

## Interpersonal Style of Coaching, Motivational Profiles and the Intention to be Physically Active in Young Athletes

Alfonso Valero-Valenzuela, David Manzano-Sánchez  
Department of Physical Activity and Sport, Faculty of Sports Science,  
University of Murcia, Spain

Juan Antonio Moreno-Murcia  
Department of Health Psychology, Faculty of  
Sociosanitary Sciences, Miguel Hernández  
University, Elche, Spain

Diego Andrés Heredia León  
Department of Educational Sciences, Faculty of  
Teacher Training and Education, Universidad  
Católica de Cuenca, Ecuador

The aim of this study was to assess the relationships among the motivational profile, the coach's interpersonal style and the intention to be physically active in young athletes. A sample of 254 athletes (mean age of 12.81 years), who used to participate in official competitions, was used. The measurements taken were of the young athletes' perception of the interpersonal style of the coach, satisfaction of basic psychological needs, motivation towards sports practice and intention to be physically active. Bivariate correlation, cluster and multivariate analyses were carried out. The cluster analysis revealed two profiles: one with high self-determined motivation and greater values of autonomy support, competence, relatedness and intention to be physically active, and another less self-determined cluster that showed low levels of competence, relatedness and intention to be physically active. It is suggested that adding some strategies based on autonomy support to training with athletes may ensure adherence to sports practice.

*Key words:* self-determination, autonomy support, motivation, athletics

### Introduction

Among the aspects that most influence the adherence to sports is the teaching methodology used by teachers and coaches (Martín-Albo, Nuñez, & Navarro, 2003). Unfortunately, there are still many cases where methodology is applied with an excessively rigid lesson struc-

ture and motivation is encouraged that is too focused on external aspects (Valero, 2004). This creates athletes with low motivation, which can interfere with the adherence to sports practice and the intention to be physically active (Almagro & Paramio-Pérez, 2017; Almagro, Sáenz, & Moreno, 2010; Liao, Chou, Huh, Levenhal, & Dunton, 2017; Ulrich-French & Smith, 2009). This is the reason why it is necessary to study the factors which can influence such motivation in sports.

In this regard, the "Self-Determination Theory" (SDT) (Deci & Ryan, 1985, 2000) appears as a macro-theory of human motivation related to personality development and functioning in social contexts. It focuses on the degree to which human behavior is self-determined

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Correspondence concerning this article should be addressed to Dr. David Manzano-Sánchez, Department of Physical Activity and Sport, Faculty of Sports Science, University of Murcia, Calle Argentina, 19, 30720 San Javier, Murcia, Spain. E-mail: David.manzano@um.es

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or volitional. The SDT not only concerns the specific nature of positive development trends, but also examines the social environments that support these trends.

In addition, the origin of motivation and its consequences at a cognitive, behavioral and affective level on the individual are analyzed (Vallerand, 1997). Within the sport context, one of the social factors that acquire a fundamental role in athletes' motivation is the interpersonal style that the coach uses when giving instructions (Haerens et al., 2017). This may range from frequent extrinsic incentives (controller style) to a prominent role of the athlete (autonomy support), participating in decision making and acquiring greater responsibility (Reeve et al., 2014). As indicated by Vallerand's (1997) hierarchical model of intrinsic and extrinsic motivation, the impact of social factors (interpersonal style) is mediated by basic psychological needs, these factors being key for the autonomy, competence and relatedness satisfaction needs, which lead to greater motivation and, in turn, greater adherence to physical practice. Therefore, autonomy support from the authority role is a determining factor that correlates positively with the satisfaction of basic psychological needs and with more autonomous motivation (Frielink, Schuengel, & Embregts, 2018), as well as with some consequences such as athletes' well-being (Balaguer, Castillo, & Duda, 2008), physical activity practice (Almagro et al., 2010; Almagro, Sáenz, & Moreno, 2012; Gillet, Vallerand, Amoura, & Baldés, 2010; Naisseh, Martinent, Ferrand, & Hautier, 2015) and adherence to sport practice (Haerens, Hirk, Cardon, De Bourdeaudhuij, & Vansteenkiste, 2010), among others.

Within the context of athletics, it has been found that greater intrinsic motivation corresponds to greater satisfaction with athletics practice and less boredom (Manzano & Valero, 2014), which may lead to an increase of the intention to be physically active in the future,

although so far no studies have been found that confirm this hypothesis. In contrast to a traditional methodology characterized by a controlling style, there are alternative approaches, such as the Ludotechnic Model (Valero & Conde, 2003) or the Competitive Games proposed by Patón, Ferreiro, and Nemiña (2018). They put into practice an interpersonal style based on autonomy support that avoids repetition and monotony (which lead to loss of motivation), achieving an improvement in intrinsic motivation, competence and relatedness needs (Patón et al., 2018), as well as satisfaction with athletic practice and technical execution improvement (Morales, Valero, Manzano, & Jiménez, 2016).

Regarding the participants' motivational profiles and their future involvement in physical activity practice, authors such as Haerens et al. (2010) showed a relationship between motivation and intention to be physically active, obtaining higher values of intention to practice sports in the most self-determined profiles. Similarly, Friederichs, Bolman, Oenema, and Lechner (2015) obtained that a more self-determined profile was related to a more active lifestyle. However, none of these studies mentioned are really based on a sample of athletes. On the other hand, Haerens et al. (2017) found relationships between autonomy support, intrinsic motivation and satisfaction of basic psychological needs in a group of elite athletes. Despite this, the study does not include a variable that has at least one consequence derived from the complete sequence of Vallerand's (1997, 2007) hierarchical model, such as the intention to practice sports.

Taking into consideration all of the above, the main objective of our study was to determine the athletes' profiles according to the level of self-determined motivation and to analyze the differences in these profiles with respect to the interpersonal style, the basic psychological needs and the intention to be physically

active. We expect the study to confirm that there are relationships between the different variables included in the study and also different motivational profiles: one group with higher level of self-determined motivation, which will correspond to greater autonomy support, basic psychological needs satisfaction and intention to be physically active, compared to another group with lower level of self-determined motivation, which corresponds to low level of basic psychological needs satisfaction and intention to be physically active.

## Method

### Participants

The sample of this study initially comprised of 313 athletes who belonged to 15 clubs from the Spanish Athletics Federation. They had similar low and middle-level socio-demographic profiles, and they were selected based on accessibility and convenience. Inclusion criteria for participation in the study were: a) regular attendance in the Athletics school ( $\geq 70\%$ ) and b) completion of all the questionnaires.

After discarding the questionnaires that had not been carried out in their entirety, applying the statistical procedures for the detection of inconsistencies, as well as homogenizing the age of the participants, the final sample was composed of 254 athletes (97 males and 157 females) who participated in cross country official competition (from 2 to 4 kilometers), with ages ranging from 10 to 16 years old ( $M = 12.81$ ,  $SD = 1.89$ ) and mean training frequency of 3–4 times per week.

### Material and Instruments

*Autonomy Support.* The Scale of Autonomy Support by Moreno, Huéscar, Andrés, and Sánchez (in press) was used. The questionnaire consists of eleven items that the participants

have to answer about the coach's style in the sessions (e.g., "With his/her explanations, he/she helps us understand why the activities we do are useful"). The previous item used was: "In my athletic training, my coach ...". It consists of a 5-point Likert-type scale, from 1 (Surely not) to 5 (Surely), with internal consistency values of  $\alpha = .65$ ,  $\Omega = .77$ .

*Basic Psychological Needs.* The Spanish version (Moreno, González-Cutre, Chillón, & Parra, 2008) of the Basic Psychological Needs in Exercise Scale (BPNES) was used. Participants answered on a Likert-type scale from 1 (Totally disagree) to 5 (Totally agree) including a total of 12 items. The questionnaire started with the following item: "In my physical education classes...". The internal consistency was  $\alpha = .85$ ,  $\Omega = .89$  for competence,  $\alpha = .63$ ,  $\Omega = .76$  for autonomy and  $\alpha = .69$ ,  $\Omega = .79$  for relatedness.

*Motivation.* The Spanish version by Moreno-Murcia, Marzo, Martínez, and Conte (2011) of the Behavioral Regulation in Sport Questionnaire (BRSQ) by Lonsdale, Hodge, and Rose (2008) was used. Participants answered on a Likert-type scale from 1 (Nothing is true) to 7 (Very true). The questionnaire started with the following sentence: "I participate in this sport ...". It is composed of 36 items that measure 9 categories with 4 items each: general intrinsic motivation (IM) (e.g., "Because I enjoy it"), IM knowledge (e.g., "For the pleasure that I get from knowing more about this sport"), IM stimulation (e.g., "For the enthusiasm I feel when I am involved in the activity") and IM execution (e.g., "Because I enjoy when I try to achieve long-term goals"); integrated regulation (e.g., "Because it is part of what I am"), identified regulation (e.g., "Because the benefits of sport are important to me"), introjected regulation (e.g., "Because I would feel ashamed if I abandon it") and external regulation (e.g., "Because if I do not do it, others would not be happy with me"), corresponding the four to extrinsic moti-

vation (EM); and amotivation (e.g., “However, I do not know why I do it). The internal consistency values were  $\alpha = .74$ ,  $\Omega = .85$  for general IM,  $\alpha = .84$ ,  $\Omega = .89$ , for IM knowledge,  $\alpha = .83$ ,  $\Omega = .89$  for IM stimulation,  $\alpha = .79$ ,  $\Omega = .87$  for IM achievement,  $\alpha = .84$ ,  $\Omega = .89$  for integrated regulation,  $\alpha = .73$ ,  $\Omega = .83$  for identified regulation,  $\alpha = .77$ ,  $\Omega = .85$ , for introjected regulation,  $\alpha = .66$ ,  $\Omega = .79$  for external regulation and, finally,  $\alpha = .75$ ,  $\Omega = .85$  for amotivation.

*Intention to be physically active.* We used the questionnaire called “Intention to be physically active” (IPA) by Hein, Müür, and Koka (2004) and validated for Spanish primary school children by Arias, Castejón, and Yuste, (2013) and for Spanish children over 12 years by Moreno, Moreno, and Cervelló (2007). This questionnaire is composed of 5 items. The introductory sentence used was: “Regarding your intention to practice some physical/sports activity ...”. The answers were provided on a Likert-type scale from 1 (Totally disagree) to 5 (Totally agree). The reliability values were Cronbach’s  $\alpha = .70$ ,  $\Omega = .81$ .

### Design and Procedure

A descriptive methodology with transversal design was used (Montero & León, 2007). The design was approved by the Ethics Committee of the University of Murcia (1414/2016). The necessary authorizations were obtained from the presidents of the Athletics Federation of Murcia Region and the clubs. Informed written consent was also obtained from athletes and parents when they were under-age. Once the consent was obtained, the questionnaires were administered. The researcher was present to give a brief explanation of the objective of the study, how to complete the instruments and to solve all the doubts that may arise during the process. After the information was provided, the participation of the athletes in the study was voluntary and anonymous. The time re-

quired to fill in the scales was approximately 15 minutes, varying slightly according to the age of the athletes. All questionnaires were answered on the athletics track prior to training and at the beginning of the season.

### Statistical Analysis

First, descriptive statistics of all variables (means and standard deviations) was obtained, correlation analysis was conducted and the internal consistency of each factor was calculated using Cronbach’s alpha and Omega coefficient. Most of the reliability Cronbach coefficients and all the Omega showed values above .70, a criterion considered acceptable for psychological domain scales (Nunnally, 1978). Concerning alpha coefficients only a few fell in the range between .60 and .70, considered acceptable by authors such as Sturmey, Newton, Cowley, Bouras, and Holt (2005). Furthermore, Ventura-León and Caycho-Rodríguez (2017) suggest the Omega coefficient has a more feasible value for social science studies, with non-continuous variables. It is not affected by the sample error or the number of the items, among other issues. Next, efforts were made to try to identify different motivational profiles in the study sample. To do so, a hierarchical cluster analysis was carried out with Ward method, using the variables intrinsic motivation towards knowledge, intrinsic motivation towards stimulation, intrinsic motivation towards execution, integrated, identified, introjected and external regulation, and amotivation.

Subsequently, a multivariate analysis (MANOVA) was performed to verify the possible differences between the motivational profiles and the coach’s interpersonal style, the satisfaction of basic psychological needs and the intention to be physically active (dependent variables). Statistical analysis was carried out using the statistical software IBM SPSS Statistics 23.0.

Table 1 Descriptive statistics (mean and standard deviation), Cronbach's alpha, Omega and correlations between variables

	<i>M</i>	<i>SD</i>	$\alpha$	$\Omega$	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
1 Autonomy S.	4.12	.48	.67	.77															
2 Competence	5.12	.87	.85	.89	.34**														
3 Autonomy	3.48	.96	.63	.76	.09	.41**													
4 Relatedness	5.02	.72	.69	.79	.01	.45**	.15*												
5 IM General	6.56	.73	.74	.85			.28**	.40**											
6 IM Knowledge	6.32	.90	.84	.89			.79**	.75**	.68**										
7 IM Stimulation	6.13	1.01	.83	.89				.85**	.76**	.69**									
8 IM Achievement	6.40	.81	.79	.86				.86**	.79**	.71**	.68**								
9 Integrated R.	5.87	1.21	.84	.89					.68**	.65**	.65**	.68**							
10 Identified R.	6.15	.93	.73	.83						.71**	.71**	.71**	.68**						
11 Introjected R.	2.34	1.37	.77	.85															
12 External R.	1.66	.93	.66	.79															
13 Amotivation	1.66	1.04	.75	.85															
14 IPA	4.66	.45	.70	.81															

Note. *M* = Mean; *SD* = Standard Deviation;  $\alpha$  = Cronbach's alpha;  $\Omega$  = Omega; *S* = Support; *IM* = Intrinsic Motivation; *R* = Regulation; *IPA* = Intention to be physically active.  
 \*\* $p < .01$ ; \* $p < .05$

## Results

### Descriptive Analysis and Correlations

The basic psychological needs obtained a mean score from 3.48 (autonomy) to 5.12 (competence). The most valued motivation was general IM and the least valued were amotivation and external regulation. The analysis of bivariate correlations reflected a significant and positive relationship between competence and relatedness ( $p < .01$ ), but not with autonomy. The general IM had a significant and positive relationship with autonomy support style, competence and relatedness, IM dimensions, integrated regulation, identified regulation and intention to be physically active ( $p < .01$ ). General IM had a negative and significant relationship with introjected regulation, external regulation and amotivation. Furthermore, the analysis gave a significant and positive relationship between the autonomy support style and the needs for competence and relatedness, as well as with IM dimensions towards knowledge, stimulation and achievement, integrated and identified regulation, and with the intention to be physically active ( $p < .01$ ). In addition, the

autonomy support style presented a significant and negative relationship with introjected and external regulation and amotivation in  $p < .01$  (Table 1).

### Cluster Analysis

The phases proposed by Hair, Anderson, Tatham, and Black (1998) were followed in order to carry out cluster analysis. First, participants who did not answer some test items, did not complete the test or did it incorrectly were excluded. In the next step, the univariate distribution of all the grouped variables was examined for normality. Hierarchical cluster analysis using the Ward method was performed to determine the groups that existed in the initial sample, and the dendrogram obtained suggested the existence of two groups (Table 2).

Following Norusis (1992), the small coefficients indicate great homogeneity among the members that make up the cluster, unlike the case of large samples. We conclude that there exist two motivational profiles: a self-determined or highly motivated profile, with high scores in IM (knowledge, stimulation and execution) and the most self-determined types of EM (integrated regulation and identified regulation; clus-

Table 2 Mean, standard deviation and Z-score in clusters 1 and 2

Variables	Cluster 1 ( $n = 193$ ) 76.0%			Cluster 2 ( $n = 61$ ) 24.0%			F
	M	SD	Z	M	SD	Z	
IM General	6.81	.34	.84	5.77	1.02	.03	169.693**
IM Knowledge	6.68	.43	.89	5.21	1.07	.16	310.688**
IM Stimulation	6.54	.52	.91	4.81	1.06	.20	353.604**
IM Achievement	6.73	.38	.86	5.40	0.96	.18	323.767**
Integrated R.	6.29	.84	.78	4.52	1.22	.35	190.963**
Identified R.	6.50	.55	.78	5.06	1.03	.25	242.984**
Introjected R.	2.20	1.29	-.34	2.89	1.49	.77	9.761**
External R.	1.46	.71	-.49	2.37	1.25	.77	44.549**
Amotivation	1.41	.71	-.56	2.69	1.49	.64	62.985**

Note. M = Mean; SD = Standard Deviation; IM = Intrinsic Motivation; R = Regulation.

\*\* $p < .01$ ; \* $p < .05$

ter 1) and a less self-determined or less motivated profile, with higher scores in amotivation, external regulation and introjected regulation (cluster 2). Differences of .50 in the Z-scores were used as a criterion to describe whether one group scored relatively “high” or “low” compared to the other (Wang & Biddle, 2001).

### Differential Analysis

Multivariate analysis of variance (MANOVA) was performed to examine the characteristics of each motivational profile according to the coach’s interpersonal style as perceived by the athletes, the satisfaction of their basic psychological needs and the intention to be physically active. To do so, the clusters were used as independent variables, and autonomy support, basic psychological needs (competence, autonomy and relationship with others) and intention to be physically active as dependent variables (Table 3).

The analysis of the results shows significant differences among clusters (Wilk’s  $\Lambda = .600$ ,  $F(5,931) = 27.42$ ,  $p < .01$ ) in autonomy support ( $F = 48.32$ ,  $p < .01$ ,  $\eta^2 = .16$ ), competence ( $F = 80.65$ ,  $p < .01$ ,  $\eta^2 = .24$ ), relationship with others ( $F = 40.76$ ,  $p < .01$ ,  $\eta^2 = .13$ ) and inten-

tion to be physically active ( $F = 76.59$ ,  $p < .01$ ,  $\eta^2 = .23$ ), yielding the highest scores in the self-determined profile.

### Discussion

The objective of the study was to determine the existing profiles among the athletes according to the level of self-determined motivation and to analyze the differences in these profiles with respect to autonomy support, basic psychological needs and the intention to be physically active. The study’s hypothesis was fulfilled by finding two profiles, one with higher levels of self-determination versus another one with low levels of self-determination. The more self-determined profile showed higher results in the autonomy support, two of the three satisfaction of basic psychological needs and the intention to be physically active.

Autonomy support was positively related to the psychological needs of competence and relatedness and the more self-determined motivation. These results coincide with those obtained in different studies, where relationships among autonomy support, satisfaction of basic psychological needs and motivation in athletes of various individual and collective sports

Table 3 *Multivariate analysis of interpersonal style, basic psychological needs and intention to be physically active according to the motivational profile*

Variables	Cluster 1 ( $n = 193$ ) 76.0%		Cluster 2 ( $n = 61$ ) 24.0%		$F$	$\eta^2$	
	$M$	$SD$	$M$	$SD$			
Autonomy Support	4.23	.42	3.78	.47	48.32**	.16	
Competence	5.36	.67	4.36	1.00	80.65**	.24	
Autonomy	3.47	1.00	3.49	.83	.01	.02	
Relatedness	5.17	.64	4.54	.75	40.76**	.13	
IPA	4.78	.28	4.27	.64	76.59**	.23	
<i>Wilk’s <math>\Lambda</math></i>						.600**	
<i>Multivariate <math>F</math></i>						27.42**	

Note.  $M$  = Mean;  $SD$  = Standard Deviation;  $\eta^2$  = Cohen’s value (size effect); IPA = Intention to be physically active.

\*\*  $p < .01$

were reported (Almagro et al., 2012; Almagro et al., 2010; Balaguer et al., 2008; Gillet et al., 2010; Naisseh et al., 2015). It is not unusual in this kind of study to assess one of the three basic psychological needs (Almagro et al., 2010), or that one or more of the three basic psychological needs presents no correlation to the self-determination motivation, as has happened in this research (Balaguer et al., 2008), so it is recommended to pay attention to this in future studies.

The cluster analysis revealed the existence of two motivational profiles in the sample studied: a self-determined profile with high IM values and the most self-determined types of EM (integrated and identified regulation), and a less self-determined profile with higher values of introjected regulation (EM) and amotivation. These results coincide to a large extent with the study by Haerens et al. (2017) in a sample of elite athletes and with Almagro et al. (2012) in Spanish adolescent athletes. Although they are studies with different athletes and contexts, similar profiles were obtained, clearly distinguishing between participants with higher rates of internal motivation and others with greater external motivation or amotivation.

The analysis of variance showed that the self-determined profile was positively related to the interpersonal style of autonomy support and two of the three basic psychological needs, while the non-self-determined profile was negatively related to the autonomy support and the basic psychological needs of competence and relatedness. These results are in line with those obtained by Haerens et al. (2017) and Almagro et al. (2012). Therefore, regardless of the context, a more self-determined motivational profile is linked to athletes with greater satisfaction with some or even every one of their basic psychological needs and greater autonomy support provided by their mentors.

We found higher intention to be physically active in the self-determined profile, so the re-

sults obtained are in line with the profile studies by Haerens et al. (2010) and Friederichs et al. (2015) in school children and adults with low levels of physical activity. There are other studies that involved athletes, but did not carry out a profile analysis. Gillet et al. (2010) determined that a coach using an autonomy support style predicted a greater self-determined motivation and better sports performance in judokas of different categories and ages, while Almagro et al. (2010) found that the climate of autonomy created by the coach predicted the perception of autonomy of their athletes, their intrinsic motivation and adherence to sports practice in athletes of 12-17 years involved in different individual and collective sports.

As limitations of this study we must indicate that it is a cross-sectional and descriptive work, where causality relationships cannot be established. Furthermore, it should be taken into consideration that the intention to be physically active is not exactly the same as real physical activity and there could be some differences between them. On the other hand, future investigations may contemplate the possibility of carrying out a prediction analysis, to verify whether the relationships of this study can follow Vallerand's (1997) hierarchical model, considering the coach's interpersonal style as a trigger variable for motivation and basic psychological needs, and if, in turn, this leads to behaviors such as the intention to be physically active, life satisfaction or well-being. The aim of this research has been to assess the relationships among the motivational profile, the coach's interpersonal style and the intention to be physically active. Future studies with more accurate models (e.g., hierarchical analysis) should be developed to support SDT as significant determinants of athlete's intentions to be physically active and relationships among micro-theories of personality motivation. In addition, it would be interesting to analyze the existing differences based



on sociodemographic variables such as gender or age, something that was not contemplated in the present study. However, in the absence of more experimental evidence, as indicated by the pedagogical proposal of Koh, Camiré, Bloom, and Wang (2017), it seems essential that sports technicians be trained in interpersonal styles of autonomy support to achieve better behavioral, affective and cognitive effects in their athletes.

In conclusion, two motivational profiles have been found among the athletes: a profile with high levels of motivation (self-determined profile) that is related to the interpersonal style of autonomy support, the satisfaction of the needs of competence and relationships and greater intention to be physically active, and another profile with low motivation (non self-determined).

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