

## **Relationship between the 3x2 achievement goals and perceived competence in Physical Education students**

### **Relación entre las metas de logro 3x2 y la competencia percibida en los estudiantes de Educación Física**

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#### **Abstract**

Youth affiliation to physical activity and their active implication in sport throughout life, are two of the main objectives in Physical Education. In this research we examine the relationship between the achievement goals and the perceived competence in Physical Education since the recent theoretical framework of 3x2 achievement goals. The sample comprised 205 (113 boys and 92 girls), aged 12 and 18 years ( $M = 14,02$ ;  $SD = 1,70$ ), all of them belonging to two Secondary School in the North of Spain. These students completed the 3x2 Achievement Goal Questionnaire (CML3x2-EF) and the perceived competence subscale factor included in the Basic Psychological Needs in Exercise Scale (BPNES), also adapted to Physical Education. We performed descriptive analysis ( $M$  and  $SD$ ), Cronbach alphas and linear regression analysis by stepwise. The results showed a positive correlation between the six goals of achievement and the perceived competence, being particularly high value of approach-task and approach-self. The three approach goals (approach-task, approach-self, approach-other) significantly predicted the perceived competence ( $\beta = 0,43; 0,18; 0,20$ , respectively).

#### **Keywords**

Achievement motivation; approach goals; ability perceive; physical activity.

## Resumen

La adhesión de los jóvenes a la actividad física y su implicación activa en el deporte a lo largo de la vida, son dos de los grandes objetivos que persigue la Educación Física. En esta investigación se examina la relación entre las metas de logro y la competencia percibida en Educación Física desde el reciente marco teórico de metas de logro 3x2. Participaron 205 estudiantes (113 varones y 92 mujeres), con edades comprendidas entre los 12 y los 17 años ( $M = 14,02$ ;  $SD = 1,70$ ), pertenecientes a dos institutos de Educación Secundaria del Norte de España. Los estudiantes cumplimentaron el Cuestionario de Metas de logro 3x2 en Educación Física (CML 3x2-EF) y la subescala competencia percibida de la Escala de las Necesidades Psicológicas Básicas en el Ejercicio (BPNES), también adaptada a la Educación Física. Se realizaron análisis descriptivos ( $M$  y  $DT$ ), alfas de Cronbach y un análisis de regresión lineal por pasos. Los resultados señalaron una correlación positiva entre las seis metas de logro y la competencia percibida, destacando el elevado valor de las metas de aproximación-tarea y aproximación-yo. Las tres metas de aproximación (aproximación-tarea, aproximación-yo, aproximación-otro) predijeron significativamente la competencia percibida ( $\beta=0,43$ ;  $0,18$ ;  $0,20$ , respectivamente).

## Palabras clave

Motivación de logro; metas de aproximación; habilidad percibida; actividad física.



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## Introduction

Nowadays Physical Education provides an appropriate means to encourage among the students the practice of physical education regularly, furthermore, it is an exceptional space to develop knowledge and positive attitudes toward the practice of physical sporting. Therefore, the positive experiences in these lessons get an important role when developing in the students a healthy and active lifestyle (Peiró-Velert, Pérez-Gimeno & Valencia-Peris, 2012), as opposed to some negative experiences (Beltrán-Carrillo, Devís-Devís, Peiró-Velert & Brown, 2012). For this reason, Physical Education teachers are aware of the importance that students should be motivated, to create in this way pleasant and satisfactory experiences (Baena-Extremera, Granero-Gallegos, Sánchez-Fuentes & Martínez-Molina, 2013; Moreno, Zomeño, Martín de

Oliveira, Ruíz-Pérez & Cervelló, 2013), which may favor the posterior sports adhesion, out of the school context (Hagger & Chatzisarantis, 2012) and thereby, avoid sedentary behaviors (McKenzie & Lounsbery, 2013; Oviedo, Sánchez, Castro, Calvo, Sevilla & Iglesias, 2013).

To further analyze the different factors influencing this motivation, it has been used one of the cognitive social theories which has helped more to understand the cognitive, behavioral and emotional patterns of the students in Physical Education lessons, the Achievement Goals Theory (Nicholls, 1984; 1989). This pattern is based on the expectations and values that the subjects give to the different goals and tasks to do, being the main purpose to show competence or ability at various contexts in which it participates, such as sport or the Physical Education class (Nicholls, 1989). At first, the ways in which one person could define the competence were identified through dichotomous constructs, namely, *mastery goals*, they are based on the domain of the task that it is performing focused on competence standards based on the task or intrapersonal and *performance goals*, consisting on judging the ability depending on the social comparison with others and focusing on interpersonal competence standards (Dweck, 1986; Nicholls, 1984).

Originally, the Achievement Goals Theory linked the competence with absolute and intrapersonal standards (task) and normative standards (performance). Afterwards, it was assumed that the competence could be also defined according to its valence, namely, in positive and negative terms, for distinguishing it between *approach* (people can have as goal demonstrating their competence) and *avoidance*, (avoiding incompetence). Based on this differentiation, the trichotomous model was postulated, where the performance goals were divided into goals approach and avoidance, while the mastery goal was related exclusively to the approach goal (Elliot & Church, 1997; Elliot & Harackiewicz, 1996). There are many studies that evidence the relationships between mastery goals (task orientation) with positive and adaptive patterns, while performance goals (ego orientation) are related with less adaptive patterns (Duda, 1992).

Elliot (1999) and Elliot & McGregor (2001) years later, developed the framework, and they proposed the 2x2 achievement goal model. On this focus, both the mastery goal construct and the performance goal construct, diverged in terms of approach and avoidance. Accordingly, apart from the definition of competence, they included the valence of competence, which could be estimated at negative or positive terms. The crossing of these two dimensions originated the four achievement goals that compose this framework: *mastery-approach* (focused on attaining the intrapersonal competence or based on the task), *mastery-avoidance* (focused on avoiding the intrapersonal incompetence or based on the task), *performance-approach* (focused on attaining interpersonal competence or normative), and *performance-avoidance* (focused on preventing interpersonal incompetence or normative). Some studies done by Elliot (1999) and Elliot & McGregor (2001), under the 2x2 achievement goals model, have shown that the mastery-approach goal is related to more positive effects, and among the avoidance goals, the mastery one seems to be more positive than the performance one.

Recently, the latest evolution of the 3x2 achievement goals model has been proposed (Elliot, Murayama & Pekrun, 2011). In this context, when crossing the three criteria that define competence (task, self and others) with the two ways in which competence can be valenced, six achievement goals are specified: *task-approach* (focused on attaining competence on the task), *task-avoidance* (focused on avoiding of incompetence based on the task), *self-approach* (focused on attaining competence based on self), *self-avoidance* (focused on avoiding incompetence based on self), *other-approach* (focused on attaining competence on the other), *other-avoidance* (focused on avoiding incompetence based on other). Elliot et al. (2011) have developed a questionnaire called 3x2 Achievement Goal Questionnaire (AGQ) to verify the validity of this latest model in the academic context. Recently, Méndez-Giménez, Fernández-Río & Cecchini (2014) have developed and validated the 3x2 Achievement Goals Questionnaire to the context of Physical Education.

Another of the most studied motivational variables in recent years is the perceived competence. According to Ruiz (1995), it is meant as the ability of individuals to use and adapt their motor resources effectively and efficiently in achieving objectives in a changing context. Therefore, being competent involves developing knowledge, procedures, attitudes and feelings that allow an autonomous practice. When the physical-sport practice is gratifying for the individual, they perceive themselves as skilful and show a positive attitude towards the activity. On the contrary, if the activity is beyond the possibilities of execution of individuals, a lack of trust takes place. Several studies have shown the influence of perceived competence in the persistence and intention of physical activity practice and the acquisition of healthy lifestyles (Franco, Pérez-Tejero, & Arrizabalaga, 2012; Weidong, Bo, Rukavina, & Haichun, 2011). Another point to note is the relationship between perceived competence and motivational patterns, appearing as a critical component in the Achievement Goals Theory (Duda & Hall, 2001; Nicholls, 1989).

Cury, Elliot, Da Fonseca & Moller (2006) consider that the perceived competence is best seen as a predictor of achievement goals. In this sense, it establishes that a high perceived competence generates approach goals, because if a person perceives oneself as competent, it is normal to try to demonstrate his competence and not to avoid his incompetence. On the same vein, Elliot & McGregor (2001) determinate that an high perceived competence would guide to the physical activity practitioners to succeed and it would facilitate the adoption of approach goals, while a low perceived competence would guide them to the possibility of failure and it would facilitate the adoption of avoidance goals. Equally, several investigations indicate that the mastery-approach goals were positively associated with the belief that the ability can be improved and the perception of competence and, negatively, with the state of anxiety and demotivation (Cecchini, González, Méndez-Giménez & Fernández-Río, 2011; Conroy, Kaye & Coatsworth, 2006). The performance-approach goals are positively related to the belief that the ability level is fixed, and with the perception of competition and, negatively, with anxiety states (Smith, Duda, Allen & Hall, 2002),

thereby causing frustration in the effort of an individual to meet their basic psychological needs.


Until now, no study has linked the 3x2 Achievement Goal Theory and perceived competence in Physical Education students of Secondary School and High School. Therefore, the aim of this research intends to investigate the relationship between the theoretical context of 3x2 Achievement Goals and perceived competence in the context of Physical Education.

## **Material and Methods**

### **Participants**

In this study, 205 students of Secondary School and High School (113 male and 92 female) aged between 12 and 18 ( $M = 14.02$ ;  $SD = 1.70$ ) were involved. All of them, belong to two Secondary schools in northern Spain.

### **Procedure**



At first, there was a contact with the headmasters and teachers from the different schools where the questionnaires were taken. The investigation aims were explained, and permission was asked for students to participate in the activity. Subsequently, the parents of all students who participated in the study were informed and their consent was requested. Thereafter, measuring instruments were given in the classroom individually, in the presence of the researcher. Students were informed, at all times, about the confidentiality of their answers and that these would not influence on their Physical Education notes. The time required to complete them was approximately 10-15 minutes.

### **Instruments**

*Achievement goals.* It was used the 3x2 Achievement Goals Questionnaire in Physical Education, validated by Méndez-Giménez, Fernández-Río & Cecchini (2014), in the

context of Physical Education. This questionnaire has 24 items, 4 for each of the goals: task-approach (e.g., "perform properly many exercises and tasks"), task-avoidance (e.g., "avoid doing homework wrong"), self-approach (e.g., "do homework better than I usually do"), self-avoidance (e.g., "avoid the worst skills compared to my usual level"), other-approach (e.g., "overtake the other students in performing the tasks and skills"), other-avoidance (e.g., "avoid doing homework worse than the others"). All the items were preceded of "In my Physical Education classes my goal is...". On the analysis of the data the following reliability indices were obtained (Cronbach Alphas): task-approach goals (0.85), task-avoidance goals (0.74), self-approach goals (0.81), self-avoidance (0.78), other-approach (0.89) and other-avoidance (0.81).

*Perceived competence.* It was used the factor "competence" of the Spanish version translated and adapted to Physical Education by Moreno, González-Cutre, Chillón & Parra, (2008) of the Basic Psychological Needs in Exercise Scale (Vlachopoulos & Michailidou, 2006). This factor consists of 4 items, (e.g., "I feel I've had a great progression with respect to the ultimate goal that I have proposed myself"). All items were preceded of the header "In Physical Education classes...". The items correspond to a Likert scale ranging from 1 (completely disagree) to 5 (completely agree). Reliability as measured by Cronbach alpha was 0.78.

## **Data analysis**

Analyses performed for this research were descriptive analysis (average and standard deviation), Cronbach alpha and bivariate correlations (Pearson) of all study variables: task-approach goals, task-avoidance goals, self-approach goals, self-avoidance goals, other-approach goals and other-avoidance goals and perceived competence. The values that have been considered in the analysis of correlations were as follows: very low (0.01-0.20), low (0.20-0.40), moderate (0.40-0.60), high (0.60-0.80) and very high (0.80-0.99), the same scale is used in negative values. Likewise, linear regression analysis by stepwise was done to examine whether 3x2 achievement goals were

predictors of perceived competence. The data analysis was performed using the Statistical Package for Windows "Statistical Package for Social Science" (SPSS) version 19.

## Results

### Descriptive statistics, internal consistencies and correlations

Table 1 shows the Cronbach alphas, means, standard deviations and correlations between variables used in this study. After making the corresponding analysis, the Cronbach alphas suggest acceptable levels of reliability in all variables, resulting in the following values: task-approach ( $\alpha = 0.85$ ); task-avoidance ( $\alpha = 0.71$ ); self-approach ( $\alpha = 0.85$ ); self-avoidance ( $\alpha = 0.74$ ); other-approach (0.89); other-avoidance (0.83) and perceived competence ( $\alpha = 0.75$ ).

Compared to the average, the highest values are found in the task-approach goals and self-approach, with values of 4.16 and 4.05, respectively. The lowest scores are reflected by other-approach and other-avoidance with 3.19 and 3.73, it is interesting that even these lower values are above the average value of the 5-point scale.

Regarding the standard deviation, we observe a great variety of views on the other-approach goals and other-avoidance, showing values of 1.15 and 1.13. While the task-approach goals and self-approach showed less divergent views, expressing values of 0.77 and 0.78, respectively.

The correlation analysis shows that all variables positively and significantly correlated with each other, except for task-avoidance goals and other-approach goals. The highest correlation takes place between the task-approach goals and self-approach goals (0.71). Regarding the correlation of perceived competence, the highest values are given with the task-approach goals (0.61), and the lowest values with the other-avoidance goals (0.28).



Table 1: Cronbach alphas, means, standard deviations and correlations between variables

	$\alpha$	M	SD	1	2	3	4	5	6
1.Task-approach	0.85	4.16	0.77	1					
2.Task- avoidance	0.71	3.87	0.91	0.43**	1				
3.Self-approach	0.85	4.05	0.78	0.71**	0.48**	1			
4.Self-avoidance	0.74	3.71	0.94	0.33**	0.68**	0.46**	1		
5.Other-approach	0.89	3.19	1.15	0.21**	0.09	0.20**	0.31**	1	
6.Other-avoidance	0.83	3.31	1.13	0.17*	0.44**	0.24**	0.57**	0.62**	1
7.Competence	0.75	3.73	0.80	0.61**	0.36**	0.54**	0.36**	0.33**	0.28**

" $\alpha$ " Cronbach Alpha; "M" means; "SD" standard deviations

\*  $p < 0.05$ . \*\*  $p < 0.01$

### Linear regression analysis by stepwise

To evaluate whether the achievement goals predict the perceived competence among adolescent students of Physical Education, linear regression analysis was performed by stepwise. More specifically, the step input method (2) was used, considering as independent variable the perceived competence. To include these variables, it was found that there is no collinearity between them, as the inflation factor of variance (FIV) for achievement goals variables varied between 1.89 and 2.67, well below the conventional cutting criterion 10 (Kutner, Nachtsheim & Neter, 2004).

In the first step, avoidance goals were introduced, and in the second one the approach goals were included. The results of the regression analysis are shown in Table 2. In the first step, avoidance goals were included and explained 16% of variance, being only the *task-avoidance* goals (0.20), which showed a significant regression coefficient with the *perceived competence*. In the second step, approach goals were included; the variance explained was 28.5%. In this step, the predictive character of avoidance goals disappears and the three *approach goals* became significant, in order of relevance, *task-*

*approach, other-approach and self-approach*, with values 0.43, 0.20, and 0.19, respectively.

Table 2. Hierarchical regression in two successive steps

Effects	<i>T</i>	<i>β</i>
<b>Avoidance goals</b>		
Steps 1 $\Delta R^2 = 0.160$ , $\Delta F (3, 201) = 12.73$ ; $p < .001$		
Task-avoidance	2.27	0.20*
Self-avoidance	1.74	0.17
Other-avoidance	1.20	0.09
Steps 2 $\Delta R^2 = 0.285$ , $\Delta F (13, 198) = 33.85$ ; $p < .001$		
Task-avoidance	0.48	0.04
Self-avoidance	0,77	0,06
Other-avoidance	0,09	0,01
Task-approach	5,50	0,43***
Self-approach	1,94	0,19*
Other-approach	2,57	0,20**

"*T*" standard coefficient; "*β*" contrast statistic.

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

## Discussion

The objective of this research consisted of examining the relationship between achievement goals and perceived competence in the recent context 3x2. The data of this study reveal adequate reliability of the six achievement goals and the perceived competence, finding all of them over the range of 0.70 (Nunnally, 1978). These numbers are similar to those shown in a study carried out by Méndez-Giménez et al. (2014) in the context of physical education with high school students.

Other data highlighted in this study on the theoretical context of 3x2 achievement goals, they reveal an average high in task-approach goals and self-approach goals. These findings match those of the study by Moller & Elliot (2006) on 2x2 achievement goals, in which it emphasizes that students show high values in mastery-approach goals and these are associated with positive consequences, especially in its intention to sport practice. It is interesting to remember that mastery-approach goals in the 2x2 model, they correspond to the task-approach goals and self-approach, in the current model of 3x2 achievement goals.

Equally, the self-avoidance goals, task-avoidance and other-avoidance obtained high values. Although a priori these goals could be considered maladaptive, a study done by Wang, Biddle & Elliot (2007) on the theoretical context of 2x2 achievement goals revealed that motivational profiles with high scores on all the achievement goals, and profiles with high scores on mastery goals demonstrated a strong positive character, essentially self-determined motivation, satisfaction of the need for competence and practice of physical activity.

To complete the study of average and different achievement goals, we can see how the students show lower values on goals focused in comparison with others, namely, other-approach and other-avoidance. This may be due, as indicated Elliot et al. (2011), to the complexity of these last goals, given that its application varies depending on comparisons with another subject that may be present or not, and requires a range of skills regarding the representation of concrete results normally received externally. Therefore, what is expected of these goals sometimes it is not as representative or ideal as the experience with targets based on the self or on the task.

Regarding the standard deviation, the task-approach goals and self-approach, experience unanimously in their responses, while on the opposite point are located the other-approach goals and other-avoidance. These details are consistent with the study of Mendez-Jimenez et al. (2014) made in the school context.

Regarding the analysis of correlations, this showed high ratios between the task-approach goals and self-approach (0.71). These details are similar to a study by Johnson & Kestler (2013) in traditional and non-traditional schools in Midwestern, United States. Equally, we found that the task-avoidance goals and self-avoidance correlated moderately high among them, in the same way, these data are concurrent with the previous study. This fact can be due to both goals trying to stay away from a negative possibility, both from the task and from oneself. Another point to emphasize and equal to the study conducted by Méndez-Giménez et al. (2014), is among the other-approach goals and self-avoidance, showing no significant correlation between them, this may be due to the objectives pursued by both goals differing, both in the meaning of the competition and its valence, therefore, they fully pursue competing objectives.

Regarding the correlations between achievement goals and perceived competence, these indicated that the three approach goals were related positively and significantly with the perceived competence, showing high values between the latter and the task-approach goal. In a similar experience made in the sport context, and using as a reference framework the 2x2 achievement goals, Nien & Duda (2008) found that the perceived competence positively predicted the approach goals (mastery and performance). Similar investigations were developed in the school context and more specifically in the context of Physical Education and it was observed that mastery goals scored positive correlations in terms of perceived competence (Méndez-Giménez, Fernández-Río & Cecchini, 2012). In the same vein, Méndez-Giménez, Fernandez-Rio, Cecchini & González, (2013) showed that the task-approach goals were a positive predictor of satisfaction perceived competence, while the self-approach goals and task-avoidance had no relationship with that variable. These latest data are not similar to those obtained in our study.

In the same way, we observe a number of moderately high correlations between other-approach and other-avoidance (0.62), this can be related to, as mentioned by Elliot et al. (2011), both goals pursue the use of an interpersonal same standard, externally

receiving information from other individuals who may be present or not. Likewise, the self-avoidance goals and task-avoidance (0.68) correlated moderately high, being these results consistent with a study in the context of Physical Education by Wang, Biddle & Elliot (2007) with reference to the theoretical context of 2x2 achievement goals, in it, they found strong relationships between performance goals and between the performance-avoidance goals and mastery-avoidance. However, in our study we have found high correlations between the mastery-approach goals and performance-avoidance, as well as previous authors said. Also the data found in this research regarding the low correlations between mastery-avoidance goals and mastery-approach are concurrent with the previous study.

## Conclusions

The results of this study have shown that when students take physical education or pursue approach goals with great force based on themselves, on tasks and on others, their perception of competition is higher. This could lead them to direct their efforts towards the realization of sport and its future adhesion to it, acquiring for it, healthy lifestyles. These results are important because the three types of targets have been identified as predictors. Consequently, the results go beyond the evidence obtained under the paradigm of 2x2 goals, and they support the need to fork mastery goals, along the lines suggested by the context of 3x2 achievement goals, therefore, we confirm the 3x2 model as a solid and reliable context for Physical Education model.

There should be noted that this study has some limitations, the first one lies in the small number of secondary schools with which we have collaborated in this research. The second limitation was to include in the analysis a single basic psychological need, the competence, therefore, it would be important for future research to expand the study to the three basic psychological needs (competence, autonomy and relationship) and observe the relationships that occur between these three variables and the recent context of 3x2 achievement goals. It would also be interesting to develop this

same study longitudinally figuring out how to evolve the relationship between achievement goals and basic psychological needs as students of Secondary Education progress in their schooling.

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