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2x2 achievement goals in physical education and leisure-time sports and physical activity. Comparative study of students in Spain, Costa Rica and Mexico

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Abstract: The aim of this study was to determine the relationship between levels of leisure-time sports and physical activity and the stages of change in high school students with goal orientations. Methods: The sample consisted of 2168 students randomly selected to participate in a longitudinal study in Costa Rica (423), Mexico (408) and Spain (1337), with 1052 being boys, 1037 girls and 79 who did not specify sex, aged between 11 and 16 years old (M = 12.49, SD = .81). We used a questionnaire to ask students about their leisure-time sports and physical activity, about stages of change and to measure achievement goals. Results: The results show that students are more active in Costa Rica, most of them being in the stage of active change. Conclusions: We found significant differences in achievement goals in all three countries, which shows that students in active stages have higher values than those in the inactive stage.

Keywords: physical education; goals orientations; stage of change.

1. Introduction

Physical Education students display a series of psychological characteristics throughout their school years (perception of motivational climates, motivation, etc.) which can strongly affect their academic and personal environment [1]. Therefore, Physical Education teachers should be aware of the most suitable conditions for their students' learning and how to attain them, as the positive effect of teachers with such information on their students would be highly significant.

A large number of studies have shown that certain characteristics in students are better than others when it comes to achieving positive effects in education. Méndez-Giménez et al. and Wang et al. [2,3], for instance, analyzed goal achievement profiles and found that the "high achievement goals" profile was the most positive feature pattern, with high self-determined motivation, competence perception and relationship with the others, fun, effort and physical education practice and low levels of boredom and demotivation. Something similar happened in the case of the "mastery achievement goals" group. Standage et al. [4], for their part, have shown evidence of an important link between the mastery goal orientation and self-determined motivation; subjects who involve themselves in activities and freely commit to them for pleasure, fun and joy being in this state [5,6]. In this same line, Standage et al. [4] found poor connection between performance oriented goals and self-determination. But what are goal orientations?

In order to answer this question it is necessary to be familiar with Achievement Goals Theory. This theory studies the different dispositional and environmental factors affecting achievement

motivation. According to this theoretical construct there are two types of dispositional goals orientations. One is task orientation, which manifests itself when the goal is related to learning and students assess their capacity level by a process of comparing to themselves. The other is ego orientation, in which the goal is characterized by competition and students assess their level by comparison with the other students [7,8]. Task oriented students see education as a goal in itself, perceive practice as an activity which reinforces the capacity to cooperate and increases their interest in learning whereas goal oriented students sees education as a means to obtain validation and social status [6,8]. Thus, task orientation is associated with more positive motivational, affective and behavioral patterns than ego orientation [6].

Based on this proposition, other researchers [9,10] saw a need to modify this model as the mastery (task) – performance (ego) distinction takes into account the way in competition is defined (in relation to an absolute and intrapersonal standard or in relation to a normative standard) but a further distinction is needed, namely an approach-avoidance one, which would collect the value attributed to competition in positive or negative terms [11].

Based on this idea, a series of researchers, among them Elliot [10] developed the 2x2 model. This model includes four possible goals divided into the two aforementioned perspectives: mastery-approach (absolute and intrapersonal definition of competition and positive valence), performance-approach (normative definition and negative valence) and performance-avoidance (normative definition and negative valence).

The fact that students can find themselves with one of the aforementioned goals can be also related to or affected by the potential stages of change (Marcus and Forsyth, 2003) [12] teenagers might go through during their school years. The stages of change represent a time dimension which allow us to understand *when* changes in attitudes, intentions and behavior take place (Marcus and Forsyth, 2003; Prochaska et al., 1992) [12,13]. The stages of change are called precontemplation, contemplation, determination, action and maintenance (Prochaska et al., 1992) [13]. These stages are important as each one of them involves students' adoption of a pattern of attitudes and behaviors which can affect their way of dealing with school, friends and even the practice of physical education.

The relevance of all of the above is that during adolescence students can have different goal orientations (in the knowledge that some of them are more suitable for learning) and place themselves in a stage of change which negatively affects physical education practice. Méndez-Giménez et al. [2], for example, show that girls are situated on a mastery goals profile (avoidance-approach) with high rates of physical activity whereas boys are situated in a moderately high performance goals profile [14] and low mastery goals with less physical activity. However, according to Granero-Gallegos et al. [15], boys tend to show higher levels of physical education practice than girls.

Therefore, it is of great importance in Physical Education teaching to be aware of our students' current stage of change and their goal orientation in order to plan teachers' educational process and promote the sports habits as required at the curricular level.

Furthermore, another out of school factor which can have an effect on our students is leisure-time physical and sports activity. One of the major objectives of the Physical Education subject is for students to acquire healthy and long-lasting sports and physical activity habits. This is a highly important aspect which has given rise to numerous studies analyzing the benefits of these leisure-time habits on students (Ardoy et al., 2010; Nuviala et al., 2011) [16,17]. But this research intends to go further as it attempts to analyze not only whether students have these habits but how these habits can be associated with certain stages of change and even more important, with certain goal orientations and the effects each of them can have on students.

In view of all this, the object of this study is to find out the relationship between levels of leisure-time sports and physical activity and the stages of change in high school students and goal orientations across three countries so as to assess if each tendency is general in all of them or otherwise.

2. Materials and Methods

2.1. Participants

2168 students in their first year of secondary education participated in this study; they were randomly selected to take part in a longitudinal study in Costa Rica (423), Mexico (408) and Spain (1337), 1052 being male students (50.4%), 1037 female students (49.6%) and 79 students who did not specify gender, from state schools (86.6%) and charter schools (13.4%). Age range was 11 to 16 years old (M=12.49; SD=.81), median age for boys being 12.53 (SD=.87) and 12.44 for girls (SD=.74). The field work was carried out between February and June, 2011.

2.2. Procedure

We asked schools for permission to carry out research in a letter explaining the aims of the study and how it would be carried out; a model of the instrument that would be used was attached. This instrument was self-administered and it was applied on a large scale; it was filled in anonymously during a school day, with prior agreement and training given by the evaluators. Subjects were debriefed on the object of the study, its voluntary nature and on the absolute confidentiality for the answers and data management; it was explained there were no correct or incorrect answers and they were asked to reply with maximum sincerity and honesty. Only students whose parents and tutors had given informed consent participated in the study.

2.3. Instruments

We *Leisure-time sport and physical activity*. This was measured following the same procedure as Piéron et al. and Ruiz-Juan et al. [18,19]. One question was used in order to determine whether respondents did or did not do leisure-time sport and physical activities defined in the following way: *"We understand sports and physical activities are those which are carried out with an intention of partaking in physical exercise and which are practiced with some regularity. They include regulated forms such as football, basketball, athletics, tennis, swimming…, others more open in nature such as mountaineering, cycle-touring, climbing, scuba diving… and those each person practices according to their own tastes, such as running, swimming, biking…"*. Students were asked to report whether a) they had partaken in sports-physical activity in the 2010-2011 school year, b) they had not partaken in sports-physical activity in the 2010-2011 school year but they had done so in previous years or c) they had never done sports-physical activity. The respondents who selected the latter two options were classified as "sedentary". Those who stated they partook in sports-physical activity answered five additional questions which allowed us to calculate the rate or quantity pattern of habitual sports and physical activity (Finnish index of sports and physical activity) and refer to frequency, duration, intensity, participation in organized sports and sports competitions [20]. The answers were recoded in three categories so that they all had similar weight and we calculated the index or pattern. The resulting value oscillated between 5 and 15. The lowest results are typical of the less active people while the highest scores correspond to the most active subjects. In line with previous research with adolescents using the same measurement [18,19] and in order to better represent physical activity patterns, the scoring was used to classify participants into vigourous, moderate, mild and insufficient activity categories. For analytical purposes we created a dichotmous variable by means of grouping participants classified as vigorously active and moderately active (high level of sports-physical activity) at one end and those mildly and insufficiently active (low level of sports-physical activity) at the other end. Cronbach's alpha revealed high reliability for this set of variables (α=.88 Costa Rica, α=.83 México, α=.87 Spain) and was similar to that obtained in the above cited studies.

Stages of change [13,21]. It was defined in the following way: *"physical activity or exercise includes activities such as brisk walks, running, cycling, swimming or any other activity which involves at least the same intensity as these activities"*. Students were asked to choose YES or NO regarding the following statements: (1) I am physically active at the moment. (2) I have an intention to be more physically active within the next 6 months. Those who selected YES in question (1) did not answer question (2) and moved on to questions (3) and (4). Regular activity was previously defined in the following way: *"For activity to be regarded as regular it has to add up to a total of 30 minutes or more at least 5 days a week. For example, you could take a 30 minute walk or take 3 10-minute walks a day to reach a daily total of 30 minutes"*. Students were asked to choose YES or NO for the following statements (3) I partake in

regular physical activity at the moment. (4) I have been partaking in regular physical activity over the last 6 months. In line with previous studies [22,23,24] subjects placed themselves in one of these five stages of change: precontemplation, contemplation, determination, action and maintenance (Table 1). For analytical purposes we created a dichotomous variable by grouping the students classified under the active stages (action and maintenance) at one end, and under the inactive stages (precontemplation, contemplation and determination) at the other end.

Table 1.

Categorization of subjects in stages of change.

(1)	(2)	(3)	(4)	Stage
No	No	-----	-----	Precontemplation
No	Sí	-----	-----	Contemplation
Sí	-----	No	-----	Determination
Sí	-----	Sí	No	Action
Sí	-----	Sí	Sí	Maintenance

2x2 Achievement Goals adapted to Physical Education by Moreno et al. [25], Spanish version by Wang et al. [3], created to measure achievement goal orientations in Physical Education students. The original instrument includes 12 items and four subscales (three items per factor): mastery-approach, mastery-avoidance, performance-approach and performance-avoidance. The header read: "In my Physical Education class…".The answers were collected on a Likert scale from 1 (totally disagree) to 7 (totally agree).

2.4. Psychometric properties of 2x2 achievement goals.

Psychometric properties were estimated following the analysis procedure set up by Carretero-Dios and Pérez [26]. None of the items were eliminated post-analysis as they all satisfied the established requirements, (≥.30 value in item-total corrected correlation coefficient, >1standard deviation; all the answer options were used). The homogeneity analysis showed no item overlapping across theoretical dimensions on both questionnaires. The asymmetry and kurtosis indices were close to zero and <2.0 as recommended by Bollen and Long [27], which indicates similarity to the univariate standard curve. The factor validity of the four instruments was analyzed with CFA. Bootstrapping was used as well as the maximum likelihood procedure, an estimation of structural equation models which assumes normal univariate distribution and a continuous scale given that the bulk of the data lack multivariate standardization, which violates one of the basic rules of CFA.

The model's fit to the data was assessed by means of combining absolute and relative fit indices. The four scales show correct values which allow for the establishing an acceptable fit to the original model [28] as seen in the results obtained (Table 2). The standardized relation coefficients of the latent variable with each of the items ranged between .75 and .93; standardized factor loads were >60 in all cases and t-value was always >1.96, which guarantees convergent validity of all the instruments used in this study [29]. Table 4 shows Cronbach's alpha coefficients. All the subscales showed satisfactory internal consistency (between α=.71 and α=.91).

Table 2.

Fit indices for the 2x2 Achievement Goals Model.

	χ^2/gl	*TLI*	*IFI*	*CFI*	*RMSEA*	*SRMR*
Costa Rica (*n*=360)	2.88	.97	.98	.98	.06	.02
México (*n*=389)	4.22	.92	.94	.94	.08	.04
Spain (*n*=1062)	4.07	.96	.97	.97	.07	.03
Desirable	*< 5*	*> .9*	*> .9*	*> .9*	*< .08*	*< .05*

2.5. Data analysis.

Item and homogeneity analyses, subscale correlations (Pearson coefficient), internal consistency (Cronbach's alpha), Chi Square test (x^2), Student's *t*, ANOVA and MANOVA were carried out with SPSS 17.0. The factor structure was assessed with AMOS 21.0 confirmatory factor analysis (CFA).

3. Results

3.1. Descriptive statistics and correlation analysis

2168 students i The results of behaviors vis-à-vis leisure-time sports and physical activity (Table 3) show clear significant differences (p<.001) across all three countries. Thus, the highest percentages of active students are in Costa Rica (88.5%), whereas only 34.8% of students are active in Mexico, which causes this country to have the highest dropout rate (52.0%) and no practice ever (13.2%) percentages. Dropout rates are a problem also in Spain, (22.5%).

The sports-physical activity pattern reveals a quite worrying picture as only 12.0% (10.7%+1.3%) of Mexican students show a high level of sports-physical activity vs. 32.7% (29.3%+3.4%) in Spanish students and 23.7% (20.7%+3.0%) in Costa Ricans. Thus, what predominates is a low level of sports-physical activity across all three countries (Table 3), especially in Costa Rica where 64.6% (44.2%+20.4%) of students have a low level of sports-physical activity.

In terms of stages of change, differences are also statistically significant (p<.001) across the three countries. 71.9% (59.6%+12.3%) of Costa Rican students are in the active stages of change vs. only 32.9% (21.9%+11.0%) of Mexicans and 60.8% (37.0%+23.85%) of Spaniards. Therefore, slightly more than two-thirds of Mexican students are in inactive stages of change (Table 3).

Table 3.

Chi square test (x^2)of behaviors, sports-physical activity pattern and stages of change by country.

	n	Costa Rica	México	España	Total	x^2	*p*
Behavior in relation to leisure-time sports and physical activity							
Never	102	1.1	13.2	4.1	5.4		
Abandoned	495	10.4	52.0	22.5	26.4	291.20	.000
Active	1281	88.5	34.8	73.3	68.2		
Leisure-time sports and physical activity pattern							
Sedentary	597	11.6	65.2	26.7	31.9		
Insufficient	171	20.4	4.3	7.2	9.1		
Light	605	44.2	18.5	33.4	32.3	347.06	.000
Mild	444	20.7	10.7	29.3	23.7		
Vigorous	54	3.0	1.3	3.4	2.9		
Stages of change							
Precontemplation	68	1.5	3.1	4.7	3.8		
Contemplation	510	10.2	62.0	21.7	28.4		
Determination	199	16.4	2.0	12.8	11.1	358.97	.000
Action	340	12.3	11.0	23.8	18.9		
Maintenance	679	59.6	21.9	37.0	37.8		

Table 4 shows statistically significant differences (p<.001) across the medians of each of the 2x2 achievement goals variables analyzed by country. The highest scores are in mastery-approach (M=5.88, DT=1.21, Mexico) and the lowest ones are in performance-approach (M=4.14, DT=1.73, Spain) in all three countries. Likewise, Mexican students obtain the highest scores in all four sub-scales, followed by Costa Ricans and Spaniards. The results of the Bonferroni homogenous subsets show that even though median differences across variables are small three different subsets can be defined for each of the four variables corresponding to each country.

Table 4.

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ANOVA of the 2x2 goal orientation dimensions by country.

	Costa Rica (*n*=360)			México (*n*=389)			Spain (*n*=1062)			*F*	*Sig.*
	α	*M*	*DT*	*α*	*M*	*DT*	*α*	*M*	*DT*		
Performance-approach	.91	4.66	1.80	.88	5.11	1.66	.88	4.14	1.73	47.99	.000
Mastery-approach	.76	5.31	1.50	.80	5.88	1.21	.79	5.43	1.39	19.46	.000
Performance-avoidance	.81	4.91	1.58	.72	5.31	1.37	.71	4.59	1.53	33.76	.000
Mastery-avoidance	.84	4.92	1.52	.76	5.17	1.39	.81	4.68	1.43	17.33	.000

In terms of factor correlation in 2x2 goals in Physical Education, all factors correlated in a positive and significant way in all three countries (Table 5)

Table 5.

Correlations between 2x2 goal orientation factors. Differences across countries

	Costa Rica (*n*=360)				México (*n*=389)				Spain (*n*=1062)			
	1	2	3	4	1	2	3	4	1	2	3	4
1.Performance-approach	1	.54**	.67**	.58**	1	.46**	.54**	.46**	1	.38**	.45**	.46**
2.Mastery-approach		1	.58**	.60**		1	.50**	.56**		1	.44**	.61**
3.Performance-avoidance			1	.57**			1	.59**			1	.53**
4.Mastery-avoidance				1				1				1

*(p<.05), **(p<.01)

3.1. Main relationships and gender interaction, behavior, sports-physical activity pattern and leisure-time stages of change on 2x2 goals in Physical Education.

We carried out a multivariate analysis (Tables 6 and 7) in which gender, behavior, sports-physical activity pattern and leisure-time stages of change were independent variables and mastery-approach, mastery-avoidance, performance-approach and performance-avoidance were dependent variables. The MANOVA revealed significant main relationships among dependent and independent variables in all three countries. There were no second-order interaction effects among independent variables (p>.05) in any of the countries (Table 6).

Table 6

Univariate and multivariate analyses of 2x2 goal orientation factors according to gender, behaviors, sports-physical activity pattern and stages of change

	Costa Rica				México				Spain			
	Gender	*Behavior*	*SFA pattern*	*Stages of change*	*Gender*	*Behavior*	*SFA pattern*	*Stages of change*	*Gender*	*Behavior*	*SFA pattern*	*Stages of change*
	F	*F*	*F*	*F*	*F*	*F*	*F*	*F*	*F*	*F*	*F*	*F*
Performance-approach	27.94***	6.89**	4.92*	3.29*	23.86***	5.83*	3.12*	3.56*	95.73***	3.48*	4.00*	4.93*
Mastery-approach	11.26***	3.13*	3.65*	.01	8.95**	2.86*	.06	.09*	25.44***	5.75*	2.20*	3.45*

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Performance-avoidance	10.96***	5.70*	3.65*	3.01*	8.44**	5.62*	3.68*	3.10*	14.33***	4.11*	3.13*	3.83*
Mastery-avoidance	4.28*	4.59*	3.32*	1.33	3.47*	2.98*	.50	.04	6.96**	4.02*	1.41	.83
Multivariate Analysis												
Wilks' Lambda	.89	.96	.95	.95	.93	.94	.96	.96	.88	.95	.95	.97
Multivariate F	7.57***	2.58*	2.83*	2.39*	6.40***	5.47**	4.42*	4.11*	28.08***	2.78*	2.74*	3.14*

*(p<.05), **(p<.01), ***(p<.001)

In terms of gender, there are statistically significant differences in all three countries and in all the variables. Boys always show higher median values than girls (Table 7).

There are statistically significant differences in behaviors in relation to leisure-time sports and physical activity in all three countries and in all the variables. Active subjects always show higher values than sedentary subjects (Table 7).

An analysis of the leisure-time sports and physical activity pattern reveals statistically significant differences in all three countries in performance-approach and performance-avoidance. Those who have a high level of sports-physical activity always show higher median values than those with low levels of sports-physical activity (Table 7). In the case of mastery approach, there are significant differences in Costa Rica (p=.001) and Spain (p=.047) and also higher levels of sports-physical activity have higher median levels than low levels of these activities (Table 7). In Costa Rica this is seen only in mastery-avoidance (p=.012).

As to mastery-avoidance, there were no statistically significant differences in any of the three countries, and the same happened with mastery-approach in Costa Rica. In terms of the rest of the variables (performance-approach, mastery-approach and performance-avoidance) the significant differences found in the three countries show that students in active stages show higher median values than those in inactive stages (Table 7).

Table 7.

Medians (M), standard deviation (SD), significance (F, p value) and size of error (d) of 2 X 2 Achievement Goals, differences by gender, sports-physical activity behaviors, sports-physical activity patterns and stages of change.

		Performance-approach					*Mastery-approach*					*Performance-avoidance*					*Mastery-avoidance*				
		M	*DT*	*t*	*p*	*d*	*M*	*DT*	*t*	*p*	*d*	*M*	*DT*	*t*	*p*	*d*	*M*	*DT*	*t*	*p*	*d*
	Gender																				
Costa Rica	*Chicos (n=181)*	5.14	1.64	5.31	.000	.56	5.58	1.35	3.50	.001	.36	5.23	1.44	3.88	.000	.41	5.10	1.37	2.30	.022	.24
	Chicas (n=180)	4.16	1.83				5.04	1.59				4.59	1.65				4.73	1.65			
México	*Chicos (n=204)*	5.50	1.43	4.92	.000	.49	6.06	1.08	3.06	.002	.31	5.50	1.28	2.88	.004	.29	5.30	1.35	1.89	.049	.19
	Chicas (n=185)	4.69	1.79				5.68	1.30				5.10	1.43				5.03	1.42			
Spain	*Chicos (n=528)*	4.68	1.68	10.42	.000	.64	5.64	1.37	4.82	.000	.29	4.80	1.52	4.54	.000	.27	4.79	1.46	2.41	.016	.14

	Chicas (n=541)	3.62	1.62				5.24	1.36				4.38	1.51				4.58	1.39			
	Leisure-time sports and physical activity behaviors																				
Costa Rica	*Sedentary (n=36)*	3.61	1.90	-3.70	.000	-.63	5.07	1.68	-1.32	.048	-.19	4.33	1.83	-2.34	.020	-.38	4.25	1.76	-2.63	.009	-.43
	Active (n=280)	4.78	1.78				5.37	1.47				4.98	1.54				4.95	1.48			
México	*Sedentary (n=252)*	4.97	1.73	-2.31	.021	-.25	5.80	1.24	-1.74	.043	-.19	5.15	1.38	-2.67	.008	-.29	5.08	1.40	-1.64	.042	-.17
	Active (n=124)	5.39	1.50				6.03	1.14				5.55	1.32				5.33	1.38			
Spain	*Sedentary (n=245)*	3.77	1.66	-3.55	.000	-.27	5.15	1.42	-3.64	.000	-.27	4.36	1.46	-2.59	.010	-.19	4.50	1.37	-2.50	.013	-.19
	Active (n=662)	4.23	1.74				5.53	1.36				4.66	1.55				4.77	1.43			
	Leisure-time sports and physical activity																				
Costa Rica	*Low level of physical activity (n=234)*	4.39	1.83	-4.56	.000	-.61	5.18	1.52	-3.33	.001	-.45	4.74	1.64	-3.47	.001	-.48	4.75	1.55	-2.51	.012	-.34
	High level of physical activity (n= 78)																				
México	*Low level of physical activity (n= 335)*	5.46	1.62	-2.60	.009	-.48	5.83	1.35	-.98	.323	-.17	5.46	1.32	-3.29	.001	-.59	5.26	1.40	-1.78	.080	-.28
	High level of physical activity (n=41)	5.74	1.16				6.05	1.00				5.95	1.08				5.50	1.25			
Spain	*Low level of physical activity (n=597)*	3.97	1.70	-3.16	.002	-.22	5.37	1.38	-1.81	.047	-.12	4.49	1.48	-2.28	.023	-.16	4.68	1.37	-.50	.617	-.03

	High level of physical activity (n=307)	4.36	1.76				5.54	1.39				4.74	1.62				4.73	1.50			
	Stages of change																				
Costa Rica	*Inactive Stages*	4.33	2.09	-1.88	.049	-.24	5.25	1.67	-.69	.489	-.09	4.68	1.75	-1.56	.048	-.20	4.75	1.70	-.68	.491	-.08
	Active Stages	4.80	1.72				5.40	1.46				5.02	1.55				4.89	1.51			
México	*Inactive Stages*	4.99	1.73	-1.93	.043	-.22	5.80	1.23	-1.74	.041	-.20	5.16	1.37	-2.50	.013	-.28	5.08	1.40	-1.64	.102	-.18
	Active Stages	5.35	1.51				6.04	1.15				5.54	1.34				5.34	1.38			
Spain	*Inactive Stages*	3.78	1.66	-4.17	.000	-.29	5.24	1.40	-3.14	.002	-.21	4.47	1.46	-1.52	.049	-.10	4.62	1.41	-1.09	.272	-.07
	Active Stages	4.28	1.75				5.54	1.38				4.63	1.57				4.73	1.42			

4. Discussion

This study sought to discover the relationship between levels of leisure-time physical activity and stages of change and goal orientations in three different countries. A further aim was to see if the results were common to the three countries studied according to the sample analyzed.

Although not many studies have been carried out with high school studies using the 2x2 achievement goal scale so far [14,30], the existing research reveals the importance of these goals [31,32,33,34,35]. Therefore, it is important to find out students' characteristics according to the goal orientations in which they are situated and more important still to see if there is a general common tendency in different countries.

In the case of physical activity, it is already known from authors such as Ramírez et al. [36] that it improves students' health, cognition, socialization, academic performance and self-esteem and that it reduces school stress, etc. Furthermore, this study points out that basic cognitive processes (attention, inhibitory control and working memory, information processing speed) in kids who systematically partake in physical activity are better than in sedentary children. This indicates that devoting substantial time to physical activity can result in benefits in students' academic performance. This is even more interesting if this habit is related to students' social goals.

The descriptive analysis reveals that the most active students are in Costa Rica and that there is a high dropout rate in Mexico and Spain. In spite of this, the National Survey on Cardiovascular Risk Factor in Costa Rica reported that 50.1% of Costa Ricans show high levels of sedentary lifestyle *Encuesta Nacional sobre Factores de Riesgo Cardiovascular*, CCSS [37]. Along the same lines, The Global School-Based Student Health Survey (GSHS) [38] revealed that only 27.4% of the population between 13 and 15 years of age is physically active and complies with the recommendation of doing at least 60 minutes of physical activity a day. Besides, less than fifty per cent of this adolescent population (43%) walks or cycles to school and 44% spends 3 or more hours sitting down outside school hours and apart from doing homework, which means that their recreational activities are most likely sedentary in nature (GSHS, WHO). Regarding México, García-Pacheco and Hernández-Pozo [39], state that Mexican students have low levels of physical activity and that it decreases with age, but the most alarming issue is the high dropout rate [40]. Moreover, recent figures [41] show that Mexico has

the second highest rate of obesity in the world; 26% of children and 31% of adolescents suffer from this condition. This is clearly in line with the results in this study in relation to physical activity level, where Mexico showed the lowest rates (12%). But these low rates are seen not only in Mexico but in the three countries studied, as shown by a series of papers [41] and by the present study.

In relation to the stages of change, students from Costa Rica and Spain are mostly within inactive stages of change whereas in Mexico two-thirds of the population is within inactive stages of change. Furthermore, la *Encuesta Nacional de Salud y Nutrición* [National Survey on Health and Nutrition] [42], concluded that Mexican adolescents between 10 and 19 years of age are 35.2% active, 24.4% are moderately active and 40.4% are inactive, while 70% of school-aged children do no physical activity, and according to our study have no intention to change. This data thus strengthens the results found in this research and justifies the high inactivity and dropout rates.

The highest median scores here were found in the mastery-approach subscale and the lowest in the performance-approach dimension. These results are similar in adolescents from the three countries studied so it is safe to state that this is a general trend and that it is in line with

Cecchini et al., Cervelló et al., Méndez-Giménez et al. and Ruiz and Casado [2,43,44,45,46]. Furthermore, it is worth noting that the highest values in mastery-approach correspond to Mexicans, whereas Spaniards had the lowest rates in mastery-performance. These results can probably be accounted for by cultural differences.

In terms of gender, there are clear significant differences across the three countries, where boys always show higher median values than girls. However, not all the studies are in line with these results. Cecchini et al. [43], for instance, found that girls scored higher in task avoidance goals perhaps due to their perception of competition. Méndez-Giménez et al. [2], for their part, found that girls scored higher in mastery and higher rates of physical activity than boys. However, the bulk of studies agree that boys show higher rates of physical activity [15]. Therefore, data contradicting this should be taken with caution and checked out in future research.

Another shared trend in the countries analyzed are the significant differences both in performance approach and avoidance with the level of physical activity pattern, in which the highest values are seen in students with a high level of physical activity. This is a shared and understandable situation as these students are likely to be looking to obtain results and compete (typical performance pattern), hence their high level of physical activity.

In the case of mastery-approach, it is related to more positive consequences [46], such as motivation, intention to practice sports, and effort, autonomy and competition Méndez-Giménez et al. [2]. If we observe the results obtained in this research, this goal present significant differences with Costa Rica and Spain and thus it can be regarded as a general tendency in all three countries. However, the fact that it is not related to Mexico can explain the high dropout and no practice ever rates in view of the positive consequences of this goal. Thus, authors such as Wang et al., [3] and Méndez-Giménez et al. [2] showed that students with high achievement goals (high mastery-approach values) showed high self-determined motivation, relationship with the others, fun, effort and physical activity practice and low levels of boredom and demotivation.

Also worth noting as a shared tendency is the relationship between mastery-avoidance and stages of change; no statistically significant differences were found in any of the three countries. In relation to Physical Education, when it comes to promoting positive behaviors in class, studies show that mastery-avoidance goals seem to be more suitable than performance-avoidance but less suitable than mastery-approach [10]. However, the general trend in the three countries shows that there is no relationship with students' stages of change.

Finally, a common line was revealed across all three countries: the active stage of change variable has a significant relationship with performance-approach, mastery-approach and performance-avoidance with median values higher to those of inactive stages. That is, action stages (in which students have already made specific lifestyle changes over the past six months) and maintenance stages (when students make efforts to prevent relapses and has been making changes for 6 months), has a relationship with performance and mastery-approach. Furthermore, this relationship is observed both with performance-approach and mastery-approach; in this respect, Wang et al. [3]

noted that profiles combining high achievement goals and high mastery goals can present self-determined motivation in students and high competition perception, good relationship with the others, fun, effort, physical activity practice, low level of boredom and low demotivation, which would explain the relationship with these active stages. If we go back in time, Hardy et al. [47] already revealed that subjects with high task and ego orientation showed a pattern typical of elite athletes, that is, active people.

In the case of avoidance, as seen in Elliot [48] in relation to the academic field, these goals tend to be associated with negative behaviors in students. However, this is not necessarily the case and Wang et al. [3] is a clear example of this as this study shows that when avoidance goals are combined with approach goals they can generate an adaptative motivational pattern. Furthermore, Méndez-Giménez et al. [2] also obtained a high goals profile which was the most adaptative profile. If we observe the results of this research, students are likely to be in the same situation as the cited work and the combination of avoidance and approach goals is probably the most suitable in terms of physical activity and active stages of change.

As to stages of change, adolescent students are in the action and maintenance stages, with 88% in Hausenblas et al. [49], 58.7% in De Bourdeaudhuij [50], and 69.8% in Montil et al. [51]. That is, the majority of students are in active stages, which is also related to the fact the bulk of Physical Education students are in the mastery-approach stage, a goal mainly related to motivation for physical activity.

5. Conclusions

Finally, it is worth highlighting that adolescence is a key period for students to acquire and consolidate physical activity habits or otherwise to abandon them [52]. Further to this, teachers are regarded as figures involved in the guidance and promotion of these positive habits [53], through the creation of a class environment [54] and of a climate which motivates students to partake in sports and physical activity in and out of school [55]. This research clearly shows the relationship between people who partake or not in leisure-time physical activity, the stage of change in which they are situated and its potential relationship with achievement goals, taking the benefits that certain goals have on students as a reference point. Therefore, the data in this study is highly relevant for students, teachers, trainers and even sports' institutions.

6. Patents

This section is not mandatory, but may be added if there are patents resulting from the work reported in this manuscript.

Supplementary Materials: The following are available online at www.mdpi.com/xxx/s1, Figure S1: title, Table S1: title, Video S1: title.

Author Contributions:

Francisco Ruiz Juan and Antonio Baena Extremera conceived the hypothesis of this study. Raúl Baños, María Elena García Montes and Maríadel Mar Ortiz Camacho participated in data collection. Francisco Ruiz Juan and Antonio Baena Extremera analysed the data. All authors contributed to data interpretation of statistical analysis. Raúl Baños, Antonio Baena Extremera and Francisco Ruiz Juan wrote the paper with significant input from Antonio Baena Extremera. All authors read and approved the final manuscript.

Conflicts of Interest:

The authors declare no conflict of interest.

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