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Attention in physical education classes: Differences between colletive sports
Atención en las clases de educación física: diferencias entre deportes colectivos

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Abstract. Attention is considered an important mediator variable in the teaching / learning process, because of that, the scientific community made several investigations in order to understand what students are thinking, what strategies are best to captivate their attention and the type of instructions and/or feedback to develop students' performance in achieving motor skills. In this research we tried to find differences in attentional profiles, of students during the practice of football and basketball at different moments of a Physical Education class. The sample consists of 156 students of both genders (84 females and 72 males), between 12 and 16 years old ($\tilde{x} = 14{,}9 \pm 1{,}3$), of 3rd Primary School (7th, 8th and 9th grade) to which a questionnaire was applied, ATEST- EF (Petrica 2010). Questionnaire which students had to point out what they were thinking at certain time of the Physical Education class. This was applied in team sports (football and basketball). In descriptive terms we found that students are in general aware of the task, information and behavior, and there are a few differences between the percentages between them, but from the test Chi_Square we found no statistical differences between the different moments of the Physical Education class. We concluded that, in this sample we didn't verified the importance of attention and students focus in the different moments of team sport's practice.
Key words: Physical Education; Attention; Team Sports; Class Moments.

Resumen: La atención se considera un mediador importante en el proceso de enseñanza / aprendizaje, por lo que ya se han llevado a cabo varias investigaciones para percibir los pensamientos de los alumnos, las estrategias para atraer su atención y el tipo de instrucción y / o feedback que se debe dar a los alumnos para desarrollar el rendimiento en la realización de habilidades motoras. En esta investigación, tratamos de encontrar diferencias en los perfiles de atención de los estudiantes durante la enseñanza de deportes colectivos (fútbol y baloncesto), en varios momentos de la clase de Educación Física. La muestra estuvo compuesta por 156 estudiantes de ambos sexos (84 mujeres y 72 hombres), con edades comprendidas entre 12 y 16 años (x Þ = 14,9 ± 1,3), de la 3ra escuela primaria (7º, 8º y 9º grado) a la que se aplicó un cuestionario, ATEST-EF (Petrica 2010), en el que los estudiantes tendrían que indicar que estaban pensando en ciertos momentos de la clase de Educación Física, este se aplicó en las modalidades deportivas como el fútbol y el baloncesto. En términos descriptivos, encontramos que los estudiantes generalmente están atentos a la tarea, la información y el comportamiento, y hay algunas diferencias porcentuales entre las dos modalidades, pero a partir de la prueba Qui_Square, no encontramos diferencias estadísticamente significativas entre los diferentes momentos de la clase en las modalidades deportivas colectivos. Por lo tanto, se apoya que, en esta muestra, no se verificó la importancia de los momentos diferenciados en relación con la atención y en qué se enfocan los estudiantes.
Palabras clave: educación física; atención; deportes colectivos; momentos de la clase.

Introduction

Knowing that physical education has been the subject of numerous scientific investigations on various topics, nowadays, we know the cognitive, physical and social benefits of regular physical activity, and therefore specialists promote, habits and healthier life styles, especially in younger groups, where these benefits create stronger «roots» (Murcia, Roman, Galindo, Alonso, & González-Cutre, 2008; Janssen & LeBlanc, 2010; World Health Organization (2018) Global action plan on physical activity from 2018 to 2030: more active people for a healthier world, 2018). Then a more specific research on the components of physical education classes started, from the component associated to the teacher (e.g.: feedback, time management, type of instruction, etc.), students and their motivation, fun, satisfaction and attention. Pereira, Costa and Diniz (2009) studied students motivation in Physical Education, Batista, Lercas, Ferreira, Taborda and Faustino (2016) evaluated the academic performance depending on the amount of hours of oriented sport in children of the 1st cycle, Fraile-García, Tejero González, Esteban-Cornejo and Veiga (2019) analysed the relationship between the variables satisfaction, self-efficacy and academic performance in Physical Education. All these studies are only examples of the various investigations, in favour of a better teaching/learning process.

In the specific case of attention, it's considered as an important mediating variable in the teaching/learning process, and therefore this variable has been studied by several researchers (Santos, Petrica, Serrano & Mesquita, 2014; Emad, Neumann & Abel, 2017; Kim, Jimenez-Diaz, & Chen, 2017; Navarro-Patón, Lake-Ballesteros, Basanta-Camino, & Arufe-Giraldez, 2018 ; Tsetseli, Zetou, Vernadakis, & Mountaki, 2018; Santos et al, 2019;. Santos, Petrica, & Maia, 2019).

Petrica and Tavares (1999) studied students' attention of the 2nd cycle in physical education classes, using an observational method in which the results show that students are aware of the task and the instructions given by the teacher. Similarly Petrica (2003) and Santos (2009), concluded that the participants in their investigations proved to be more attentive to «what the teacher was saying,» «was doing» and « to the task that they'll be performing». A teacher to be able to manage the time of a Physical Education class, must be able to pass the necessary information for an easy and correct understanding, to the students. Therefore, the instruction and feedback must be clearly transmitted and the key information selected, however, to the message reach its

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target is required that students are paying attention, so that they can learn and develop their skills.

According to Al-Abood, Bennett, Hernandez, Ashford and Davids (2002) and Zachry, Wulf, Mercer and Bezodis (2005) that evaluated the effectiveness of an individual during free basketball throw, concluded that the feedbacks which had emphasis on the basket and the trajectory of the ball (external focus), obtained better results than when they were given feedback on the wrist movement during the release of the ball (internal focus) The same conclusions were removed from the service in volleyball, the kick in soccer (Wulf, McConnel, Gärtner, & Schwarz, 2002) and the side throw in soccer (Wulf, Chiviacowsky, Schiller, & Avila, 2010).

Recently, Kim, Jimenez-Diaz and Chen (2017) conducted a systematic review where the purpose was to examine the effects of attentional focus (internal or external) while performing balance exercises, the internal focus is associated with feelings and thoughts about the own body, while the external are related to what is foreign to our body. The results of this review are not unanimous, however, the authors concluded that the group receiving external feedbacks had better motor performance in balance exercises than the group of internal feedbacks. In another review by Marques, A., Gómez, F., Martins, J., Catunda, R., & Sarmento, H. (2017) sought associations between physical education and physical activity and scholastic performance, and concluded that review argue that physical education or school-based physical activity is positively associated with academic performance in children.

Ladewig (2017) in her article on the importance of attention in learning motor skills, the individuals begin on the cognitive stage, to understand the tasks objectives, this stage requires higher levels of attention. From the consecutive practice, individuals come to achieve the associative stage, where they can already maintain a stable performance, without being required such high levels of attention as in the previous stage. The last stage is called an autonomous, this is achieved by individuals in which the skill is well developed and that allows them to accomplish the task automatically, with low levels of attention, witch means that they can direct it to other things.

Santos et al. (2019) have been conducting investigations into attention profile of students in Physical Education classes. In a recent study, students' attention was evalueted at various times of a Physical Education class during practice of individual sports, namely athletics and gymnastics, in order to find statistical significant between those sports attentional profile. More research on attention and students thinking are required, new ways to capture their attention (eg: teaching strategies or presentation of the contents) (Grube, Ryan, Lowell, & Stringer, 2018) and give the most appropriate feedback to students to develop their motor skills (Ladewig, 2017), its performance (Greeff, Bosker, Osterlaan, Visscher, & Hartman, 2018), their academic performance (Batista, Lercas, Ferreira, Taborda, & Faustino, 2016; García-Fraile, Tejero González, Esteban-Cornejo, & Veiga, 2019), among others.

Thus, in general we can classify attention, as the ability to direct our cognitive resources to a given situation, so that the body is prepared for a given motor task at a given time (Fehmi & Shor, 1990).

According to Exercise Psychology Division of Sports (Santos, Petrica & Maia, 2019) and Nideffer and Sagal (2010) attention has different types of internal or external nature as well as being wide or narrow (Weinberg & Gould, 2019).

Wide: this kind of attention allows an individual to have the perception of different stimuli simultaneously;

Narrow: as opposed to the former type, in this kind individual perceives and responds to one or two stimuli;

External: whose attentional focus is on external stimuli to the individual (e.g.: a ball or the movement of an opponent);

Internal: it is associated with and directed to the perception of internal stimuli (e.g.: thoughts and feelings).

In this study we attempted to detect the existence (or absence) of «significant» factors that distinguish attention on Physical Education, and its relationship with the team sports, taught in the Physical Education.

We intend to:

• know the pattern of thought in physical education classes in relation to the attention profile;

• know theoretical and practical indicators on what they students think in different moments of team sports;

• design some recommendations for better links between attention and approach of team sports in Physical Education classes.

Methodology

The variables used in this research are qualitative in nature (responses given in the questionnaires during the signals), data collection was done only once and thus characterized this study as transverse and qualitative (Minayo, 2017).

The sample was selected for convenience, all attending the 3rd cycle (7th, 8th or 9th year) in the same teaching institution. It consists of 156 students of both sexes, of whom 84 are female (53.8%) and 72 are male (46.2%), aged between 12 and 16 years old (x 14.9 = 14 , 9 ± 1.3), were evaluated during the practice of two different team sports (basketball and soccer).

Procedures

Given our objectives, we used ATEST-EF (Petrica, 2010) to evaluate the students, with procedures already applied by other authors to analyse the attention and the teaching/learning process (Santos, et al., 2019). This provided the assessment of student's attention at different times of the class (4), in a rapid and disturbing as less as possible the class.

Students' attention were recorded in questionnaires distributed and explained to them at the beginning of it, when they heard the signal (previously known) they had to choose from a range of possible answers to the question: What were you thinking at the time you heard the signal? This is a single questionnaire with 16 response items, subdivided into six variables with the respective levels: (5) attention to the task; (4) behavioural attention; (3) attention to information; (2) affective attention; (1) attention out of the task and (0) attention in other things.

Facts of psychological nature of this level of education were crucial, as these students already have a great ability to

verbalize and written expression of their thoughts and attitudes, because it seems interesting to students who have a capacity of discernment and expression of thought processes adequate.

Statistical procedures

After the data collection, we proceed to its treatment using the SPSS statistical software (Statistical Package for Social Science) version 21 where we conducted a descriptive and inferential statistical via the test application Chi-Square, where we considered a probabilistic error of 5% (≤0.05).

Results

We start with the general profile of attention (table 1), from which we observed that the attentional category that stands out from the rest of them for being the highest, is the attention to the task (49.7%) followed by attention to information (20.8%) and attention to behaviour (20.2%), while the remaining categories have lower percentages, namely and by descending order: affective attention, attention outsider the task and attention to other things.

By dividing the data between the two sports (basketball and football) and their comparation, the profiles are very similar, however, note that the percentual values of affective attention (AA), attention outside the task (AFT) and attention to other things (AOC) are slightly higher in students during the practice of basketball (table 2) than football (table 3).

Given that the answers were given at different times of the class, we exhibit in table 4, the descriptive results of the students attention during the practice of team ports, and from the Chi-Square test we did not find statistically significant differences, $X^2(5) = 3.9$ $p > 0.05$ (signal 1), $X^2(5) = 8.5$ $p > 0.05$ (signal 2), $X^2(5) = 1.8$ $p > 0.05$ (signal 3) and $X^2(5) = 4.4$ $p > 0.05$ (signal 4).

From the values shown below, we verified that the «attention to the task» is the category with the highest percentages, followed by the «attention to information» and «attention to behaviour», the remaining categories that are associated with things outside the class and/or task.

Regarding the differences in attention between Basketball (table 5) and Football (table 6) at different times, we observed that in both spots, the «Attention to the Task» (AT) increases during the first part of the class (2nd and 3rd Signal) which seems quite positive given that is the part of the class where the goals of the class are more emphasized, which will theoretically require a higher attentional focus, but then stabilizes or decreases in the final part of the class. In «Attention to Information» (AI) it decreases from the initial part of the class until the end of the fundamental part of the class (3rd Signal) and increases at the end. Regarding the «attention to behaviour» (AC), starts with reduced percentage levels, but increases until the signal 2 which then it begins to decrease until the end of class. As for the other variables, « Affective Attention « (AF), the «Attention Outside the Task» (AFT) and «Attention to Other Things» (AOC) in both modalities, obtained reduced percentages where there are some differences and swings between them, however, this was an expected point because these attentional focuses are not associated with a positive development of performance due to the fact that these attentions are not the subject in class, or the task given by the teacher.

Table 1
Frequency and overall percentage of responses given by the students.

Variables	Total	
	N	%
Attention to the behaviour (AC)	252	20.2
Attention to Information (AI)	259	20.8
Attention to Task (AT)	620	49.7
Affective Attention (AA)	66	5.3
Attention Outside the Task (AFT)	30	2.4
Attention to Other Things (AOC)	21	1.7

Table 2
Frequency and percentage of answers given by the students while practicing basketball.

Variables	Total	
	N	%
Attention to the behaviour (AC)	127	20.4
Attention to Information (AI)	122	19.6
Attention to Task (AT)	310	49.7
Affective Attention (AA)	36	5.8
Attention Outside the Task (AFT)	18	2.9
Attention to Other Things (AOC)	11	1.8

Table 3
Frequency and percentage of answers given by the students while practicing football.

Variables	Total	
	N	%
Attention to the behaviour (AC)	125	20.0
Attention to Information (AI)	137	22.0
Task attention (AT)	310	49.7
Attention Affective (AA)	30	4.8
Attention Outside the Task (AFT)	12	1.9
Attention to Other Things (AOC)	10	1.6

Table 4
Frequency and percentage of responses given by students during the various moments of the class.

Variables	1st Signal		2nd Signal		3rd Signal		4th Signal	
	N	%	N	%	N	%	N	%
Attention to the behaviour (AC)	26	8.3	98	31.4	76	24.4	52	16.7
Attention to Information (AI)	112	35.9	46	14.7	35	11.2	66	21.2
Task attention (AT)	155	49.7	148	47.4	168	53.8	149	47.8
Attention Affective (AA)	9	2.9	13	4.2	25	8.0	19	6.1
Attention Outside the Task (AFT)	5	1.6	6	1.9	5	1.6	14	4.5
Attention to Other Things (AOC)	5	1.6	1	0.3	3	1.0	12	3.8

Table 5
Frequency and percentage of answers given by students at different times during basketball practice.

Variables	1st Signal		2nd Signal		3rd Signal		4th Signal	
	N	%	N	%	N	%	N	%
Attention to the behaviour (AC)	14	9	52	33.3	39	25	22	14.1
Attention to Information (AI)	50	32.1	21	13.5	19	12.2	32	20.5
Task attention (AT)	81	51.9	72	46.2	79	50.6	78	50
Attention Affective (AA)	5	3.2	5	3.2	14	9	12	7.7
Attention Outside the Task (AFT)	4	2.6	6	3.8	3	1.9	5	3.2
Attention to Other Things (AOC)	2	1.3	0	0	2	1.3	7	4.5

Table 6 - Frequency and percentage of answers given by students at different times during football practice.

Variables	1st Signal		2nd Signal		3rd Signal		4th Signal	
	N	%	N	%	N	%	N	%
Attention to the behaviour (AC)	12	7.7	46	29.5	37	23.7	30	19.2
Attention to Information (AI)	62	39.7	25	16	16	10.3	34	21.8
Task attention (AT)	74	47.4	76	48.7	89	57.1	71	45.5
Attention Affective (AA)	4	2.6	8	5.1	11	7.1	7	4.5
Attention Outside the Task (AFT)	1	0.6	0	0	2	1.3	9	5.8
Attention to Other Things (AOC)	3	1.9	1	0.6	1	0.6	5	3.2

Discussion of Results

The results indicate that the attentional categories that promote the development of students, are the same that revealed more pronounced percentages, specifically, namely the attention to the task, the attention to information and attention to behaviour. This profile is very similar to the study of Santos (2009), that research about the relation between attention and academic performance in Physical Education. In the same issue, but in individual sports, Santos et al. (2019) also obtained an attentional profile very similar to ours in its recent study, which was used ATEST-EF and concluded that they had no statistically significant differences between athletics and gymnastics, as well as in this investigation, however, we observed some oscillations between percentual values in the different categories of attention during the different moments of the Physical Education class, when compared.

Although the results show that students are most of the time with attention to something related to the theme of the class, there is also a percentage of the time that they are not. In order to combat this attentional lapse, teachers must try other strategies to expose the information and «guide» students' attention, as stated in Ladewig (2017) and Grube, Ryan, Lowell, and Stringer (2018). In addition, the feedback given by the teacher are equally important for better learning, so researchers like Wulf, Chiviacowsky, Schiller and Avila (2010), Wulf (2013), Kim, Jimenez-Diaz, and Chen (2017) and Tsetseli , Zetou, Vernadakis and Mountaki (2018), concluded that the feedbacks directed to an external focus show more benefits and development in completing the task or exercise, than the internally focused group.

After our literary review, is to the best of our knowledge that we haven't found more recent studies on students' attention at various times of the Physical Education class. Instead, we found more investigations, as mentioned earlier, on the attentional focus of participants in technical and motor skills in several sports (team and individual), though in studies in team sports, the evaluation of the participants was made using an isolated motor skill of that sport (Lazarraga, 2019).

Conclusions and Recommendations

According to our objectives in this study, we are able to conclude that, as soon as students heard the sound signal, they were mostly attentive to the task, information and/or behaviour, however the statistical tests do not show statistically significant differences between these sports, in our sample. These indicators show that so far we have no evidence that there are statistically significant differences between these sports, as well as in individual sports (Santos et al., 2019) in terms of direction of attention in the physical education classes.

So, we think future investigations should compared other team and individual sports, as well as the comparison between them, in attentional terms. As mentioned earlier, attention, is an important mediating variable of the teaching process, teachers should find diversified strategies that captivate the students attention, because we think that may be of influence in different teaching styles in students' attention. We also suggest a comparison between the student's attention and his academic performance in different sports, where we expect the most attentive students have better academic performance.

Finally, we recommend a larger sample for better statistical processing and further research on this topic is needed in order to develop a better teaching/learning process.

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Note

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