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The Impact of Coaching, Experience and Technical Post on Precompetitive Anxiety among Elite U15 Footballers Affiliated to the Sectorial Training Centers of the Tunisian Football Federation (TFF)

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Abstract

Precompetitive anxiety is a psychological constraint for young athletes in an institutional system characterized by a selective environment such as training centers. The objective of our study is to examine cognitive anxiety, somatic and precompetitive self-confidence through measures, intensity, direction and frequency, among 76 U15 elite footballers affiliated in the sectorial training centers. Supervised by the Tunisian Football Federation, the data were collected and analyzed by version 22.0.0. IBM SPSS and AMOS. In our young footballers with neglected psychological framework, the results show that self-confidence through its three measures represents the most identified dimension among our participants. On the other hand, the analysis of MANOVA demonstrated only the effect of coaching on the strategies of mental imagery, control of thoughts, deployment of effort and relaxation. Identifying the manifestation of precompetitive anxiety is an essential step in effectively managing the stressful situation.

Keywords

1. Introduction

Over the course of half a century, anxiety has been frequently considered in

sports psychology as an acting emotion on performance (Grossbard et al., 2009: pp. 153-166).

Consequently, concern about anxiety as a negative emotion (Lazarus, 2000: pp. 229-252), has been addressed in many ways such as its nature and role in the field of sport (Woodman & Hardy, 2003: pp. 443-457).

In this context, several unidimensional and multidimensional theoretical models have appreciated competitive anxiety. The transactional model of Lazarus and Folkman (1984), is one of the most important models that has been agreed upon. This model indicates that the well-being of the athlete is endangered when the anticipation of the situation is threatening, and the achievement of the objective and the performance are put in a critical situation.

Anxiety that derives from the individual's uncertain confrontation with environmental aggression is indicated as an unpleasant emotion (Lazarus, 2000: pp. 229-252; Skinner & Brewer, 2002: pp. 678-692).

Some researchers in the field of sport psychology confirm that an unfavorable performance may be a result of a high level of competitive situational anxiety (Hardy, 1999: pp. 227-233; Horikawa & Yagi, 2012: pp. 1-5).

The evaluation of precompetitive anxiety among our youth participants will provide us with a thorough understanding of the threatening situation, its interpretation and its frequency over time, with respect to coaching factors, level of experience and technical position, considered as environmental constraints in the training of young footballers.

The works of Khodayari et al. (2011: pp. 2280-2284), Sangari et al. (2012: pp. 1175-1178), indicate that the level of competitive anxiety can be modified. However, the development of mental methods and techniques is essential, in order to reduce competitive anxiety and improve performance.

2. Population

These are 76 Tunisian U15 footballers (average age 14.00, ET: 0.327), affiliated to the sectorial pre-training centers. These young athletes are subject to a training program supervised by the Tunisian National Technical Direction (Table 1).

3. Measure

To evaluate pre-competitive situational anxiety, we used the Tunisian version of the Competitive State Anxiety Inventory-2 Revised (CSAI-2R) including frequency and direction scales (Hajji & Elloumi, 2017: pp. 1-7).

This version has allowed us to measure the level of intensity, direction and frequency of cognitive pre-competitive anxiety, somatic and the level of confidence a few minutes of the competition.

The intensity scale designed to measure precompetitive anxiety scores, each item is estimated on a four-point Likert scale (1 = not at all, 2 = somewhat, 3 = moderately, 4 = all at fact).

Table 1. The population of the study.

		Numbers	%
Training Center	Gafsa	20	26.3
	Sidi Bouzid	19	25.0
	Gabes	20	26.3
	Kef	17	22.4
Experience Level	Below 2 years	26	34.2
	Over 2 years	50	65.8
Technical Position Player	Goalkeeper	10	13.2
	Defender player	22	28.9
	Midfield player	21	27.6
	Attacking player	23	30.3
Total		76	100,0

The direction scale designed to evaluate the directional interpretation of pre-competitive anxiety. Responses range from minus three (−3) to plus three (+3) (−3 = very unfavorable, −2 = somewhat unfavorable, −1 = somewhat unfavorable, 0 = no effect on performance, +1 = somewhat favorable, +2 = quite favorable, +3 very favorable).

The frequency scale designed to evaluate the spread of pre-competitive anxiety over time, in this scale the responses range from 1 point (not at all) to 7 points (all the time).

4. Procedure

After informing the managers of each training center through letters of recommendation certified by the National Technical Department, and after obtaining the consent of the coaches and parents, the athletes were invited during their sectorial groupings, to settle against the Tunisian version of CSAI-2R, 30 minutes before the competition.

In this context, studies by Stavrou et al. (2006: pp. 91-98), indicate that the level of intensity and direction of precompetitive anxiety varies from one day to 30 minutes before the competition.

5. Result

5.1. The Psychometric Properties of the Tunisian Version of CSAI-2R

5.1.1. The Internal Consistency of the Tunisian Version CSAI-2R

The Cronbach alpha coefficients of our measurement instrument of the Tunisian version of CSAI-2R (Hajji & Elloumi, 2017), and the French version (Martinent et al., 2010), are shown in Table 2.

5.1.2. Exploratory Factor Analysis

The indices of the exploratory factor analysis are shown in Table 3.

Table 2. Cronbach alpha coefficients.

CSAI-2R		Alpha Cronbach	N	Alpha Cronbach from The Tunisian Version (Hajji & Elloumi, 2017)	Alpha Cronbach of The French Version (Martinent et al, 2010)
Intensity	Cognitive anxiety	0.774	5	0.82	0.80
	Somatic anxiety	0.912	6	0.87	0.77
	Self-confidence	0.891	5	0.87	0.83
	Scale of intensity	0.734	16	--	--
Direction	Cognitive anxiety	0.856	5	0.87	0.81
	Somatic anxiety	0.891	6	0.90	0.82
	Self-confidence	0.836	5	0.87	0.76
	Scale of direction	0.875	16	--	--
Frequency	Cognitive anxiety	0.828	5	0.76	0.77
	Somatic anxiety	0.908	6	0.80	0.77
	Self-confidence	0.802	5	0.87	0.78
	Scale of frequency	0.768	16	--	--

Table 3. The indices of the exploratory analysis.

		Scale of intensity	Scale of direction	Scale of frequency
Determinant		4.149E−5	7.118E−5	5.701E−5
KMO Index		0.801	0.839	0.806
Sphericity test from Bartlett	Chi-square	694.528	657.380	672.660
	Ddl	120	120	120
	Significance	0.000	0.000	0.000

The factor loads of the three scales are shown in Table 4.

5.1.3. Confirmatory Factors Analysis

The adjustment indices for the three subscales are shown in Table 5.

5.2. The Level of Competitive Anxiety

Mean scores and standard deviations for the different dimensions of precompetitive anxiety are shown in Table 6.

Generally, self-confidence is indicated as the most identified dimension in our participants, it is interpreted as a facilitator of performance and constantly demanded over time.

In relation to the training center factor, the dimension of self-confidence is most accepted by our elites across all three scales (see Table 7).

The same results are revealed in both levels of experience, and in relation to the different positions of each young talent (see Table 8 and Table 9).

Table 4. Factor loads.

	Scale of intensity				Scale of direction				Scale of frequency		
	1	2	3		1	2	3		1	2	3
i15	0.898			D6	0.851			F15	0.838		
i12	0.884			D9	0.782			F12	0.837		
i6	0.872			D4	0.777	0.323		F4	0.822		
i9	0.826			D12	0.738	0.344		F6	0.800		
i17	0.764			D15	0.728			F9	0.790	0.348	
i4	0.702			D17	0.716			F17	0.737		
i10		0.910		D8		0.809		F2		0.861	
i7		0.891		D11		0.799		F14		0.792	
i13		0.814		D14	0.326	0.723		F5		0.705	
i3		0.787		D2	0.339	0.687		F8		0.692	
i16		0.718		D5		0.667		F11	0.368	0.687	
i14			0.770	D10			0.875	F13			0.833
i11			0.732	D3			0.807	F10	-0.338		0.788
i2			0.708	D7			0.790	F7			0.743
i5			0.706	D13			0.751	F3			0.721
i8			0.692	D16			0.650	F16			0.624

Table 5. Adjustment indices.

	X2	X2/df	Df	P	CFI	TLI	RMSEA
intensity scale	134.939	1.336	101	0.014	0.947	0.937	0.067
direction scale	129.349	1.281	101	0.030	0.952	0.944	0.061
frequency scale	147.079	1.456	101	0.002	0.925	0.911	0.078

Table 6. Precompetitive anxiety scores.

	ICA	ISA	ISC	DCA	DSA	DSC	FCA	FSA	FSC
Means	10.96	12.21	16.51	−2.89	−4.54	8.37	15.20	14.17	28.29
SD	3.67	5.05	3.76	7.50	8.16	6.46	7.04	6.89	5.63
N	76	76	76	76	76	76	76	76	76
Intensity of cognitive anxiety: ICA			Direction of cognitive anxiety: DCA			Frequency of cognitive anxiety: FCA			
Intensity of somatic anxiety: ISA			Direction of somatic anxiety: DAS			Frequency of somatic anxiety: FAS			
Intensity of self-confidence: ISC			Direction of self-confidence: DSC			Frequency of self-confidence: FSC			

5.3. The Effects of Interactions

Through MANOVA variance analysis, we distinguished only the effect of coaching on pre-competitive anxiety perceived by our participants

[Wilks Lambda = 0.292 < 1, F = 2.050, P = 0.005 < 0.05] (see Table 10)

Table 7. Pre-competitive anxiety scores versus training centers.

Training centers		ICA	ISA	ISC	DCA	DSA	DSC	FCA	FSA	FSC
GAFSA	Means	11.75	11.25	16.50	−3.90	−5.05	6.15	16.10	15.05	26.20
	SD	4.42	5.02	2.06	7.43	5.94	7.58	7.86	6.24	6.58
	N	20	20	20	20	20	20	20	20	20
SIDI BOUZID	Means	10.89	13.52	14.42	−2.47	−3.16	7.89	16.95	16.26	27.16
	SD	3.75	5.31	5.05	9.80	10.88	7.89	7.83	7.68	6.33
	N	19	19	19	19	19	19	19	19	19
GABES	Means	9.80	12.20	17.30	−2.40	−3.30	9.55	11.85	9.90	30.25
	SD	2.89	5.00	3.64	6.19	8.22	5.08	5.08	3.51	4.62
	N	20	20	20	20	20	20	20	20	20
LE KEF	Means	11.47	11.88	17.94	−2.76	−6.94	10.12	16.11	15.82	29.70
	SD	3.39	4.97	2.92	6.52	6.82	3.88	6.30	7.96	3.58
	N	17	17	17	17	17	17	17	17	17

Table 8. Precompetitive anxiety scores in relation to the level of experience.

Experience Level		ICA	ISA	ISC	DCA	DSA	DSC	FCA	FSA	FSC
Below 2 years	Means	10.92	12.11	16.19	−2.80	−4.41	8.65	15.69	14.69	27.54
	SD	3.33	5.32	3.73	7.87	7.82	6.08	7.42	7.57	6.43
	N	26	26	26	26	26	26	26	26	26
over 2 years	Means	10.98	12.26	16.68	−2.94	−4.58	8.22	14.94	13.90	28.68
	SD	3.87	4.95	3.80	7.37	8.41	6.70	6.90	6.57	5.19
	N	50	50	50	50	50	50	50	50	50

Table 9. Pre-competitive anxiety scores in relation to the player's position.

technical position		ICA	ISA	ISC	DCA	DSA	DSC	FCA	FSA	FSC
Goalkeeper	Means	12.20	14.00	16.10	−1.80	−2.10	6.80	13.90	18.60	27.30
	SD	2.57	5.83	3.28	8.19	9.16	6.96	7.23	8.63	6.00
	N	10	10	10	10	10	10	10	10	10
Defender player	Means	10.18	13.63	16.27	-4.23	-5.09	8.91	16.23	14.50	27.18
	SD	4.17	4.98	4.44	6.92	8.09	7.35	9.02	7.02	6.41
	N	22	22	22	22	22	22	22	22	22
Midfield player	Means	11.00	10.62	17.71	−1.86	−5.52	8.24	15.24	13.66	29.05
	SD	3.75	4.62	2.95	7.63	8.82	6.63	6.95	6.76	5.58
	N	21	21	21	21	21	21	21	21	21
Attack player	Means	11.13	11.52	15.83	−3.04	−4.17	8.65	14.74	12.39	29.09
	SD	3.54	4.85	3.87	7.89	7.45	5.41	4.89	5.49	4.79
	N	23	23	23	23	23	23	23	23	23

Table 10. Impact of coaching, experience and technical position on precompetitive anxiety.

	Effect	Value	F	ddl of the hypothesis	Error ddl	Significance
Coaching	Trace of Pillai	0.976	2.036	27.000	114.000	0.005
	Wilks Lambda	0.292	2.050	27.000	105.781	0.005
	Hotelling Trace	1.600	2.054	27.000	104.000	0.005
	Largest Roy Root	0.951	4.014c	9.000	38.000	0.001
Experience level	Trace of Pillai	0.134	0.619b	9.000	36.000	0.772
	Wilks Lambda	0.866	0.619b	9.000	36.000	0.772
	Hotelling Trace	0.155	0.619b	9.000	36.000	0.772
	Largest Roy Root	0.155	0.619b	9.000	36.000	0.772
Technical post	Trace of Pillai	0.605	1.066	27.000	114.000	0.393
	Wilks Lambda	0.501	1.045	27.000	105.781	0.419
	Hotelling Trace	0.796	1.022	27.000	104.000	0.448
	Largest Roy Root	0.434	1.834c	9.000	38.000	0.094

b. Exact statistics; c. The statistic is an upper bound of F that produces a lower bound on the level of significance.

The dimensions affected by this effect are the intensity of self-confidence and the frequency of somatic anxiety (see Table 11).

6. Discussion

6.1. The Psychometric Properties of the Measuring Instrument

6.1.1. The Internal Consistency of the Scale

The coefficients of α Cronbach, are approved, and similar to those of the French version of Martinent et al. (2010). In general, α Cronbach coefficients vary between 0.734 and 0.912, which are acceptable (De Vellis, 1991).

6.1.2. Exploratory Factor Analysis for the Three Scales

1) The Kaiser-Meyer-Olkin Index

The value of Kaiser-Meyer-Olkin, which gives a global idea about the quality of inter-item correlations, is always greater than 0.5.

The KMO value for the scale of intensity equal to 0.801, for the scale of the direction equals 0.839, and for the scale of the frequency equal to 0.806, demonstrate that the correlations between the items are of good quality.

2) Bartlett Sphericity Test

The result of Bartlett's sphericity test for intensity, direction and frequency scales is still significant at $p < 0.05$. We can therefore reject the null hypothesis that our data come from a population for which the matrix is an identity matrix, so the correlations are not all equal to zero.

3) Determinant of the matrix

The determinant values of the matrix for the three CSAI-2R scales are always small but different at zero (the intensity scale determinant = 4.149E−5, the

Table 11. Inter-subject effects tests.

Source	Dependent variable	Sum of type III squares	Middle square	F	Significance
Coaching	Intensity of Cognitive anxiety	78.713	26.238	2.097	0.114
	Intensity of Somatic anxiety	43.479	14.493	0.575	0.635
	Intensity of Self-confidence	179.053	59.684	4.482	0.008
	Direction of Scale of intensity	121.400	40.467	0.585	0.628
	Direction of Cognitive anxiety	312.310	104.103	1.607	0.201
	Direction of Somatic anxiety	159.612	53.204	1.044	0.383
	Frequency of Self-confidence	310.142	103.381	2.387	0.082
	Frequency of Scale of direction	758.911	252.970	10.345	0.000
	Frequency of Cognitive anxiety	221.251	73.750	2.018	0.125

direction scale determinant = 7.118E−5 and the determinant of the frequency scale = 5.701E−5), confirming the absence of multicollinearity (Hair et al., 2010).

6.1.3. Confirmatory Factor Analysis

According to Tabachnick & Fidell (2007), the results of the confirmatory factor analysis showed good fit indices for the three scales of our measuring instrument.

- The intensity scale: [X2 = 134.94 at p = 0.014; CFI = 0.947; TLI = 0.937 and RMSEA = 0.067],
- The scale of the direction: [X2 = 129.35 at p = 0.030; CFI = 0.952; TLI = 0.944 and RMSEA = 0.061],
- The frequency scale: [X2 = 147.08 at p = 0.002; CFI = 0.925; TLI = 0.911 and RMSEA = 0.078].

The AMOS software (see Figures 1-3), validates the factor structure of the three scales of the Tunisian version of CSAI-2R, which we used in our study.

6.2. The Level of Precompetitive Anxiety

According to the scores of the different dimensions of precompetitive anxiety, the dimension of self-confidence through its three measures, is the most identified among our young talents.

The same results were confirmed in relation to the factors of coaching, experience and technical position (defender, striker, goalkeeper...).

In this context, several studies confirm that elite athletes bring lower levels of cognitive and somatic anxiety intensity, and higher levels of precompetitive self-confidence.

These results are similar to those published in the work of Wolfram et al. (2008: pp. 153-159), among elite riders evaluated by CSAI-2R.

Similar results have been confirmed in elite gymnasts and swimmers (Jones et al., 1994: pp. 657-663), elite tennis players (Perry & Williams, 1998: pp. 169-179),
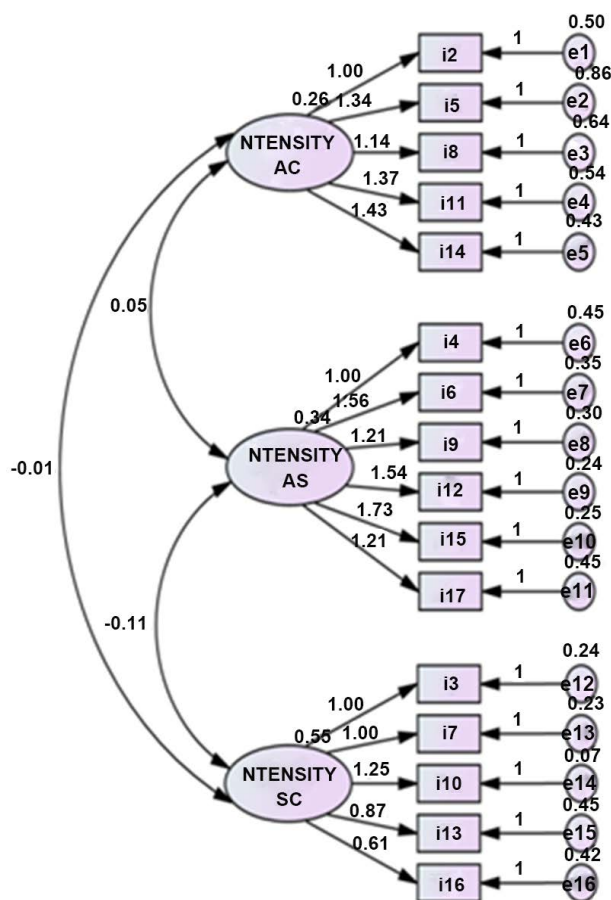
Figure 1. Model of the hypothetical structure: the intensity scale. Circles represent latent constructions and squares represent measured variables. All parameters are standardized and significant at p < 0.05. Residual differences are indicated in small circles.

elite wrestlers (Highlen & Bennett, 1979: pp. 123-137), and elite gymnasts (Mahoney & Avener, 1977).

In the works of Hanton et al. (2004: pp. 169-181), and Jones & Swain (1995: pp. 201-211), elite athletes brought high levels of direction to precompetitive anxiety.

In the same vein, Mellalieu et al. (2006), reported high levels of the direction of precompetitive anxiety and the intensity of precompetitive self-confidence in elite athletes.

Hanton & Jones (1999: pp. 1-21), also reported that the majority of elite swimmers (85.3%) presented facilitative perceptions of pre-competitive anxiety. In addition, Hanton et al. (2004: pp. 169-181), Craft et al. (2003: pp. 44-65), Hanton et al. (2002: pp. 911-928), indicate that measures of the intensity and frequency of pre-competitive anxiety manifest themselves as, predictors less important than the measure of direction, in elite athletes.

On the other hand, and in relation to the level of experience, Rokka et al. (2009: pp. 178-153), confirmed that with 4 to 6 years of experience, the athlete
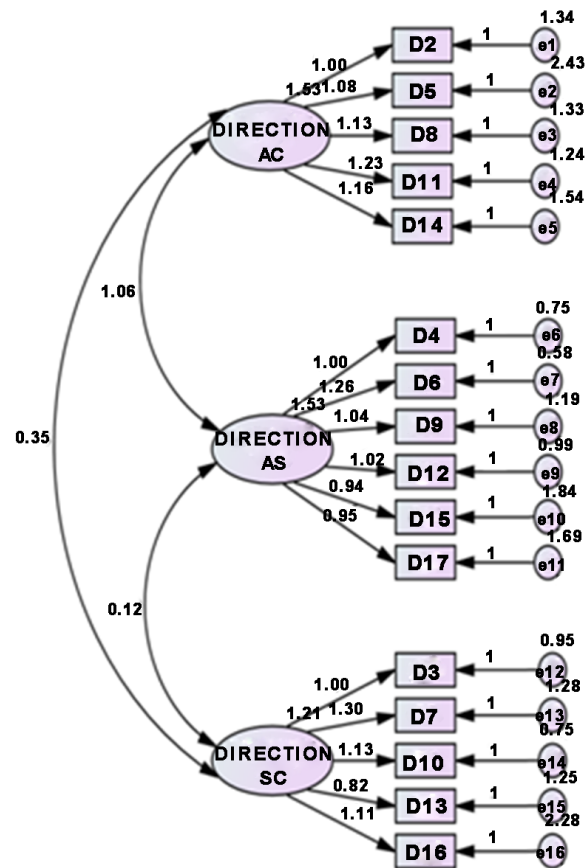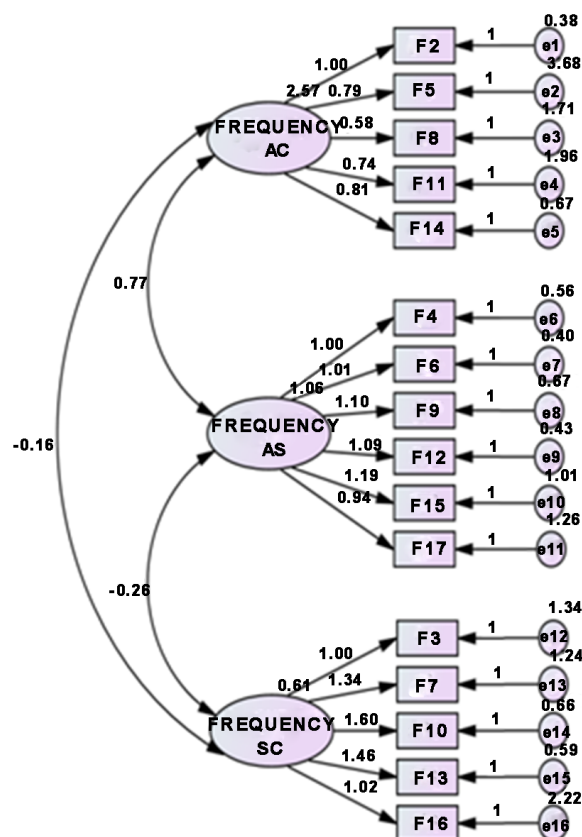
Figure 2. Model of the hypothetical structure: the direction scale. Circles represent latent constructions and squares represent measured variables. All parameters are standardized and significant at $p < 0.05$. Residual differences are indicated in small circles.

can adopt high levels of precompetitive self-confidence intensity and a facilitative directional interpretation of precompetitive anxiety. In contrast, less experienced athletes have revealed lower levels of self-confidence, with effects that are neither facilitative nor debilitating on their performance.

In contrast, Singley et al. (2012: pp. 453-496), recently reported that there are no significant differences in frequency and direction levels of precompetitive cognitive and somatic anxiety, and in the level of intensity of precompetitive self-confidence between expert and non-expert cavaliers.

Based on the results obtained in our study and the results presented above, we have noted that most studies indicate that expert athletes reveal low levels of cognitive and somatic anxiety intensity and high levels of anxiety. Self-confidence with facilitating directional interpretations and positive diffusion over time of precompetitive anxiety.

Compared to the "technical station" factor, our study shows that through the three measures of pre-competitive anxiety, self-confidence is the most sought-after dimension by goalkeepers, defenders, players in the middle and

Figure 3. Model of the hypothetical structure: the frequency scale. Circles represent latent constructions and squares represent measured variables. All parameters are standardized and significant at p < 0.05. Residual differences are indicated in small circles.

attackers. In this context and following a thorough analysis of literature reviews in sports psychology, we found that our study is innovative in this field of study.

6.3. The Effects of Interactions

MANOVA variance analysis, which we performed to estimate interaction effect, coaching, experience and technical position, only demonstrates the presence of coaching influence on precompetitive anxiety in our participants.

The research interest in coaching behaviors and its effects on psychological variables such as anxiety (Keegan et al., 2011: pp. 1-55), is exploited in young athletes with competitive practice (Fry et al., 2010: pp. 294-304; Gould et al., 2012: pp. 80-87).

According to Martin et al. (2014: pp. 111-123), young Americans view coaches as positive ascendants positive about their behaviors. In the same context, Balaguer et al. (2007: pp. 123-139), ask that the coach support a favorable psychological environment for young athletes to exploit their maximum potential during the competition.

The coach-trainer represents informational support (Wolfenden & Holt, 2005:

pp. 108-126), and emotional support (Reinboth et al., 2004: pp. 297-313). Coaches are among the most influential social factors in young athletes (Brustad et al., 2001: pp. 604-635).

It has been justified that the motivational climate established by the coach (Gould et al., 2012: pp. 80-87; Smith et al., 2006: pp. 479-501) and the acts that he has commits to circulate (Fry et al., 2010: pp. 294-304), have a direct influence on the personal and social development of young athletes.

In addition, coaches can have a negative influence on athletes (Keegan et al., 2011: pp. 1-55), through certain behaviors which disadvantage the development of athletes (Reinboth & Duda, 2006: pp. 269-286).

7. Conclusion

The management of stress and more precisely pre-competitive anxiety is a fundamental objective for the athlete and for all the actors active in the institutional system of training.

In this context, our work has been designed to present a well detailed repertoire to understand how pre-competitive anxiety is identified in our young footballers, during the main competitive events.

In our elite U15 footballers, the directional interpretation of self-confidence is always favorable for performance, and positively continuous over time.

The MANOVA analysis only shows the impact of the coach trainer. But the regression analysis did not reveal any significant predictive linear relationships.

On the other hand, the study of pre-competitive anxiety in relation to the technical position, such as the goalkeeper, the defender, the middle player or the attacker, is considered the first in this field of study.

Among the limitations of our work, we had examined only pre-competitive state anxiety and neglected precompetitive anxiety trait. However, the effect of personality, for example, among young elites in a decisive pre-training phase seems important to us for a highly selective career.

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