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Relationship between the level of physical activity and the motivation of physical education teachers

Relación entre el nivel de actividad física y la motivacion de docentes de educación física

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Abstract

If we want to generate motivation in our PE students, it is necessary to analyze what the teacher has in terms of the physical activity carried out. The objective was to analyze the relationship between the level of moderate-vigorous physical activity and the motivational climate of physical education teachers (PE). Participated were 125 teachers (71 men and 45 women) of PE from Costa Rica, with an average age of 40.12 ± 13.62 years. Five practical jump rope workshops were developed under the attitudinal style. The SOFIT program was used to record the time and intensity of the physical activity performed and the motivational climate questionnaire perceived in sport-2 (PMCSQ-2). A discussion group was also held with 10 of the teachers. The variable of cooperative learning (p=.022) and that of the important role of the student (p=.039) correlated significantly with the index of moderate-vigorous physical activity. The variable of unequal recognition among partners did it in an inverse way (p=.032). The teachers positively evaluated the training received in order to rethink the importance of the role of the PE teacher in the classroom. It is important to continue working in the training of teachers on bodily practices that generate motivation in themselves, as it guarantees to a greater extent that it is implemented in the classroom.

Keywords

Physical education; physical activity; motivational climate; intensity in practice; attitudinal style

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Resumen

Si queremos generar motivación en nuestros estudiantes de Educación Física (EF) es necesario analizar la que tiene el docente en función de la actividad física realizada. El objetivo fue analizar la relación entre el nivel de actividad física moderada-vigorosa y el clima motivacional de docentes de EF. Participaron 125 docentes (71 hombres y 45 mujeres) de EF de Costa Rica, con una media edad de 40.12 ± 13 años. Se desarrollaron cinco talleres prácticos de combas bajo el Estilo Actitudinal. Se utilizó el programa SOFIT para registrar el tiempo y la intensidad de la actividad física realizada y el cuestionario del clima motivacional percibido en el deporte-2 (PMCSQ-2). También se realizó un grupo de discusión con 10 de los docentes. La variable de aprendizaje cooperativo (p=.022) y la del papel importante del estudiante (p=.039) correlacionaron significativamente con el índice de actividad física moderada-vigorosa. La de reconocimiento desigual entre compañeros lo hizo de manera inversa (p=.032). Los docentes valoraron positivamente la formación recibida de cara a repensar la importancia el rol del docente de EF en el aula. Es importante seguir trabajando en la formación del profesorado sobre prácticas corporales que en ellos mismos genere motivación, ya que garantiza en mayor medida que sea implantada en el aula.

Palabras clave

Educación física; actividad física; clima motivacional; intensidad en la práctica; estilo actitudinal

Introduction

The World Health Organization (WHO) (2017) recommends that children and adolescents between 5 and 17 years of age, perform at least 60 minutes of moderate to vigorous daily physical activity, and adults, at least 150 minutes of weekly aerobic physical activity of moderate intensity. However, the practice of physical activity, regardless of its intensity and characteristics, requires a motivational component on the part of the practitioner (Efrat, 2016). The motivation of an individual attends to a continuum that oscillates between extrinsic regulation and intrinsic regulation (Chen, 2014). These aspects, initially derived from the theory of self-determination (Deci & Ryan, 1985), have been the object of study of a multitude of research in the last 20 years at the international level. The principles that sustain these ideas are directly linked to the theory of achievement goals, defining the goal orientations towards the ego or toward the task that motivate the practice of physical activity (Nicholls, 1989). In this regard, several national and international researches have studied the motivational profiles in

Original Article. Relationship between the level of physical activity and the motivation of physical education teachers. Vol. IV, issue. 2; p. 331-348, may 2018. A Coruña. Spain ISSN 2386-8333

relation to the intensity, frequency and type of practice (Azofeita, 2006, Costa, Hausenblas, Oliva, Cuzzocrea & Larcan, 2013, Marcos, Borges, Rodríguez, Huescar & Moreno, 2011, Moreno, López, Martínez, Alonso & González-Cutre, 2007).

For this reason, it seems of special relevance to be able to verify what are the motivations presented by professionals in the field of physical activity and sports, and more PE teachers, since they project a vision and a way of understanding the subject that directly affects the experiences of the students (Hortigüela, Pérez-Pueyo & Fernández-Río, 2016). It has been found that the experiences that students have in the area of EF s transcendental for adherence to future sports practice (Georgakis & Graham, 2016) and depending on the approach given to the subject and the conception that the teacher has about it can be decisive. The way of approaching the school PE by the teacher can be mediated by factors such as their level of sport practice, their age, or the type of training received (Jung & Choi, 2016). These variables can affect the approach of the subject as a prolongation of the sport activity, the higher intensity the better, or on the contrary, in a curricular structuring where what is truly important is the learning that it is generated through movement (Yilmaz, Esenturk, Demir & Ilhan, 2017).

As indicated by Erwin, Beets, Centeio and Morrow (2014), PE, being a compulsory subject, is the only stable means at our disposal to witness the level of physical activity practice of students and the type of experiences that are generated around it. Therefore, and if we want these to be positive and associated with meaningful learning, we must start from the analysis of how teachers perceive their own sports practice, since teachers do not stop projecting into the classroom a reflection of what they are and of what they think (Tsangaridou & Polemitou, 2015). In the initial teacher training it has been shown how satisfaction with physical practice and the usefulness of the content do not correlate significantly with the intensity of exercise in the sessions held (Hortigüela, Salicetti & Hernández, in press). Therefore, it is not only a matter of checking whether PE classes oscillate in moderate-vigorous intensity levels according to the recommendations of the United States' National Association for Sport and Physical Education (NASPE, 2004), but to go further and see how this intensity is associated with the ego and the task of teachers (Deci & Ryan, 1985).

Original Article. Relationship between the level of physical activity and the motivation of physical education teachers. Vol. IV, issue. 2; p. 331-348, may 2018. A Coruña. Spain ISSN 2386-8333

Therefore, it seems necessary to investigate the relationship between the motivational climate perceived in practice and the level of physical activity (moderate- vigorous) of PE teachers. Although there is some study analysing these aspects in the initial formation of PE professors (Bennie, Peralta, Gibbons, Lubans & Rosenkranz, 2017, Tingstrom & Nagel, 2017) there is none in the permanent formation. This, together with the use of a mixed research method, is a significant contribution to the existing literature. Therefore, the objective of the study was to analyze the relationship between the level of moderate-vigorous physical activity and the motivational climate of PE teachers in Costa Rica.

Participants

125 PE teachers from Costa Rica (71 men and 45 women), with an average age of 40.12 ± (13 years), agreed to participate. All of them were active professionals with more than 6 years of experience in the teaching field. They belonged to different regions of Costa Rica and expressly attended to professional training within the pedagogical training offered at the national level. A convenience sampling was used, due to the accessibility to the participants and the ease in obtaining the data by the researchers. All participants who started the training course completed it, so there was no experimental death in the study. This guarantees the reliability of the data, since the answers obtained come from the real perception of the teachers who experienced all the training sessions given. At the end of the training, 10 participants were randomly selected to participate in a discussion group.

Instruments

Quantitative Instruments

Questionnaire on the Motivational Climate Perceived in Sport-2 (PMCSQ-2).

The version was adapted to the Spanish PE (Cecchini, González, López- Prado & Brustad, 2005) of the Motivational Climate Perception Questionnaire in Sport-2 (Newton & Duda, 1998). It consists of 33 items grouped into two factors: perception of a motivational climate that involves the ego (16 items) and perception of a motivational climate that involves the task (17 items). The ego climate factor is composed of the subscales punishment for errors (six items), uneven recognition of participants (seven items) and rivalry among group members

Original Article. Relationship between the level of physical activity and the motivation of physical education teachers. Vol. IV, issue. 2; p. 331-348, may 2018. A Coruña. Spain ISSN 2386-8333

(three items), while the task climate grouped the subscales cooperative learning (four items)), effort / improvement (eight items) and important role of the student (five items). The beginning of each item was adapted: "During the workshop developed ...". The instrument uses a Likert-type response scale from 1 (totally disagree) to 5 (totally agree). The internal consistency analysis showed Cronbach's alpha values in this study of 0.91 for the ego climate (0.76 for punishment for errors, 0.86 for unequal recognition, 0.60 for rivalry) and 0.85 for the task climate (0.63 for cooperative learning, 0.72 for effort / improvement and 0.70 for important role).

SOFIT

The diagnostic and summative evaluation of the activity of the participants in the practical workshops was carried out through the System for Observing fitness and Instruction Time (SOFIT) (McKenzie, Sallis & Nader, 1991), system to observe the physical activity instruction time. The workshops were evaluated (they were recorded entirely by a camera), registering in rotating sequences for 12 intervals of 20 seconds each. The observations were repeated throughout the class, following the audio of SOFIT on a Sony Xplod player. In the SOFIT assessment, codes were used to classify the activity levels, which allowed us to estimate the energy expendediture . The codes are classified into four: 1) lying down, 2) sitting, 3) standing, 4) walking, and 5) very active, the latter corresponding to running or when the participant performs more physical activity than corresponds to walking. This system has already been validated through its reliability and complementation with the use of Caltrac accelerometers (McKenzie et al., 1994). The moderate-vigorous physical activity index was determined by adding percentage codes 4) walking and 5) very active, with respect to the total time of the class. The time of each workshop was measured with the Casio HS-5 chronometer, establishing the start and end according to the established 90-minute schedule.

Qualitative

Discussion group

The extraction of qualitative information from the research was carried out through a discussion group with 10 participating teachers. A script with four questions related to the two

Original Article. Relationship between the level of physical activity and the motivation of physical education teachers. Vol. IV, issue. 2; p. 331-348, may 2018. A Coruña. Spain ISSN 2386-8333

factors of the PMCSQ-2 was developed. The questions were of an open nature, which favored the dialogue structure to be a conversation (Patton, 2002). The discussion group lasted 90 minutes and was held in a classroom of the Faculty.

Chart 1. *Basic script of the discussion group held with the teachers.*

1. How do you think that the proposals of a cooperative nature affect the intensity of classroom practice?
2. In what way does giving an active role to the student in the classroom influence the intensity of practice?
3. How do you think penalizing student errors impacts the intensity of practice in the classroom?
4. How does the level of recognition and rivalry among students influences the intensity of practice?

Design and procedure

This is a quasi-experimental cross-sectional design. It was carried out during the academic year 2016. The training workshops were given by two Spanish university teachers (a man and a woman), specialists in training and research related to PE models and pedagogical approaches. The training consisted of five practical workshops of combas, two hours each (10 hours in total). We used the pedagogical approach of the Attitudinal Style (Pérez-Pueyo, 2016), model aimed at obtaining the improvement of motor competence in PE. The objective was for all participants to be able to jump into double skip-rope jump, both individually and collectively in a variety of motor sequences. At the end of the last workshop, 15 minutes were left for each participant to complete the PMCSQ-2. All teachers were guaranteed the anonymity and confidentiality of the data. After the last workshop, the discussion group was carried out.

Analysis employed

Quantitative

A descriptive analysis was carried out with the purpose of showing the moderate-vigorous physical activity index of the total class. In addition, a correlation analysis was

Original Article. Relationship between the level of physical activity and the motivation of physical education teachers. Vol. IV, issue. 2; p. 331-348, may 2018. A Coruña. Spain ISSN 2386-8333

performed between the variables of the questionnaire of the *Motivational Climate Perceived in Sport-2 (PMCSQ-2)* and the variables of the index of moderate-vigorous physical activity of the practical session. The Spearman correlation coefficient r was applied. The statistical analysis was performed using the SPSS 20.0 program (SPSS Inc., Chicago, IL, USA). After performing the Kolmogorov-Smirnov test (n> 20), it was observed that the sample responded to parameters of normality (p = .891), so parametric tests were used. The variables that were tested were those related to the ego and task climate in relation to moderate-vigorous physical activity.

Qualitative

The qualitative analysis was made based on the developmet of a discussion group with ten of the participants. The extracted data were explored through the analysis of the subject matter (Libarkin & Kurdziel, 2002) and the constant comparison between the answers addressed (Denzin & Lincoln, 1994). The content analysis focused on the search of patterns in the text, coding the extracts coinciding with the crossed patterns (Saldaña, 2009). An open coding was carried out, with emerging categories; axial coding, around the grouping of emerging categories into broader ones; and selective coding, through a job and specific that led to the development of an interpretative model. These categories are two: 1) relationship between intensity of practice and climate task; 2) relationship between practice intensity and ego climate. They are the same as the factors extracted from the quantitative analysis, which means that they are not superimposed studies but complementary to the subject of study. In each category, the extracted text extracts were counted, presenting the most significant ones through a process of triangulation and saturation. The WEFT QDA computer program was used for all the analysis.

Analysis of results

Descriptive

Chart 2 shows a moderate-vigorous physical activity index of 40.13% in the total of the workshops. These levels are close to the standards established by the (NASPE).

Chart 2. *Moderate-vigorous physical activity index in practical workshops.*

Original Article. Relationship between the level of physical activity and the motivation of physical education teachers. Vol. IV, issue. 2; p. 331-348, may 2018. A Coruña. Spain ISSN 2386-8333

	Minimum	Maximum	Average	Divert. typ
Moderate-vigorous physical activity	19.44	69.44	40.13	14.60

Chart 3 shows the averages in the responses to the six subscales of the PMCSQ-2. It can be observed how the highest values are found in the variable of the important role of the student and that of the effort for improvement, while the lowest in that of punishment for errors.

Chart 3. *Average responses in each of the subscales of the PMCSQ-2.*

	Minimum	*Maximum*	*Average*	*Divert. typ*
TASK CLIMATE				
1. Cooperative learning	2.50	4.00	3.5500	.49070
2. Effort for improvement	3.50	5.00	4.5205	.46876
3. Important role of the student	2.80	5.00	4.5700	.60271
EGO CLIMATE				
4. Punishment for errors	1.00	2.60	1.3300	.42686
5. Unequal recognition of participants	1.00	4.00	1.3370	.69287
6. Rivalry between group members	1.00	5.00	2.3170	1.25020

Inferential

In Chart 4, and with respect to the task climate, one can observe how the cooperative learning variable and the moderate-vigorous physical activity index correlate significantly in a positive way (p = .022). The same happens with the student's important role variable (p = .039).

Original Article. Relationship between the level of physical activity and the motivation of physical education teachers. Vol. IV, issue. 2; p. 331-348, may 2018. A Coruña. Spain ISSN 2386-8333

In the variable of the effort for improvement and the moderate-vigorous physical activity index, there is no significant correlation.

Regarding the ego climate, the only significant correlation is between the unequal recognition variable and the moderate-vigorous physical activity index, which is also inverse. In that of punishment for errors and rivalry between members of the group there is no significant correlation, although there is a positive tendency regarding the level of moderate-vigorous physical activity.

Chart 4. *Correlation between the moderate-vigorous physical activity index and the motivational climate.*

TASK CLIMATE	
1. Cooperative learning	.123 **.022***
2. Effort for improvement	-.004 .987
3. Important role of the student	.364 **.039***
EGO CLIMATE	
4. Punishment for errors	.164 .489
5. Unequal recognition of participants	-.676 **.032***
6. Rivalry between members of the group	.287 .220

* The correlation is significant at the 0.05 level

Qualitative

Relationship between intensity of practice and climate task (212 excerpts of text). It can be observed how the teachers attach importance to the social relations established in the classroom, since they are transferable outside of the classroom. Even so, they recognize that there are certain contents that they teach as they were taught to them, although it could be done in another way:

Original Article. Relationship between the level of physical activity and the motivation of physical education teachers. Vol. IV, issue. 2; p. 331-348, may 2018. A Coruña. Spain ISSN 2386-8333

"Sometimes we believe that because classes are more physically intense they will be more positive for student learning, and this is not always the case [...]. You have to be aware that social relationships are very important too. " "The socialization of the PE is not the same as in any other subject, and this has to be taken advantage of, since it is a civic competence". "Training like the one we just received is truly positive for us, since we have an initial training that in many cases was pedagogically very weak." "Sometimes we give contents of physical condition that, although we know that it could be taught in another way, we do it that way because it is how they taught us [...]" (Anonymous, 2016).

Relationship between practice intensity and ego climate (238 text extracts). It is observed how there is a discrepancy among teachers in relation to the type of communication that must exist with students to increase the level of practice in the classroom:

"I think we all want students to do more physical activity practice than they normally do [...].In a certain way, that's why we are here". "Communication has to be directive many times if we want it to have an effect".

"I do not share that opinion completely [...]. Our goal is not that students perform a higher physical activity above all, we must take great care of the methods and communication with the class. " "The practice of physical activity can not be demanded, because if it is then it is not motivating [...]. Therefore, it is necessary to agree with the class on methods and dynamics that may be attractive for them "(Anonymous, 2016).

Discussion

The objective of the study was to analyze the relationship between the level of moderate-vigorous physical activity and the perceived motivational climate of PE teachers in Costa Rica. The results have shown how in the task climate there is a significant relationship between the items of cooperative learning and the important role of the teacher regarding the moderate-vigorous intensity of the practice. Regarding the ego climate, significant correlation was found, in an inverse way, with the variable of unequal recognition to the participants.

Within the climate towards the task, the fact that the levels of cooperation in the workshops have been significantly correlated with higher levels of intensity in practice, presents

Original Article. Relationship between the level of physical activity and the motivation of physical education teachers. Vol. IV, issue. 2; p. 331-348, may 2018. A Coruña. Spain ISSN 2386-8333

a result of real interest. This breaks the idea, too widespread, that the implantation of cooperative techniques in PE leads to a lower caloric expenditure in practice (Akelaitis & Malinauskas, 2016). However, these methodologies are valued positively by PE students, especially in the variables of intrinsic motivation, social relation, motor enjoyment, fun and novelty (Fernández-Río, Sanz, Fernández-Cando & Santos, 2017). In this case, the Attitudinal Style has been used, which links cooperative learning with the generation of positive motor experiences through the increase of perceived achievement competition (Hortigüela, Pérez-Pueyo & Fernández-Río, 2016; Pérez-Pueyo, 2016).

In the same way, in this same task factor, a significant correlation was also obtained between the important role of the student and the moderate-vigorous activity of the workshops developed. It seems to show that giving the predominant role to the student can lead to greater practical intensity. In this sense, some experiences indicate that when PE students are granted greater autonomy in the classroom, it has an impact on greater motor practice (Weigand & Burton, 2010). On the contrary, there has not been a significant correlation between the effort for improvement and the levels of physical practice in the workshops. In fact, an inverse trend has been obtained. This reflects that it can not be assumed that a greater perception of effort to improve in the activity entails a greater intensity of practice. The culture of effort in PE classes has always been very present, although perhaps not from a critical and pedagogical approach. Xiangli, Yu-Lin, Allen and Thao (2017) indicate that not for asking a student to make an effort in isolation will their involvement be greater, since the key lies in two factors: a) that they really feel that they are competent towards the task and b) they perceive that their actions are relevant to the group, key aspects in the pedagogical model used.

Within the ego climate, the only factor that has presented a significant relationship, of an inverse nature, with the intensity of moderate-vigorous physical activity has been the unequal recognition of students. This implies that the more inequality that occurs in the treatment of participants, the less intensity of physical activity will exist in the classroom. Navarro-Patón, Basanta-Camiño and Abelairas (2017) showed that a positive social climate in PE is the factor that most influences the level of motor performance of the students, since sometimes the fear of what the classmates will say or the type of teacher feedback generate insecurities to expose themselves in front of the group. Therefore, the autonomy of the student on their level of

Original Article. Relationship between the level of physical activity and the motivation of physical education teachers. Vol. IV, issue. 2; p. 331-348, may 2018. A Coruña. Spain ISSN 2386-8333

performance, the teacher's beliefs about the success of students and the coordination of teachers when applying participatory methodologies, are the three main factors that affect intrinsic motivation of students to practice, and as a consequence to the subject of EF (Fletcher, Mandigo & Kosnik, 2013).

The variables of punishment for errors and that of rivalry among group members have not presented a significant correlation with the intensity level of moderate to vigorous physical activity practice. Therefore, competition and sanction can not be associated with a higher level of physical practice. Previous studies in this line (Pihu, Hein, Koka & Hagger, 2008) show that it is recurrent that PE teachers use motor activity as the main means of punishment (running around, abs ...) which has a pernicious effect, since that subconsciously the message is sent to the students that physical activity is not something positive. In this sense, the feedback used by the teacher becomes key to generate intrinsic motivation towards the subject, which leads to an increase in the possibilities of students to perform more physical activity outside the classroom (Anibal, 2017). For this, Hortigüela, Pérez-Pueyo and Fernández-Río (2017) highlight the importance that working from the PE classes the evaluative responsibility of the student has.

In relation to the first category of the qualitative data of the study, and although the participating teachers emphasize the importance of social relations in the classroom due to their transferability outside the classroom, they recognize that there are certain physical condition contents which they teach as they were taught as students. Garrett and Wrench (2007) indicate how it is very common in the teaching field to reproduce the experiences experienced at a personal level, regardless of whether or not they are convinced that they are appropriate. This presents especial relevance in school PE, a curricular subject that must be supported by pedagogical and didactic principles that go beyond sports performance (Backman & Larsson, 2016) or intensity level.

In relation to the second category of the qualitative data of the study, the teachers expressed different perceptions regarding the type of communication existing with the students to achieve a higher level of practice in the classroom. Given this and as indicated by Lund (2013), if you only structure the subject under the interest of the more physical practice, you will be leaving aside aspects of such importance as social, motivational and psycho-

Original Article. Relationship between the level of physical activity and the motivation of physical education teachers. Vol. IV, issue. 2; p. 331-348, may 2018. A Coruña. Spain ISSN 2386-8333

evolutionary. Therefore, it is necessary to have a more consensual view among teachers and not based on immediacy, understanding that if the main objective of the subject is the generation of positive social and motor experiences that lead to adherence to the practice of physical activity In an autonomous way, the reflection of why and for what in the delivery of our contents have to become key (Tsangaridou & Polemitou, 2015). Although, in many cases, EF classes are the main source of physical activity for our students, there is no point in squeezing every minute if this can lead to low motivational experiences that are not transferred outside the classroom.

Conclusions

The cooperative learning variable and that of the important role of the student correlated significantly with the index of moderate-vigorous physical activity. The one of unequal recognition among colleagues did it in an inverse way. This reflects the importance of how social relationships, group work and student responsibility for homework entails a higher level of physical activity in the classroom. In turn, the teachers positively rated the training received based on the Attitudinal Style, arguing the importance of the methodology in the PE classroom to work on aspects that go beyond the motive. This supposes a significant contribution to the existent literature on the subject, since never before the relation between motivation and intensity of practice of physical activity in PE teachers had been measured. In addition, a mixed method has been used, which has allowed to give voice to their experiences after the completion of the workshops.

However, the research has some limitations. In the first place, only five workshops were developed, so that carrying out longitudinal studies could show the effects of these pedagogical practices in relation to the intensity of more long-term practice. On the other hand, the study focuses only on Costa Rica. For future research, the evaluations of teachers from different countries could be compared, checking how their orientation towards the ego or the task varies according to the social and curricular context of the subject.

We consider this research of special interest for all PE teachers interested in how to articulate the binomial between practice of physical activity and learning in the classroom. It seems necessary to continue investigating in this line, verifying how the intensity in the practice

within the PE classroom does not always have to be an indispensable requirement for learning to occur and adherence to the practice.

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