

Cooperative games: incidence in motivation, basic psychological needs and enjoyment in Primary School

Los juegos cooperativos: incidencia en la motivación, necesidades psicológicas básicas y disfrute en Educación Primaria

Rubén Navarro-Patón, Silvia Basanta-Camiño; Cristian Abelairas Gómez
Faculty of Teacher Training. Universidade de Santiago de Compostela.

Contact: ruben.navarro.paton@usc.es

Editorial shedule: Article received: 06/06/2017 Accepted: 18/08/2017 Published: 01/09/2017

DOI: <http://dx.doi.org/10.17979/sportis.2017.3.3.2088>

Abstract

This research's aim was to analyse the effects of a cooperative games didactic unit on self-determined motivation, basic psychological needs and enjoyment, in physical education sessions, with primary school students. A quasi-experimental pre-post-test design with a control group was used. 104 schoolchildren were the participants ($10.29 \pm .62$ years old) from Lugo (Spain). The control and experimental groups consisted of 50 and 54 students, respectively. To measure motivation, basic psychological needs and enjoyment, an ad hoc questionnaire -used in other researches- was used. Results indicated positive effects of the program on intrinsic motivation ($p < .001$); extrinsic motivation ($p = .044$); demotivation ($p = .014$); relationships ($p = .004$), perceived autonomy ($p = .001$) and enjoyment ($p = .021$). Data suggest that the application of didactic units or programs based on cooperative games could positively influence self-determined motivation, satisfaction of basic psychological needs and enjoyment of schoolchildren in physical education sessions.

Keywords

Self-determined motivation; Basic psychological needs; Enjoyment; Physical education; Primary education.

Resumen

El propósito de este trabajo fue analizar los efectos de una unidad didáctica de juegos cooperativos sobre la motivación autodeterminada, las necesidades psicológicas básicas y el disfrute en escolares de 5º y 6º de educación primaria, dentro de las clases de educación física. Se empleó un diseño cuasi-experimental pre-post test con un grupo control. Los participantes fueron 104 escolares ($10.29 \pm .62$ años) de Lugo (España). El grupo control y el experimental estuvieron constituidos por 50 y 54 alumnos, respectivamente. Para medir motivación, necesidades psicológicas básicas y disfrute se usó un cuestionario *ad hoc* utilizado en otras investigaciones. Los resultados indicaron efectos positivos del programa sobre la motivación intrínseca ($p < .001$); motivación externa ($p = .044$); desmotivación ($p = .014$); relación con los demás ($p = .004$), autonomía percibida ($p = .001$) y disfrute ($p = .021$). Los datos encontrados sugieren que la aplicación de unidades didácticas o programas basados en los juegos cooperativos podrían incidir de manera positiva en la motivación autodeterminada, la satisfacción de las necesidades psicológicas básicas y el disfrute de los escolares de educación primaria dentro de las clases de educación física.

Palabras clave

Motivación autodeterminada; Necesidades psicológicas básicas; Disfrute; Educación física; Educación primaria.

Introducción

It is indisputable that sedentary lifestyle has started to impose itself on the lifestyle of the population in developed countries (World Health Organization – WHO, 2010). Physical inactivity is being contagious among the population –tending to move increasingly towards younger targets, reaching adolescence and even childhood (Martínez Contreras, Aznar & Lera, 2012). So that, not practising enough physical activity has gradually become a common habit among the youngest. That can easily explain the growing physical, mental and social health problems. Then, this predisposition indicates that there are higher and higher rates of childhood obesity (WHO, 2010).

Nevertheless, concerns are focused on the different habits and lifestyles that are transmitted to future generations. It is enough to take a look at our daily life. For example, it is easy to find an elevator at the ground floor of the public buildings. Children do not walk to school but they go by car from home right to the main gates of the school. There are

computers, televisions and game consoles that keep the whole family entertained –remaining still on the sofa. The refrigerators are full of high-calorie foods that are high in fat, salt and sugar. These products fall outside the concept of a well-balanced diet. Heating and air conditioning avoid the energy expenditure of our body (Carranza, Garriga & Llinás, 2011). Undoubtedly, those factors contribute to live a more sedentary lifestyle at home, at school and at work.

We take as a starting point the definition of health proposed by the WHO (1948). We focus attention on three different dimensions: physical, mental and social well-being. Taking this into consideration, it can be assumed that in order to achieve a full and healthy lifestyle in school it is not enough to do physical exercise, eat a balanced diet and not to be sick. For this reason, it is necessary to work these areas of health as a whole –especially concerning psychological health- from childhood.

In this regard, WHO (2014) argues that the mental health is more than the absence of mental disorders. This organization states that the mental health is “a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community” (WHO, 2014, p. 2).

Therefore, it could be said that the usual practice of physical activity will have a positive impact on the social and psychological welfare of those people who practice it. However, it is necessary to understand the reasons why people commit themselves to one activity in particular. In this regard, the Self-Determination Theory (SDT) is one of the most used theories in the field of physical activity in order to ascertain to what degree to which people get involved in doing a specific activity (Deci & Ryan, 1985).

SDT comes from a basic proposition which states that human behavior is motivated by three basic psychological needs: autonomy, competence and relationship. In this way, these three propositions remain indispensable and necessary for the proper work of the mind, personal welfare and for the people-centered social development (Castaño, Navarro & Basanta, 2016).

When we refer to autonomy, we are not talking about independence or total freedom, but rather an internal acceptance of, an engagement with, one’s motivated behavior. So,

supporting autonomy means empowering students, offering choices, and providing them a meaningful rationale when choice is not possible” (Filak & Sheldon, 2003, p. 235). This autonomy arises when students know their needs and wishes to make their own decisions – showing a greater behavioral control over situations (Moreno-Murcia & Martínez, 2006).

Competence is “people’s need to feel effective at meeting every-day challenges and the social experimentation opportunity and opportunities to exercise his or her capabilities” (Moreno-Murcia & Martínez, 2006, p. 44).

Furthermore, relationship occurs when one feels connected to or understood by others and accepted by his or her partners (Filak & Sheldon, 2003).

Those are innate, universal and fundamental needs for good mental and social health. They both together form a natural aspect common to all people around the world, regardless of gender, origin, religion, colour or even age (Moreno-Murcia & Martínez, 2006).

Therefore, basic needs are the key psychological factors and they wield a social influence on the three main types of motivation: intrinsic motivation, extrinsic motivation and demotivation (Deci & Ryan, 1985).

González, Huéscar and Moreno (2013) argue that intrinsic motivation refers to initiating an activity for its own sake without expecting any reward, just because it is interesting and satisfying in itself. Additionally, when an activity is engaged to obtain a reward, avoid punishment or for disobedience it is said to be extrinsically motivated. Finally, demotivation corresponds to the lack of intrinsic and extrinsic motivation. It means that people feel like they have no competence in carrying out the activity.

Ultimately, it is necessary to apply this theory to the PE class so as to encourage wider participation of all students giving them the opportunity to participate in tasks related to their characteristics, needs and interests. Thus, they feel competent and motivated to carry out a specific task (Castaño, Navarro & Basanta, 2016). Similarly, relationships with their partners should be promoted from the school and they should likewise create a positive atmosphere which fosters camaraderie, empathy and spirit of cooperation.

Considering that the performance of physical activities has a great transcendence in youth development, we must take into account the importance of the teacher’s role in this process. He or she could be considered largely responsible for educating physically active

people during its lifetime. It could be achieved or not depending on the approach used for PE classes which will have an effect on the degree of satisfaction of a particular subject with regard to them (Troost, Pate, Freedson, Sallis & Taylor, 2000).

Due to reasons explained previously, we believe that investigations need to be conducted in order to analyse self-determined motivation, basic psychological needs and their variation as a result of the pedagogical model used in PE classes. It is considered a line of research –still rather studied- that can make major contributions to the psycho-evolutionary field and can be a real engine for the students' development (Hortigüela, Fernández-Río, & Pérez-Pueyo, 2016).

Consequently, based on the available evidence, there is no research that has analysed the effects of a programme based on cooperative games about auto-determined motivation, basic psychological needs and enjoyment as part as the PE classes in Primary Education. For this reason, a lesson planning based on cooperative games was designed for this research – following a previous survey (Navarro-Patón & Basanta, 2015). Then, it was implemented in Primary Education at several PE sessions.

The main objective of this research is to analyse the effects of the lesson planning based on cooperative games on motivation, on basic psychological needs and enjoyment – evaluated within the context of the PE classes.

The first hypothesis posed by the researchers concluded that the students we would implement the experience with –through cooperative games- would score highest on intrinsic motivation, on relationship and competence. Considering the second posed hypothesis, we can state that within the experimental group girls would show a higher improvement than boys in those areas.

Méthod

Design

A cross-sectional, descriptive, comparative analytic-relational design was undertaken to conduct this research and respond to the proposed objectives (Ato, López & Benavente, 2013).

Participants

The research involved 104 students from Lugo between the ages of 9 and 11 years old ($M = 10.29 \pm .62$): 59 boys (56.7 %) and 45 girls (43.3 %). According to the students accessed, the selection of the sample was a non - probability one. Participants were not assigned to the group in accordance with a randomized criterion –using for this purpose natural groups on the basis of their belonging to the same group within the classroom.

A control group (=50) was established. It was a group of 5th year students and a 6th year students from Primary Education and an experimental group (n=54) of students from other groups belonging to the same educational levels.

As an inclusion criterion, it was established that participants must have the consent of either parents or guardians as well as not to present any diversity or special educational need that prevent him or her from participating in the research. In addition, the educational establishment students belonged is used as the criterion for the assignment of control or experimental groups because they were schools with the same characteristics.

Instruments

The scale of multidimensional measure referring to enjoyment, competence, relationship, autonomy, demotivation, intrinsic and extrinsic motivation was used with the intention of evaluating psychological and social aspects of the lesson planning based on cooperative games. It is a questionnaire done ad hoc from Moreno, González, Martínez, Alonso and López (2008); Moreno, González, Chillón and Parra (2008) and Moreno, González and Chillón (2009).

The first 14 items -headed by the statement “when I do activities in Physical Education classes...”- consisted of 4 factors: enjoyment (i.e. “I will have a lot of fun”), relationships (i.e. “I will feel very comfortable with partners”), competence (i.e. “I will feel I can improve doing these activities”) and autonomy (i.e. “I will have the opportunity to choose the way of doing activities”).

The last 12 items –headed by the statement “I will participate in the Physical Education classes...”- consisted of 3 factors: demotivation (i.e. “However I think I will waste my time”), intrinsic motivation (i.e. “Since PE activities are really fun”) and extrinsic

motivation (i.e. “Since I am forced to do it at school”).

Procedure

Firstly, we asked the educational center for collaboration and consent in order to carry out this research. Then, legal guardians of children were reported on the protocol, the subject of study, willingness to participate and confidentiality of replies and the survey data. Likewise, an indispensable requirement for the student participation was the signing of the informed consent by the legal guardians. This is all in accordance with the ethical guidelines established in the Declaration of Helsinki (1975).

The multidimensional tool was implemented in the PE lesson (before and after the interventions) and without the presence of the teacher to ensure that it would not interfere with the student’s replies. To respond to the questionnaire there was a 30-minutes time period, indicating clearly that it was not an examination and there were no right or wrong answers but their most honest opinion. The doubts raised by the questionnaire were immediately clarified by the researchers.

Once the testing tool was given, the control group continued to the normal scheduling process established by the PE teacher. Nevertheless, regarding students from the experimental group, a lesson planning was developed for three weeks (6 sessions) by playing cooperative games following the guidelines included in a previous research (Navarro-Patón & Basanta, 2015) and maintaining this particular structure during the session: the information phase, the warm-up phase, phase for the achievement of the objectives, phase to return to normality and the final comment.

Statistical Analyse

The descriptive and statistical data have been determined as well as the internal consistency of the instrument (Cronbach’s alpha) and the differences according the variables under consideration –gender (boys / girls) and group (control / experimental).

The Kolgomorov-Smirnov normality tests revealed an abnormal distribution –using nonparametric tests (U de Mann-Whitney) for the comparison between gender and group variables and the dimensions of the multidimensional questionnaire before it and for a post-

hoc comparison related to the experimental group using the Wilcoxon signed-ranked test. The level of significance for the various tests was determined to be a value of 95% ($p \leq .05$). Tests were carried out through IBM SPSS statistical programme (v. 20.0).

Results

Descriptive analysis, normalcy and reliability analysis

In Table 1 you can observe the means and standard deviations of the multidimensional questionnaire –prior to the study of the participants- as well as the tests for the normality of data. The Kolmogorov-Smirnov results indicated that the data did not follow a normal distribution. Likewise, Alpha index values by Crombach were ($\alpha=.718$) concerning the control group and ($\alpha=.762$) concerning the experimental group.

Table 1. Means, standard deviations, reliability analysis and internal consistency for each variable studied in the multidimensional questionnaire.

	Control group (n=50)				Experimental group (n=54)			
	M	SD	A	K	M	SD	A	K
IM	4.42	.73	-1.47	2.74	4.44	.33	-.68	.23
EM	3.11	1.17	-.09	-.97	2.85	.37	-.12	-.18
DEM	3.65	.46	-.75	-1.21	3.67	.31	-.60	-.13
COMP	4.11	.72	-.64	.92	4.28	.53	-.50	-.24
AUT	4.40	.60	-.65	-.66	4.48	.46	-.68	-.25
REL	3.90	.76	-.26	-.64	4.38	.48	-.65	-.21
ENJ	4.48	.50	-1.21	1.11	4.58	.58	-1.23	-.40

M=Mean; SD=Standard Deviation; A=Asymmetry; K=Kurtosis; IM=Intrinsic Motivacion; EM=Extrinsic Motivacion; DEM=Demotivation; COMP=Perceived Competence; AUT=Autonomy; REL=Relationship; ENJ=Enjoiment.

The analysis –reaching the values $p > .05$ - showed that the groups were homogeneous with respect to the variables IM, EM, DEM, COMP, REL and ENJ but heterogeneous in AUT dimension ($p=.001$).

Analysis of values to the questionnaire

In Table 2 you can observe the average, standard deviations -pre and post test of the control and experimental group globally and depending on the gender. Nonparametric tests were used due to the non- normality characteristics of the data.

The results show differences in the post- test between the control and the experimental group overall comparing in the COMP variable ($p=.014$); REL variable ($p=.010$); AUT variable ($p<.001$) and ENJ variable ($p=.003$); this differences do not appear in the pre-test.

Making an overall comparison between pre and post intervention in the experimental group, statistically significant differences were found in IM ($p<.001$); ME ($p=.044$); DESM ($p=.014$); DISF ($p=.021$); RELAC ($p=.004$) and AUT ($p=.001$).

Making an overall comparison considering gender, in the experimental group we can observe a statistically significant difference in IM ($p=.033$) and ENJ ($p=.046$) between boys and girls in IM ($p<.001$), DEM ($p=.019$), REL ($p=.005$) and AUT ($p<.001$).

Table 2. Means, standard deviations, reliability analysis and internal consistency for each variable studied in the multidimensional questionnaire.

		Control group						Experimental group					
		Global		Boys		Girls		Global		Boys		Girls	
		(n=50)		(n=29)		(n=21)		(n=54)		(n=30)		(n=24)	
		M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
IM	Pre.	4.42	.73	4.24	.83	4.66	.48	4.44	.33	4.40	.40	4.50	.20
	Post.	4.38	.83	4.17	.94	4.66	.56	4.60	.24	4.55	.23	4.66	.24
EM	Pre.	3.11	1.17	3.38	.96	2.72	1.34	2.85	.37	2.85	.34	2.85	.42
	Post.	2.82	1.15	3.11	.92	2.42	1.33	2.75	.36	2.75	.29	2.75	.44
DEM	Pre.	3.65	.46	3.43	.49	3.96	.11	3.67	.31	3.76	.31	3.56	.27
	Post.	3.75	.40	3.60	.43	3.96	.24	3.75	.26	3.83	.22	3.66	.28
COMP	Pre.	4.11	.72	4.32	.65	3.82	.74	4.28	.53	4.28	.44	4.27	.63
	Post.	4.02	.76	4.08	.79	3.95	.73	4.39	.37	4.40	.30	4.38	.45
REL	Pre.	4.40	.60	4.19	.66	4.69	.34	4.48	.46	4.66	.30	4.25	.54
	Post.	4.15	.80	3.91	.80	4.47	.69	4.60	.31	4.71	.24	4.47	.35
AUT	Pre.	3.90	.76	3.64	.80	4.25	.54	4.38	.48	4.60	.33	4.11	.50
	Post.	3.76	.73	3.64	.70	3.92	.76	4.59	.34	4.66	.35	4.50	.32
ENJ	Pre.	4.48	.50	4.37	.61	4.62	.24	4.58	.58	4.65	.42	4.50	.74
	Post.	4.47	.41	4.44	.45	4.50	.36	4.71	.32	4.73	.32	4.68	.33

M=Mean; SD=Standard Deviation; A=Asymmetry; K=Kurtosis; IM=Intrinsic Motivacion; EM=Extrinsic Motivacion; DEM=Demotivation; COMP=Perceived Competence; AUT=Autonomy; REL=Relationship; ENJ=Enjoyment.

Discussion

The objective of this research was to analyse the effects of a PE lesson planning based on cooperative games taking into account motivation, basic psychological needs and the Primary School students' enjoyment. The results obtained have demonstrated the positive effects of the specific methodology used within the experimental group. Moreover, they have validated our assumptions on the basis of this research.

Before introducing the intervention programme and after comparing the students' perception of the activities in PE lessons, it was proved that there is basically no difference in the scores reached in the different variables of the multidimensional questionnaire between

the students of the control group and the experimental group. Significant differences were only found with respect to the autonomy dimension (AUT) so that the experimental group could obtain a higher mean score.

Nevertheless, higher differences favouring the experimental group were achieved after implementing the lesson planning based on cooperative games. These differences were significant with respect to competence (COMP), relationship (RELAC), autonomy (AUT) and enjoyment (ENJ). All this means that the group which has worked using the planning of cooperative games, has scored higher in these variables than the control group working with conventional games (non-cooperative ones).

On one hand, these results give an enormous validity to our first hypothesis: the students who experienced these various cooperative games show higher scores in motivation, relationship and competence.

On the other hand, comparing the pre and post test related to the experimental group, we could observe some significant differences with respect to intrinsic motivation (IM), extrinsic motivation (EM), demotivation (DEM), enjoyment (ENJ), relationship (REL) and autonomy (AUT).

Making a comparison between pre and post tests and dividing the experimental group by gender, we could obtain some significant differences between intrinsic motivation (IM) and enjoyment (ENJ) referring to the boys' group and between intrinsic motivation (IM), demotivation (DEM), relationship (REL) and autonomy (AUT) with reference to the girls' group.

Based on these results and in contrast to what has happened in many other researches (Barreal-López, Navarro-Patón & Basanta-Camiño, 2015), one of our major assumptions can be confirmed. Within the experimental group, girls showed a better evolution of these dimensions than boys. It is in accordance with some other studies (for example the research of Trigo-Oroza, et al. in 2016) because it has been proved that boys have a higher level of motivation than girls in Primary Education if methodology is based on competition. This can maybe be supported by feminine gender because women use to have a higher social dependency, especially at the ages related to this research (McCabe & Ricciardelli, 2010). Those scores –higher concerning girls than boys- can be also motivated by the comprehensive

character of cooperative games (Velázquez, 2004), where everyone needs help from everyone to achieve the common objective. In this case, although there might be differences regarding gender, they are minimised or they just disappeared.

Then, it would seem logical to accept that during the PE lessons we should put some efforts to achieve higher gender equality and break away from social stereotypes (Yawen, Dorotthee, Frank & Linda, 2013).

Similarly, in the line of the previous studies carried out by Gil-Madrona and Díaz-Suárez (2012) and Navarro, Rodríguez and Eirín (2016), we emphasize that teachers must take into account that enjoyment is essential for students to acquire physical activity habits in out-of-school contexts. That is easier to implement through different and motivating activities that engage students in a meaningful learning such as cooperative games.

It must be recognised that this research presents some limitations and for this reason we must interpret data with caution. On one hand, a teaching planning with cooperative games has just been implemented –with a total duration of 6 weeks, so it would be interesting to examine the extent to which other contents or longer-term interventions could sustain or even improve self-determined motivation as well as the satisfaction of the basic psychological needs and the students' enjoyment. It is therefore interesting that it could be considered in future education projects.

Furthermore, the studied dimensions tend to be most frequently investigated in secondary education. In this way, we could compare the results of a special intervention based on cooperative games among different age groups. Thus we can see how the psycho-evolutionary development of students could affect their intrinsic and extrinsic motivation, demotivation, perceived competence, autonomy, relationship and enjoyment during the PE lessons.

This investigation is beyond doubt. It can help PE teachers to implement and put into practice alternative methodologies in the classroom. This encourages the dimensions mentioned throughout this research. For all these reasons, it would be interesting to continue working in this way –taking advantage of the educational potential provided by the PE area in order to reinforce the psychological and the motor skill competences (Hortigüela et al., 2016).

Conclusions

The teaching planning based on cooperative games during the PE lessons provoked significant improvements concerning the students' dimensions with respect to those who did not partake of this experience.

The obtained results have brought into relief the positive effects of the methodology used with the experimental group in relation with almost all the variables studied.

So then, we consider that these results must promote into teachers a positive willingness to use methodologies that generate behavioral changes in the students such as cooperative games because they have a direct influence on infancy and their subsequent habits.

References

1. Ato, M., López, J.J. & Benavente, A. (2013). Un sistema de clasificación de los diseños de investigación en psicología. *Anales de Psicología*, 29 (3), 1038-1059.
2. Barreal-López, P., Navarro-Patón, R. & Basanta-Camiño, S. (2015). ¿Disfrutan los escolares de educación primaria en las clases de educación física? Un estudio descriptivo. *Trances. Revista de Transmisión del Conocimiento Educativo y de la Salud*, 7(4), 613-625. Recovered from http://www.trances.es/papers/TCS%2007_4_7.pdf
3. Carranza, M., Garriga, H. & Llinás, M. (2011). *Saltamos a la ciudad*. Barcelona: Grao.
4. Castaño, M.E., Navarro, R. & Basanta, S. (2016). Estudio de la satisfacción de las necesidades psicológicas básicas de los escolares de primaria respecto a la Educación Física. *EmásF, Revista Digital de Educación Física*, 39, 102-110. Recovered from <https://dialnet.unirioja.es/servlet/articulo?codigo=5370988>
5. Deci, E. L., & Ryan, R. M. (1985). The General Causality Orientations Scale: Self-Determination in Personality. *Journal of Research in Personality*, 19, 109-134. Recovered from

http://sdtheory.s3.amazonaws.com/SDT/documents/1985_DeciRyan_GCOS.pdf

6. Filak, V. F., & Sheldon, K. M. (2003). Student psychological need satisfaction and college teacher-course evaluation. *Educational Psychology*, 23(3), 235-247. doi: 10.1080/0144341032000060084
7. Gil-Madrona, P. & Díaz-Suárez, A. (2012). Dominio afectivo de los alumnos de 6º curso de primaria hacia la asignatura de educación física. *Revista de Investigación en Educación*, 10 (2), 109-117. Recovered from <https://dialnet.unirioja.es/descarga/articulo/4733654.pdf>
8. González, G., Huéscar, E., & Moreno, J. (2013). Satisfacción con la vida y ejercicio físico. *Motricidad. European Journal of Human Movement*, 30, 131-151. Recovered from <http://www.redalyc.org/pdf/2742/274228060010.pdf>
9. Hortigüela, D., Fernández-Río, J., & Pérez-Pueyo, A. (2016). Efectos del planteamiento docente en la enseñanza del fútbol sobre el clima de aula. Percepciones de alumnado y profesorado. *Cuadernos de Psicología del Deporte*, 16(1), 295-306. Recovered from <http://www.redalyc.org/articulo.oa?id=227044738028>
10. Martínez, J., Contreras, O., Aznar, S., & Lera, A. (2012). Niveles de actividad física medido con acelerómetro en alumnos de 3º ciclo de Educación Primaria: actividad física diaria y sesiones de Educación Física. *Revista de Psicología del Deporte*, 21(1), 117-123. Recovered from http://ddd.uab.cat/pub/revpsidep/revpsidep_a2012v21n1/revpsidep_a2012v21n1p117.pdf
11. McCabe, M. & Ricciardelli, L. (2010). Sociocultural influences on body image and body changes among adolescent boys and girls. *The Journal of Social Psychology*, 143(1), 5-24.
12. Moreno J.A., González-Cutre, D., & Chillón, M. (2009). Preliminary validation in Spanish of a scale designed to measure motivation in physical education classes: the Perceived Locus of Causality (PLOC) Scale. *The Spanish Journal of Psychology*, 12(1), 327-337.

13. Moreno J.A., González-Cutre, D., Chillón, M., & Parra, N. (2008). Adaptación a la educación física de la escala de las necesidades psicológicas básicas en el ejercicio. *Revista Mexicana de Psicología*, 25(2), 295-303.
14. Moreno, J.A., González-Cutre, D., Martínez, C., Alonso, N., & López, M. (2008). Propiedades psicométricas de la Physical Activity Enjoyment Scale (PACES) en el contexto español. *Estudios de Psicología*, 29(2), 173-180.
15. Moreno-Murcia, J. A., & Martínez, A. (2006). Importancia de la Teoría de la Autodeterminación en la práctica físico-deportiva: Fundamentos e implicaciones prácticas. *Cuadernos de Psicología del Deporte*, 6(2), 39-54. Recovered from <http://www.um.es/univefd/TAD.pdf>
16. Navarro-Patón, R. & Basanta, S. (2015). Juegos y actividades cooperativas para educación física, deporte escolar y campamentos juveniles. In V. Arufe (Ed.), *Actas del V Congreso mundial del deporte escolar, educación física y psicomotricidad*. Sportis: A Coruña.
17. Navarro, R., Rodríguez, J.E., & Eirin, R. (2016). Análisis de la satisfacción de las necesidades psicológicas básicas, motivación y disfrute en Educación Física en Primaria. *Sportis Sci J*, 3 (2), 439-455. DOI: <http://dx.doi.org/10.17979/sportis.2016.2.3.1758>
18. Trigo-Oroza, C., Navarro-Patón, R., & Rodríguez-Fernández, J.E. (2016). Didáctica de la educación física y actividades en el medio natural. Efecto sobre la motivación, necesidades psicológicas básicas y disfrute en alumnado de primaria. *Trances. Revista de Transmisión del Conocimiento Educativo y de la Salud*, 8(6), p. 487-512. Recovered from http://www.trances.es/papers/TCS%2008_6_6.pdf
19. Trost, S.G., Pate, R., Freedson, P.S., Sallis, J.F. & Taylor, W.C. (2000). Using objective physical activity measures with youth: How many days or monitoring are need? *Medicine and Science in Sports and Exercise*, 32 (2), 426-431. Doi: 10.1097/00005768-200002000-00025.
20. Velázquez, C. (2004). *Las actividades físicas cooperativas. Una propuesta para la formación en valores a través de la educación física en las escuelas de educación básica*. México: Secretaría de Educación Pública.

21. World Health Organization - WHO (1948). *Constitución de la Organización Mundial de la Salud*. Recovered from http://www.who.int/governance/eb/who_constitution_sp.pdf
22. WHO (2010). *Population-based prevention strategies for childhood obesity: report of a WHO forum and technical meeting*. Recovered from <http://www.who.int/dietphysicalactivity/childhood/child-obesity-eng.pdf>
23. WHO (2014). *Salud mental: fortalecer nuestra respuesta*. Recovered from <http://www.who.int/mediacentre/factsheets/fs220/es/>
24. Yawen, H., Dorotthee, A., Frank, L. & Linda, L. (2013). Pathways from fear of falling to quality of life: the mediating effect of the self-concept of health and physical Independence. *Aging & Mental Health*, 17(7), 816-822. Doi: <http://dx.doi.org/10.1080/13607863.2013.805398>