling, triathlon, surfing, car racing, skiing and rowing. They were very successful athletes who participated in elite international competitions in their respective sports and most of them had even competed in the Olympics. Sixteen people in three groups of Basque pelota, rowing and football, respectively, participated in the focus groups. A total of 33 athletes shared their voice in this study. The purpose of the in-depth interviews was to gain meticulously compared information (Kvale, 2012), in an attempt to understand their perceptions from their own perspective. The focus groups explored any issues that had not emerged in the interviews or checked disparate perceptions of a given fact in order to ascertain how they justified this disagreement (triangulation), thus generating interaction among the participants (Barbour, 2013). The nature of the research was explained to all the participants, who were asked to sign an informed consent form proposed by the university's Ethics Committee.

Information analysis procedure

The information collected was analysed using the NVivo11plus text processing programme. An inductive-deductive system of categories or an analytical tool (see Table 1) was created, supported by previous theories located in the literature review and by the information that emerged in the testimonials collected. The information collected was coded and categorised, and hierarchical relationships were established among the different categories. The information was categorised by different researchers, and the matches between both analyses were compared. NVivo allows the number of voices grouped in each category to be tallied to ascertain percentages of occurrence. However, these data have no value without the interpretation of the meanings assigned to each topic. The codes that appear in the parentheses of the voices mean: the first six-digit number igitnumber is the date in which it was performed, followed by an indication as to whether the quote is from an interview (I) or focus group (FG), and the number after these letters corresponds to each one of the sportswomen, and were randomly assigned to protect their privacy. After the summaries of each category had been obtained (outlined in Table 1), the categorised information was interrelated and the instruments, informants and observers were triangulated.

Results

On the issue of how they are treated in the press, the athletes interviewed had opposing stances. While 6.11% said they were treated similar to men, 93.89% thought that women are rendered invisible or only partially visible (see Table 1).

They believed they were treated the same

Some participants were happy with the way the media treat sportswomen (6.11%), and three of the interviewees had the sensation that the press treated them the same as men. Generally speaking, and although they had been featured in many news items, they did not express an interest in the sports press.

Table 1
Categorical system of how sportswomen perceive the way they are treated in the media

Dimension	Category	Subcategory		Resources or no. of interviews	No. of references	%
Media treatment perceived by sportswomen	Same treatment			3	8	6.11
				21	123	93.89
		Invisibilization		10	16	12.22
		Partial visibility		19	40	30.53
			By accomplishments	*12*	*19*	*14.50*
			By medium	*8*	*10*	*7.63*
	Different treatment		As promotion	*4*	*8*	*6.11*
			Different expectations	*2*	*3*	*2.29*
		Disinterest/disinformation		4	7	5.34
		Objectification		14	28	21.47
		Stereotypes (beauty, etc.)		8	24	18.32
		Empowerment		4	8	6.11
Total				22	131	100

Note. The resource table states how many documents contained some kind of testimonial related to each category (19 of the interviews and 3 of the FGs).

> Just like a guy. I have not seen any significant differences that grabbed my attention, which doesn't mean they didn't exist. I seldom look at the news or read sports. (160324_I5)
>
> I think the treatment is fine, particularly in recent years. (160405_I9)

However, these opinions were far from the general consensus, many women athletes talked about discrimination by differential treatment, since the press is believed to render women invisible and treat them differently from men. As shown in the categories (Table 1) based on the studies by López (2005), the sportswomen perceived that they were rendered invisible and that when the press did make them visible, it did so either only partly or else objectified them. They were judged on the basis of gender stereotypes. A total of 131 references (or different entries for the same issue) were collected.

Sportswomen perceived a different treatment

A total of 93.89% of the women interviewed identified sexism in the sports press, although some of the athletes (30.53%) in this group also thought that progress had been made compared to previous years.

Perception of invisibility

The perceived media invisibility (12.22%) was voiced by the sportswomen. They believed that they were not treated properly because they were all but absent from sports programming.

> How do I think sportswomen are treated in the media? They're just not there, zero visibility (160429_FG2).
>
> Yes, there's a difference, but for that very reason, because we don't appear, so that is the difference: they don't give us visibility, which means we don't matter to them (160324_I12).

Some sportswomen mentioned a study by the Directorate of Youth and Sports of the Basque government (Aspic-Comunicación, 2016) which found, in 2013, that only 6.4% of sports news items reported exclusively on women, a figure which had dropped to 5.9% in 2015.

> Plus, only yesterday we were saying how we had to give talks saying that fewer than 6% of the sports news items are about female sports (160325_I1).

The athletes opined that no importance was attached to what they did, or in other words the sports press did not value their work.

> I think when they actually write about us we are treated normally, but... it's not impartial, it's not equal, they always detract from what we do. (160406_E15)

Many elite sportswomen did not appear even when they managed to earn a place on the Olympic team. They said that the sports news was full of male football league matches from lower divisions.

> I thought it was horrible that a woman has qualified for the Olympics and it's not in the news, I think that's terrible. Sometimes it is reported, but I found

> out about Tania Calvo[1] because I went to the Elite Training Centre and found out about it there. But that's one news item that I should have heard about somewhere, isn't it? (160324_I5)

They perceived that the information was fragmented, and only a small biased part was shown that did not reflect the real results of sporting events or else focused on negative aspects.

> There had bene a race before this one, and I was already winning, so I only needed to make the finish line to win the race, but my car stalled and I didn't reach the finish line so I didn't win. The person doing the summaries who sent them to Teledeporte [a television sports programme] hardly mentioned me and only said that my time in the previous round had bene better. (160925_I18)

They said that the sports press spread the prejudice whereby any sport practised by men had a larger audience than those practised by women and that that is one of the arguments they used to justify the invisibility of women.

> They think that putting a man on the cover sells more than a woman. Things shouldn't be like that, but for that reason alone we get less space. (160404_I8)

They stated that this invisibility deprived them of appreciation of their work and effort, as well as their expectations of success and media exposure for their careers. This invisibility prevented them from being role models for future generations.

> There are people who have seen us play and they know that we are good, people who, if they want, can do other things. I'm not saying we all have to be professionals, because fronton is tapering off everywhere, but the media should pay more attention, give us exposure, let us be genuine role models. (160429_FG2)

Some of them mentioned that sportswomen's invisibility was not always intentional, hence it is a reality that they observed from different perspectives.

They perceive partial visibility

A total of 30.53% of the statements made in the interviews mentioned minor improvements compared to the situation in previous years, although they believed that exposure was scant and insufficient. According to the interviewees, women had to fight twice as hard to get coverage, and when they did make it, it was by dint of their own merits and victories at the highest level. Yet they had to make do with being second fiddle. They said that some journalists are reluctant to publish some news.

> There are lots of great sportswomen! The girls that appear in the press have to be utter machines. They have to perform at 200%. (160429_FG2)

They said that competitiveness is no longer an exclusively male attribute, since numerous women have overcome this stereotype by taking up elite sports. The statistics from the last Olympics corroborate the parity in the presence of women.

> You need only open the newspaper to see that Real Madrid lost, and then on page 40 there's maybe something about women, and there has been more stuff recently because we are also asking them to put everything in. But maybe three years ago *Marca* published absolutely nothing about girls in any sport unless they won something big. I think that it's happening now, slowly but surely. They're starting to report some stuff, although there's no equality or anything resembling it, but hey!, at least they're reporting it! (160324_I12)

Far from being thankful for the space given to them, empowered women were aware of their right to occupy that space and felt that their accomplishments justified it.

> The media don't treat us equally. They were pressurised by our success on television and in the newspapers and have covered us because they had no choice. We women are going to continue to keep on achieving things so they'll be obliged to give us coverage. (160425_I14)

They said that they had to make to with getting the odd niche in programmes with smaller audiences, but never in the major sportscasts.

> If you win the championship you get some minor coverage, but not on the *Telediario* [main TV news programme] and not even in second- or third-tier programmes. I've never appeared on ETB and I don't know how many times I've been world champion. Process that! (160304_I4)

While their exposure was low in quantitative terms, they also perceived qualitative differences. Men's careers and victories are celebrated and you get recaps of their sporting life, but there seemed to be less interest in reporting on sportswomen's careers.

1. A gold medallist in indoor cycling in London 2012. They are talking about the time she qualified to go to the 2016 Rio Olympics..

It's different. Usually if you begin to read and there is a male skier who has won something, you get his name and whatever, and the his full name, his record. However, if a girl who is the best in the world wins, that's it, no awards, where she's from, not even her full name. I mean, it's just totally different. (160409_FG1)

They even complained that defeats in men's competitions got more coverage than female victories.

For years we've been hearing about the national team losing, but in the Olympics an important female fixture to make the semi-finals gets screened later (recorded) at 3 o'clock in the morning, even though TVE has 3 channels, and all because a men's team, which had already been knocked out, was playing. (160425_I14)

Some world-class sportswomen realised that their success stories were taking a back seat to footballers' new looks.

We came back from Brazil with a bronze medal and were the 8th news item after Cristiano Ronaldo's new hairdo. (160404_I8)

As Mireia Belmonte once said: "Fernando Torres's new hair-cut is more important than my gold medal, my world record in the world championship." Seeing these things really guts you. (160404_I16)

Men's injuries also took priority over news on women's victories in the same sport.

They attach more importance to the fact that Irujo broke his finger than any of us women winning the world championship. (160429_FG2)

They said that you have to go to the social media and the Internet to get the sports rankings and the accomplishments of most female sports.

I would never know if a female triathlete has won something. I have to look at Twitter or the CSD to find out. I have friends on the national hockey team, and I see their wins, which aren't reported on the TV, but they are on the Internet. (160501_I17)

In recent years, women have carved a place for themselves on the pages of the sports press, where news had previously been exclusively male-dominated. Some of the sportswomen mentioned this, which they interpret is as recognition of their work. This visibility is different according to the medium.

What are we to the media? Nothing, nothing at all. Some of them are trying. On Info7irratia, Mikel Ibarguren is there, he does a one-hour programme every Monday on female sports alone. That's cool, and at least he provides some exposure for what we do, he does stuff. But who listens to Info7irratia? Very few people. (160304_I4)

They mentioned that some media are more likely than others to try to change this widespread situation:

We have ETB, and they eventually get round to showing a bit of female sports. (160429_FG2)

I'm close to *Diario de Noticias de* Álava and they've made a huge effort to afford more visibility to female sports, and they make a big effort to ensure that both men's and female sports are covered in the sports section. (160405_I9)

The peak audience slots in the traditional channels seem to be reserved for men's sporting events; the sportswomen said that they had to settle for watching their own matches after the fact and at less popular times. Their competitions were not broadcast in their entirety, and even cartoons were taking time away from sportswomen.

This is happening with Bera-Bera and it was Euskal Telebista, which instead of televising the match at 3:30, when it began, coverage started at 3:55 because Vicki the Viking was on. That's just an example, but come on, I mean... don't put Vicki the Viking on that day because you have a European competition with the only Basque women's handball team. (160404_I8)

They believe that greater visibility would act like a loudspeaker to promote their sports careers. They said that the men's football league matches had a very efficient advertising system so you didn't have to be over-interested in football to find fixture times. Conversely, they found that women's competitions rarely appeared in the media, making them harder to promote and more difficult for the public to recognise them. The sportswomen complained that advertising was intended solely for men's matches.

No one has a clue, because our matches aren't publicised. You begin to watch sports, I get to pelota and only Olaizola and Irujo are playing; there's no one else. Not even the tiniest clip. Zero. Of if there is, then it'll be male amateur handball players. Let's have the girls' teams in there too, we play all year round! (160319_I2)

They said that in the past the general public was not familiar with sportswomen and nobody thought there could be top-level women's teams. Nowadays, people know about them because the press has played a key role in disseminating these activities, and this has been

crucial in encouraging girls to take up physical activity and increasing people's interest in female competitions.

> I've run up the same training time, I've sweated in the same jerseys, I've given it my all, just like any guy. But what has changed? I think that female sports, at least handball, has hooked people when it's been televised. I think that the media helps in this regard. (160404_I8)

The public's ignorance of female sport and competitions prevented them from watching matches or keeping up with competitions. Society did not have the same expectations of success for women and men. They complained that some sectors of the sports press celebrated the victories of new up-and-coming male athletes more than those of consolidated sportswomen.

> They don't get any recognition, there is no impact. For instance, the gymnast Carolina Rodríguez de León is a really good friend of mine. She just came in sixth in the World Championship. Sixth in a World Championship! It wasn't even reported. If it had been a guy they'd be saying, "The future is here!". (160331_I13)

Up-and-coming male athletes were treated better than consolidated sportswomen; they were given more visibility in the media, especially the printed press.

They noticed a lack of interest in the press, leading to disinformation

They perceived a lack of interest in the press, referring to a virtually total absence of journalists at their matches and how their competitions are barely covered, plus match reports penned by people who hadn't even been there.

> There is nobody in charge of writing our matches up. Oftentimes it's done by the secretary, who was probably watching jai alai, but definitely not our match. (160319_I2)
>
> They write it up without even having been there, and you say, "But what they're saying isn't even true!". (160319_I2)

They complained that some journalists go to the archives to retrieve sports reports from the past instead of actually going to the matches to get first-hand knowledge.

> Sometimes we have read articles published by Gara about the Basque Country tug-of-war championship, I think they come out on Tuesdays or Thursdays, I don't exactly remember: anyway, you read it and think, "My God! This is from last year!". Having said that, when they do actually write something they do it well (160323_I19).

Finally, some of them had had to work as impromptu journalists in view of the scant interest sparked by their sports.

Objectification

Both sexes were the object of comments of all kinds, although the sportswomen perceived nuances in these comments that went beyond the realms of sport. The women interviewed stated that sexism was such an entrenched part of sports that it even reached sports regulations. Women's uniforms in some sports were controversial.

> In beach volleyball, the bikini bottoms worn by the female national team are tiny, and yet many men are shocked to see girls playing in a hijab. Why do they have to wear these bottoms, I mean, can't they play in shorts? (160409_FG1).

They thought that instead of dignifying sportswomen's work, some journalists objectified them, using their bodies to lure readers, while the media echo of their victories paled into insignificance.

> Sometimes they do give girls coverage, but using their body more than their actual victories (160331_I13).

They said that some media even omitted the actual sports information to focus exclusively on the female athlete's physique.

> It's worrying that the best-selling sports newspaper is one of the most sensationalistic. And then there's the TV, the gender perspective is the first thing they need to work on, and I hope to make some noise in this regard. I don't care if they use Garbiñe Muguruza's legs, just like Nadal has used his body. The sad thing is that they only talk about Garbiñe once and even then it is only about her legs (160425_I14).

They believed that this objectification of women turns them into invisible beings, that journalists are blind to their sports accomplishments. Instead of seeing sports careers, hard work and success, they see only female bodies.

> Our image is stereotyped and highly sexualised; we're objects. If you run a Google Images search with "women's football" they all appear posing, half of them in thongs and the other half half-naked. Ultimately, it seems that if you're a woman, if you're an athlete, you need something else for people to actually see you. (160409_FG1)

This was the reality faced by some sportswomen, encountering genuine difficulties to find a place in the media while coping with objectification at the same time.

Beauty stereotypes

They perceived that the press treated men and women unequally and focused on stereotypes that placed beauty before athletic accomplishments, pigeonholed women in traditional roles and maintained beauty demands that were not asked of men.

> Instead of attaching importance to your sports career, they highlight beauty or something else. If you have kids they might focus on how well-organised you are, not that you are a good mother, and what's more they never ask men about these things. (160409_FG1)

Moreover, some interviewees said that some comments were very inappropriate.

> In tennis, specifically, I've heard comments about skirts more than once, so where is that coming from? What do I care about the skirt or anything like it?! (160324_I5)
>
> Yeah, Ferrer is all hairy and nobody says a word, do they? (160324_I5)

The photographs of sportswomen competing were important because they disseminated how they do sports, their work and their accomplishments, but they were not always appropriate.

> When Mireia Belmonte won, instead of talking about her career and what a great swimmer she is, they latched onto her fingernails, and there are tons of news items like that. (160409_FG1)

Most sportswomen felt heavily discriminated against because when men were discussed the focus was on their accomplishments, yet women were treated in a stereotyped fashion, closely associated with beauty and work traditionally assigned to women.

Sportswomen's anger

It should come as no surprise that many of the athletes were deeply angry and disappointed with the media and even refused to give interviews. They believed that they occupied a minimal place in the media, whereas men's sports, especially football, virtually monopolised the media in terms of space and time. They had to settle for tiny niches where their accomplishments were mentioned in passing, bereft of any detail.

> But the newspaper dedicates two or three pages to the Alavés match and then publishes a news snippet in the top right hand corner, about five centimetres square about a sportswoman who won some Spanish championship. Come on! Alavés is in the Second B class. It really infuriates me. When I pick up the newspaper, I don't even read the sports section, I just skip it. (160406_I15)

They said that they had good reason to be angry in view of the meagre coverage of their careers in the media. Complaints were also levelled at the federations, since the sportswomen felt they had no institutional support, although things did change if they won Olympic medals.

> I used to be totally unknown, and was actually fifth in Beijing in 2008, which is an Olympic Diploma. And I moved up a level in London where I was placed third, and all of a sudden I'm like a God! And I said, "No way can I be a nobody when I'm ranked fifth and amazing when I come in third. The media build us up or knock us down. You can't do that to us!" So whenever someone comes in fifth, I say, "Jeez, they are so cruel!" (160319_I6)

The sportswomen said that being forgotten is preferable to what some new sportswomen have to put up with, exposed to an extremely demanding press that exhibits a total lack of consideration in its comments about new athletes.

> There was another time when I was playing in a major "kutxa" tournament in Guipúzcoa against another girl who was basically debuting at this level and was a bundle of nerves and just went off her game. She was almost destroyed by the comments they wrote; I mean she had only just begun and almost gave it all up. This makes me angry; we get virtually no exposure, but when we do it's all bad. Sometimes no publicity would be better! (160319_I2)

They referred to different ways of being made to feel invisible, some more subtle than others. The press seemed to be familiar with all of them, and in this attempt to disparage sportswomen they would broadcast lower-level women's competitions to try to somehow justify the lack of support for female sports.

> Female sports are already somewhat marginalised, and if on top of that the matches they show are low-level, it's adding insult to injury. Imagine if that happened with rhythmic gymnastics, if there was a group of guys who were really awful and we all laughed at them. (160429_FG2)

Many of the sportswomen interviewed mentioned the need for quotas to at least force the public media to broadcast a certain percentage of female sports on the news. Some went even further and said that it should be regulated by law.

> Televisión Española receives public money, so maybe there needs to be a minimum quota. I'm not saying it has to be 50-50, but maybe there should be a minimum, like 20% or 30% of the sports they report on have to be female sports. The media should talk about the athletes who are successful. In Spain, there are extremely successful female sportswomen. Televisión Española depends heavily on the Spanish government, ETB depends on the Basque government. It always depends on who the sports director is, and I think this should be regulated by law. (160325_I11)

Some sportswomen felt unprotected by their own federations, which did not even attend their important matches. This accumulation of situations caused them to feel indignant, and they began to call for a more equitable sports press, even mentioning the need for laws in this regard.

Discussion and Conclusions

Media violence begins with invisibility. The media, as a powerful communication tool, transmit ideology, hence 93.89% of the sportswomen feel that they are not represented in the media, since they state that their accomplishments are not reported, and that at times negative or superfluous aspects that have nothing to do with their accomplishments are overstated. Similar statements have been reported in Alfaro et al. (2011), Irazusta et al. (2010) and Serra Payeras, et al. (2019). Therefore, and related to the first objective, they perceive that the press is clearly sexist and riddled with prejudices and gender stereotypes. Perhaps the 6.11% of women who are satisfied with the way the press treats them pertain to the statistics from the research by the Aspic-Comunicación (2016) consultancy firm, according to which women appear in 5.9% of broadcasts, although this could also be due to their lack of awareness or the fact that they engage in sports which in media terms are so minority that any coverage is perceived as an accomplishment. It is essential to eliminate sexist stereotypes, since sports are based on an unequal relationship of power between men and women, and maintaining current practices merely perpetuates the imbalance between them (Varela, 2013). Sportswomen believe that they have to contend with sexist microaggressions, since the non-sports aspects of men run up more media space than women's accomplishments (Bosch & Ferrer, 2002; Corsi, 1995; De-Miguel, 2015).

The majority of the interviewees perceive invisibility and find different reasons for it, since the expectations of success for women and men are different. They believe that this sexism in the press conditions their promotion as athletes, since up-and-coming male athletes are promoted more than professional sportswomen with accomplishments.

The interviewees state their opposition to certain prejudices bandied by the press, which say that female sports generate lower expectations. This has conditioned their sports lives, because they say that they could generate just as many or greater expectations if they were better known. Given this phenomenon, Bourdieu (2000) states that this tends to be yet another one of the manifestations of naturalisation, an aspect also discussed by Sainz-de-Baranda (2013) and Vega and Ábalos (2016).

Thus, with regard to the extent to which it affects their lives and choices (second objective), they believe that the invisibility of women's sports careers prevents them from being role models for school girls who have no mirror in which to regard themselves. They have insufficient exposure, and they are indignant that their accomplishments are less valued, which keeps women in a situation of inferiority, as denounced by Osborne (2009). This situation is further aggravated by the fact that they feel that their sports careers are not given the importance they deserve, their competitions are neither promoted nor valued, and this is important since, as Rubio (2009) asserts, the media normalise the behavioural patterns, models and norms that maintain the social order. This has even led some of them to go so far as to give up sport altogether.

As a general conclusion, we can assert that the sportswomen interviewed perceive that the press in general does not report female sports properly, and studies like the one by Guerrero and Núñez (2002) indicate that only a minority of the news media reports on women with any degree of dignity, since the vast majority of sports news items featuring women are markedly sexist. However, on the other hand, they feel objectified, since the press values their bodies more than their accomplishments, and this turns into anger when they perceive the extent of the scorn, when they are given less coverage than men in lower-ranking levels of sport, when they receive no support from their federations and because they think the press *makes* and *unmakes* them, makes them present or absent, the target of media violence (Buchón et al., 2017; Chaher, 2012; Gabarra, 2011; Sainz-de-Baranda, 2013). For myriad reasons, they suggest setting quotas as a solution to this social problem which afflicts not only women, but society at large as well.

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Yin and Yang. The East in Gipuzkoa: place, identity and meaning of wushu

Estibaliz Romaratezabala-Aldasoro*
Department of Physical Education and Sport, Faculty of Education and Sport, University of the Basque Country/Euskal Herriko Unibertsitatea (UPV/EHU), Spain

Director
Dr. Joseba Etxebeste Otegi
Department of Physical Education and Sport, Faculty of Education and Sport, University of the Basque Country/Euskal Herriko Unibertsitatea (UPV/EHU), Spain

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***Corresponding author:**
Estibaliz Romaratezabala-Aldasoro
estibaliz.romaratezabala@ehu.eus

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Abstract

Games, physical exercises and sports migrate from one territory and culture to another through travellers, just like food, art or languages. By studying internal logic (body techniques) and external logic (social uses) factors, this ethnographic paper seeks to understand the adaptation and integration of the Eastern motor activities called *wushu* (kung fu) into Gipuzkoan society. The first part of the paper examines the physical and sport leisure options offered in this city, ranging from the macro-structure of the offering to the layer involving activities of Eastern provenance, with a view to understanding kung fu's place and identity in this province. The length of the motor activity is used as a dependent variable in the study and praxeological analysis as an organisation and classification criterion for the activities. The importation and establishment of this technique have led the two large groups of Eastern motor activities, called taolu *(katas)* and sanshou *(fights)*, to vary and become separated and the equilibrium between them in the East to be broken.The second part describes the fieldwork, pertaining to the performance of taichi *(taolu)* and shuai jiao *(sanshou)*, designed to reveal the meaning the actor attaches to Eastern activities. Eastern techniques are reinterpreted by their practitioners, who transform them and assimilate them into Western thought through the application of the principles of Cartesian dualism. As a result, the Eastern unity between yin and yang present in Asian life, and consequently also in motor skills, is shattered through globalisation and is adapted to the Western philosophical reality of a separate soul and body. In conclusion, the place, identity and meaning of kung fu in Gipuzkoa are an example of the process of the cultural globalisation of Asian activities in the West.

Keywords: ethnomotricity, motor praxeology, cultural globalisation, *wushu*, *taichi*, *shuai jiao*

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Sport and Flexibility: sports performance without risk of injury

Antonio Cejudo-Palomo*
Faculty of Sports Science, University of Murcia, Spain

Director
Dr Pilar Sainz de Baranda Andújar
Faculty of Sports Science, University of Murcia, Spain
Dr Fernando Santonja Medina
Faculty of Medicine, University of Murcia, Spain
Dr Francisco Ayala Rodríguez.
Faculty of Social and Health Science, Miguel Hernández University of Elche, Spain

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Departament de la Presidència
Institut Nacional d'Educació Física de Catalunya (INEFC)

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***Corresponding author:**
Antonio Cejudo-Palomo
antonio.cejudo@um.es

Section:
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Abstract

This article-based thesis is part of the "optimum performance with a lower predisposition to sports injury" research line. Its objectives were: a) to present a specific proposal for the assessment of the range of motion (ROM) of the legs, the "ROM-SPORT Protocol"; b) to analyse the precision of measurement of the protocol tests, and c) to determine the flexibility profile in different sports. A total sample of 329 subjects registered with federations in futsal, handball, football and triathlon took part in this paper. The ROM-SPORT protocol consists of 11 angular tests to assess the flexibility of the main leg muscles. For the study of the reliability of the ROM measurement, and after the familiarisation session, each participant was examined a total of three times with an interval of two weeks between assessment sessions. For the description of the flexibility profile, and after the familiarisation session, each athlete was assessed once. The participants were encouraged to make a maximum of two attempts at each test on a random basis. A descriptive analysis was conducted of each one of the quantitative variables including the mean and its standard deviation. Student's t-test was used to determine the significant existence of flexibility asymmetry and to observe differences between tactical positions. The reliability of the test-retest of the measurements was determined through the change in the mean between assessment sessions (CM), standard error of the measurement, minimum detectable change 95% and intra-class correlation coefficient. The test-retest reliability of the ROM measurement was calculated separately for each one of the paired sessions (2-1 and 3-2) to analyse its consistency in the time interval between consecutive assessment sessions. The conclusions of the scientific study provide significant information about the description of each one of the ROM-SPORT protocol tests. The design and choice of the inclinometer with a telescopic rod make it applicable to sport and health. The results suggest that the ROM-SPORT protocol tests present good relative and absolute reliability. From the training standpoint, a major change in the initial values between 3.7º and 6.9º, depending on the ROM test used, will indicate a real change in flexibility values. The results define the first values of the flexibility profile of the leg in the futsal, duathlon and handball athletes analysed.

Keywords: range of movement, inclinometer, reliability, injury and performance