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Original article

ATHLETES' PERCEPTION REGARDING THE LEVEL OF PHYSICAL TRAINING AND THE IMPORTANCE OF THE COACH-ATHLETE RELATIONSHIP

DANIEL NICOLAE[1*], MARIA VĂDUVA[1], AUGUSTIN IANCU[1], LOREDANA ION[1], RALUCA STEPAN[2]

Abstract
Aim. The purpose of the research is to capture the relationships between certain athletes' sociodemographic variables and anxiety before competitions, as well as the coach-athlete relationship. The differences that appear at the level of the coach-athlete relationship according to the athletes' sociodemographic variables were also analyzed. 370 athletes between the ages of 6 and 35, with experience in sports between one year and over 5 years, participated in the study.
Methods. Anxiety before competitions was measured with the SCAT-A questionnaire, while the coach-athlete relationship was measured with the Coach-athlete Relationship Questionnaire. Socio-demographic data were also collected.
Results. Athletes' sociodemographic variables are not significant predictors of the coach-athlete relationship, nor are they predictors of anxiety before competitions, but there are significant differences regarding the coach-athlete relationship depending on age, gender, experience in sports, perceived level of training and the number of coaches
Conclusions. Knowing the factors that improve the coach-athlete relationship is particularly important for achieving performance in sports.
Keywords: perception of the level of training; coach-athlete relationship, athletes, anxiety

Introduction

The purpose of this paper is to emphasize the importance of the coach-athlete relationship and to try to answer the identification of some of the variables that define this relationship. The influence a coach has on the athletes he trains is synonymous with the direction in which the athlete's life in the sports world will evolve, stagnate or disappear. The motivation that the coach can convey to the athlete is the one that will guide him in one direction or another. In this sense, in the specialized literature, among the aspects that influence the behavior of coaches, their interest in coaching activities, and their positioning regarding the behavior and motivation of athletes are mentioned (Vallerand, 2000). All these aspects have as a common point the support and promotion of the athletes' autonomy in the first place, and then the extrinsic and intrinsic motivation of the athletes (Jowett & Nezlek, 2012). The self-determining theory of motivation (Deci & Ryan, 1985) even proposes a continuum between the two types of motives, intrinsic and extrinsic, during a learning activity, such as that of the performance indicator. Besides motivation, all the mental processes and psyche of the athlete are involved in the sports activity, and the coach has the role of supporting and potentiating their qualities, and of diminishing and inhibiting the defects as much as possible. In this sense, the coach's influence on the athlete is translated into all psychological aspects, namely the athlete's sensations, perceptions and representations, his system of thinking, engramming, feeling, will, as well as aspects of his personality (Stirling & Kerr, 2009) . For example, at the level of several meta-analyses, it was concluded that there is an influence of physical activity on the cognition and perception of athletes, and that, in turn, they differ from those who do not practice sports (Mann, Williams, Ward, Janelle, 2007). At the same time, related to the training intensity and motivation, namely that motivation tends to decrease when the difficulty of the task increases (Yerkes & Dodson, 1908), an inverted U relationship was proposed by some studies (McMorris & Hale, 2012). and contested by others (McMorris, Turner, Hale, Sproule, 2016).). However, the intensity, duration and type of proposed training remain constant, and their influence on the athletes, in terms of motivation, cognition or memory, is undeniable.

Another aspect that we considered important, at the level of this research, was the self-perception of the training level of the athletes. The literature underlines, in this sense, the fact that this type of questionnaires are mostly addressed to coaches and, much less often, even to athletes. Last but not least, we wanted to investigate the level of pre-competitive anxiety of athletes, which is a specific anxiety, associated with the activation of the body in intensely demanding situations, such as those of competition, in which the athlete's entire psyche is involved (Servant et al. 2009) . From heart rate to emotional instability, pre-competition anxiety can make a big difference between athletes and in terms of their level of success, but also the possible negative consequences that this can have in terms of the athletes' health (Martens et al. 2007).

Thus, we defined the following as research objectives:

[1]Doctoral School of Social Sciences and Humanities, University of Craiova, Craiova, Romania
[2] University of Craiova, Romania
*Coresponding author: nicolae_dani@yahoo.com

Establishing the relationships between the athletes' sociodemographic variables (gender, age, level of education, duration of practicing the sport, number of coaches, perceived level of preparation) and anxiety before competitions.

Establishing the relationships between the athletes' sociodemographic variables (gender, age, level of education, duration of practicing sports, number of coaches, perceived level of training) and the coach-athlete relationship.

Establishing the differences that appear in the coach-athlete relationship depending on the athletes' socio-demographic variables (gender, age, level of education, duration of practicing the sport, number of coaches, perceived level of preparation).

Method

Participants and procedure

370 athletes aged between 6 and 35 participated in the present study, M = 13.81, AS = 5.11, of which 304 were male (82%) and 66 were female (18%), 103 being in grades I-IV (27%), 129 in grades V-VIII (34%), 104 in grades IX-XII (28%) and 34 in college (11%). Of the total participants, 75 have been doing sports for less than a year (20%), 72 have been doing sports for 1-3 years (19%), 78 have been doing sports for 3-5 years (21%), and 143 have been doing sports for over five years (40%); 154 had only one coach (41%), 145 had 2-3 coaches (39%), and 68 had more than three coaches (20%). According to the level of performance perceived by the athletes, 49 consider that their level needs improvement (13%), 140 consider that they have a good level (37%), and 181 consider that they have a very good level (50%).

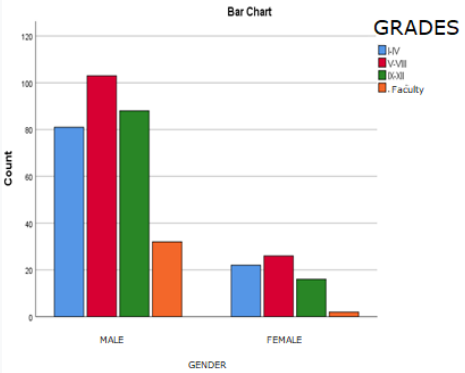

Figure 1. Distribution of participants according to gender and education level

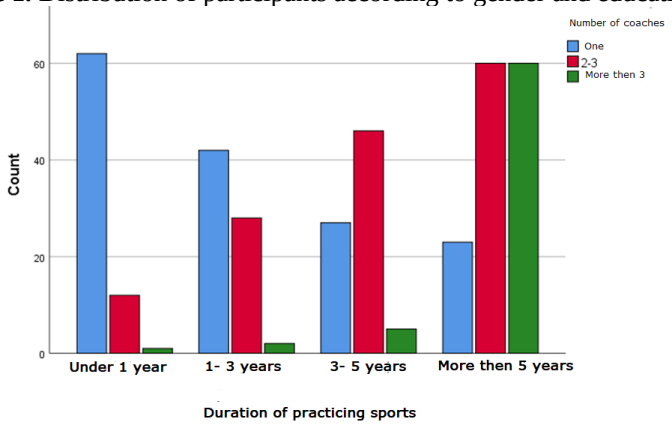

Figure 2. The distribution of participants according to the seniority of practicing the sport and the number of coaches

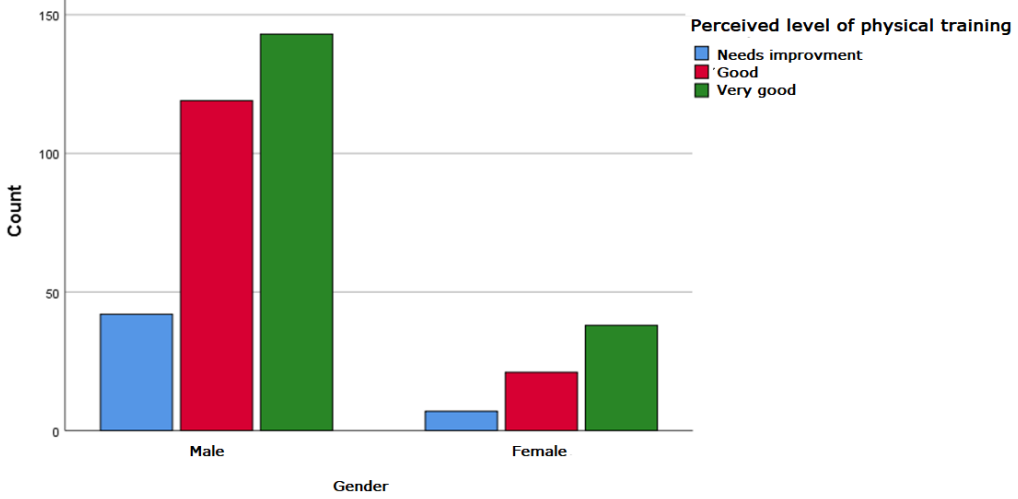

Figure 2. Distribution of participants according to gender and perceived level of physical fitness

Hypotheses:

H1. Athletes' Sociodemographic variables are significant predictors of the coach-athlete relationship.

H2. Athletes' Sociodemographic variables are significant predictors of pre-competition anxiety.

H3. There are significant differences in the coach-athlete relationship depending on the Athletes' Sociodemographic variables.

Instruments

Sociodemographic data were measured based on a list of questions regarding age, gender, class (level of education), duration of sport practiced, number of coaches, perceived level of training.

Pre- competitions Anxiety was measured with the SCAT - A questionnaire. SCAT is composed of 15 items and measures the trait dimension of pre-competition anxiety by asking questions about how the athlete generally feels in the moments before the competition. The total score can take values between 10-30 points. It has 15 items, of which 5 are insignificant - they are not taken into account (1,4,7,10,13), and 10 items are of interest (2,3,5,6,8,9,11, 12,14,15). Example item: "Competing with others is pleasant".

The coach-athlete relationship was measured with the Coach-athlete Relationship Questionnaire. This questionnaire was created to measure the nature of the coach-athlete relationship. The tool contains 11 items, and an example item is: "I feel close to my coach".

Results

Descriptive statistics

It is observed that the scores obtained by the participants for anxiety before competitions are relatively low, M = 17.21, AS = 4.87, and the scores for the coach-athlete relationship are extremely high, M = 73.38, AS = .92. Skewness and flattening do not fall within the range (-2, 2), which reflects a skewed distribution of the data. This fact requires the use of non-parametric tests for statistical analyzes testing differences.

Table 1. Mean scores, standard deviations, internal consistency coefficients and correlations between variables

	M	AS	α	1	2	3	4	5	6	7	8
1	-	-	-	1							
2	13.81	5.11	-	-.09	1						
3	-	-	-	-.10	.85**	1					
4	-	-	-	-.04	.63**	.54**	1				
5	-	-	-	-.03	.61**	.57**	.58**	1			
6	-	-	-	.08	-.07	-.10	-.03	-.15**	1		
7	17.21	4.87	.86	.15**	-.01	-.06	.01	-.03	-.10	1	
8	73.38	7.16	.92	.17**	-.19**	-.16**	-.10	-.16**	.30**	-.07	1

*. p < .01, *. p < .05

1. Gender, 2. Age, 3. Class, 4. Duration of sports practice, 5. Number of coaches, 6. Perceived level of preparation, 7. Competition anxiety, 8. Sports coach relationship

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Inferential statistics – hypothesis testing

In order to organize the data and test the hypotheses, the statistical analysis program IBM.SPSS.25 (IBM Corp, 2016) was used.

H1. Sociodemographic variables of athletes are significant predictors of the coach-athlete relationship. In order to test this hypothesis, a multiple linear regression analysis was performed with the sociodemographic variables, gender, age, level of education, the duration of the sport, the number of coaches, the perceived level of training and the coach-athlete relationship as the dependent variable.

Table 2. Multiple linear regression analysis for sociodemographic variables as predictors of the coach-athlete relationship

Model	Non-standardized quotients		Standardized quotients		
	B	ES	β	t	Sig.
Gender	1.52	.93	.08	1.63	.10
Age	-.05	.11	-.03	-.43	.67
Class	-.56	.59	-.08	-.95	.34
Duration of sport practicing	.15	.39	.03	.40	.69
Number of coaches	-.94	.64	-.10	-1.48	.14
Perceived level of training	2.23	.50	.22	4.41	.00

$R^2 = .10$

It is observed that the sociodemographic variables are responsible for 10% of the variation in the coach-athlete relationship, the regression equation being statistically significant, $F(6, 361) = 6.73$, $p < .01$. Among the six predictors, only one is significantly positively associated with the coach-athlete relationship, namely the perceived level of preparation, $\beta = .22$, $t(370) = 4.41$, $p < .01$.

Taking this result into account, we can say that hypothesis I1 is only slightly supported by the analyzed data.

H2. Sociodemographic variables of athletes are significant predictors of pre-competition anxiety. In order to test this hypothesis, a multiple linear regression analysis was performed with the sociodemographic variables, gender, age, level of education, the duration of practicing the sport, the number of coaches, the perceived level of preparation and as the dependent variable the anxiety before the competitions as predictors.

Table 3. Multiple linear regression analysis for sociodemographic variables as predictors of pre-competition anxiety

Model	Non-standardized quotients		standardized quotients		
	B	ES	β	t	Sig.
Gender	1.87	.66	.15	2.84	.01
age	.09	.08	.09	1.14	.26
Class	-.71	.42	-.14	-1.72	.09
Duration of practicing the sport	.31	.28	.08	1.12	.26
Number of trainers	-.35	.45	-.05	-.78	.44
Perceived level of training	-.87	.36	-.13	-2.44	.02

$R^2 = .05$

It is observed that sociodemographic variables are responsible for 5% of the variation of anxiety before competitions, the regression equation being statistically significant, $F(6, 361) = 2.92$, $p < .05$. Among the six predictors, only two are significantly associated with the coach-athlete relationship, namely gender, in a positive sense, $\beta = .15$, $t(370) = 2.84$, $p < .05$ and the perceived level of preparation, in a negative sense, $\beta = -.13$, $t(370) = -2.44$, $p < .05$.

Taking into account this result, we can say that hypothesis I2 is only slightly supported by the analyzed data.

H3. There are significant differences in the coach-athlete relationship depending on the sociodemographic variables of the athletes.

H3a. Girls register a higher level of coach-athlete relationship than boys. To test this hypothesis, the nonparametric Mann-Whitney U test was performed for two independent samples.

Table 4. Average ranks for the coach-athlete relationship according to the gender of the athletes

	Gender	N	Medium rank	Sum of ranks
Athlete-coach relationship	Male	304	177.44	53940.50
	Female	66	222.64	14694.50

	Total	370

Tabel 5. Mann-Whitney U test for gender differences in the coach-athlete relationship

	Athlete- coach relationship
Mann-Whitney U	7580.50
Z	-3.33
p	.00

It is observed that girls register higher levels of coach-athlete relationship Rg = 222.64 than boys Rg = 177.44, the difference being statistically significant, U = 7580.50, Z = -3.33, p < .01. So, we can say that hypothesis I3a is supported by the analyzed data.

H3b. Athletes from lower classes register a higher level of coach-athlete relationship than athletes from higher classes. In order to test this hypothesis, the non-parametric Kruskal Wallis test was performed.

Table 6. Mean ranks for the coach-athlete relationship by class

	Class	N	Medium rank
coach-athlete relationship	I-IV	103	213.82
	V-VIII	129	175.75
	IX-XII	104	177.70
	Facultate	34	160.56
	Total	370	

Table 7. Kruskal-Wallis H test for class differences in the coach-athlete relationship

	the coach-athlete relationship
Kruskal-Wallis H	12.27
df	3
p	.01

It is observed that there are significant differences regarding the coach-athlete relationship depending on the school class. Thus, the highest score is found in athletes from classes I-IV, Rg = 213.82, followed by athletes from classes IX-XII, Rg = 177.70, then by athletes from classes V-VIII, Rg = 175.75 and in those from track of college athletes, Rg = 160.56, the differences being statistically significant, H = 12.27, p < .05.
So, we can say that hypothesis I3b is supported by the analyzed data.

H3c. Athletes with a longer duration of sports activity register a higher level of coach-athlete relationship than athletes with a lower duration. In order to test this hypothesis, the non-parametric Kruskal Wallis test was performed.

Table 8. Mean ranks for the coach-athlete relationship by class

	Duration of practicing the sport	N	Medium Rank
Coach-athlete relationship	below 1 year	77	214.27
	1-3 years	72	187.94
	3-5 years	78	156.79
	Over 5 years	143	184.44
	Total	370	

Table 9. Kruskal-Wallis H-test for differences by duration of sport practice regarding coach-athlete relationship

	Coach-athlete relationship
Kruskal-Wallis H	12.90
df	3
p	.01

It is observed that there are significant differences regarding the coach-athlete relationship depending on the duration of the sport practice. Thus, the highest score is found in athletes who have been playing sports for less than a year, Rg = 214.27, followed by athletes who have been playing sports for 1-3 years, Rg = 187.94, then by athletes who have been playing sports for more than five years years, Rg = 184.44 and finally by athletes who have been playing sports for 3-5 years, Rg = 156.79, the differences being statistically significant, H = 12.90, p < .05.
So, we can say that the I3c hypothesis is supported by the analyzed data.

H3d. Athletes who have had fewer coaches report a higher level of coach-athlete relationship than athletes who have had more coaches. In order to test this hypothesis, the non-parametric Kruskal Wallis test was performed.

Table 10. Average ranks for the coach-athlete relationship according to the number of athletes' coaches

	Number of trainers	N	Average rank
the coach-athlete relationship	1	154	205.04
	2-3	146	169.18
	More than 3	68	170.86
	Total	368	

Table 11. Kruskal-Wallis H-test for differences according to the number of athletes' coaches regarding the coach-athlete relationship

	the coach-athlete relationship
Kruskal-Wallis H	11.34
df	2
p	.00

It is observed that there are significant differences in the coach-athlete relationship depending on the number of coaches of the athlete. Thus, the highest score is found in athletes who had only one coach, Rg = 205.04, followed by athletes who had more than three coaches, Rg = 170.86, then by athletes who had 2-3 coaches, Rg = 169.18, the differences being statistically significant, H = 11.34, p < .01.
So, we can say that the I3d hypothesis is supported by the analyzed data.

H3e. Athletes, who consider themselves to have very good training, record a higher level of coach-athlete relationship than athletes who consider themselves to have good training or need improvement.
In order to test this hypothesis, the non-parametric Kruskal Wallis test was performed.

Table 12. Average ranks for the coach-athlete relationship according to the athletes' perceived level of preparation

	perceived level of preparation	N	Average rank
coach-athlete relationship	Needs improvement	49	148.45
	good	140	159.03
	Very good	181	216.01
	Total	370	

Table 13. Kruskal-Wallis H test for differences according to the athletes' perceived level of training in the coach-athlete relationship

	coach-athlete relationship
Kruskal-Wallis H	33.49
df	2
p	.00

It is noted that there are significant differences in the coach-athlete relationship depending on the athlete's perceived level of training. Thus, the highest score is found in athletes who consider that they have a very good level of preparation, Rg = 216.01, followed by athletes who consider that they have a good level of preparation, Rg = 159.03, then by athletes who consider that their training level needs improvement, Rg = 148.45, the differences being statistically significant, H = 33.49, p < .01.
So, we can say that hypothesis H3e is supported by the analyzed data.
Discussions

Among the athletes who took part in our study, 49 consider that their level of physical preparation needs improvement (13%), 140 consider that they have a good level (37%), and 181 consider that they have a very good level of physical preparation (50%). The research revealed that there are significant differences in the coach-athlete relationship depending on the athletes' perceived level of preparation. Thus, the highest score is found in athletes who consider that they have a very good level of preparation, Rg = 216.01, followed by athletes who consider that they have a good level of preparation, Rg = 159.03, then by athletes who consider that the level their training needs improvement, Rg = 148.45, the differences being statistically significant. The results are consistent with other studies, thus on a sample of 581 athletes they indicated that the degree to which they felt from the coaches the support of autonomy and the feeling of relationship, influenced the increase of their motivation, independent of gender and time of training (Amorose & Anderson-Butcher, 2007). The impact of gender and age on the pre-competitive anxiety of 42 tennis players showed that younger players have lower anxiety compared to seniors, and girls had higher scores than boys (Martínez-Gallego et al., 2022). Another study aimed to investigate the relationships between anxiety and the coping strategies of 307 athletes, aged between 16 and 34 years. Their findings showed that there was a significant positive relationship between coping and subjective performance and a negative relationship between coping and athletes' anxiety, so that by improving beliefs in coping strategies, their anxiety could decrease (Nicholls, Polman & Levy, 2010) . Another research, which started from the theory of self-determination, tested whether positive self-perception, autonomy and relationship can mediate the relationship between autonomy support and the motivation of the respondents. Their results support the theory of self-determination and highlight the motivational benefits brought by coaching behaviors that support autonomy (Amorose & Horn, 2000).Thus, research that proposed similar aspects to the one carried out by us and in which 78 football players from Divisions A and B participated, together with their coaches, came to the conclusion that training, followed by confidence in one's own strengths and positive statements are the ones that help the respondents the most in achieving performance (Vargas-Tonsing, Myers, Feltz, 2004). The purpose of another study of coach-athlete relationships, carried out on coaches with Olympic medalist athletes in kayaking, swimming and wrestling, used constructs as a relationship of closeness and complementarity, and its conclusions were the fact that the coach-athlete relationship is based almost exclusively on the trained athlete, than on the practiced sport (Trzaskoma-Bicsérdy et al., 2007). The positive relationship between coach-athlete relationship quality and Stroop performance and negative relationships between coach-athlete relationship quality and cortisol responses to high-intensity exercise, intelligence tests, and burnout were the results of another study (Davis et al., 2018). 359 athletes were tested for the perception of coach-athlete quality, proposed objectives and burnout. The results also highlight that proposed goals partially mediate these relationships. (Isoard-Gautheur et al., 2016).

A study that used the same tool to measure the coach-athlete relationship, namely the Coach-Athlete Relationship Questionnaire (CART-Q), was used in student athletes. The results brought useful data about the CART-Q questionnaire for evaluating the quality of the coach-athlete relationship in athletes and non-athletes (Jowett, 2009). A study that aimed to investigate the performance athletes' perception of the characteristics they appreciate in their coaches, the effective behaviors, but also the way they establish the relationship with the athletes, concluded that the coaches should prove of closeness, commitment, complementarity and co-orientation (Foulds et al. 2019)

Therefore, coaches and sports psychologists should implement appropriate individualized interventions on and off the field to manage the relationship between themselves and athletes, as well as their anxiety, taking into account gender, duration of sport practice, age, number of coaches and level perceived training. Thus, our conclusions in the direction of maximizing the potential of the coach-athlete relationship are that coaches should give greater importance to male athletes than to female athletes, senior athletes compared to juniors, athletes with a shorter duration of sports activity , athletes who had more coaches, compared to those who had fewer and, last but not least, athletes who consider that they have a weaker training, compared to those who believe more in their own potential.

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