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ORIGINAL

COMMITMENT AND NEGATIVE ADDICTION TO TRAINING AND COMPETITION FOR MARATHONERS

COMPROMISO Y ADICCIÓN NEGATIVA AL ENTRENAMIENTO Y COMPETICIÓN DE LOS MARATONIANOS

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SUMMARY

Commitment and negative addiction to training and competition are studied through a wide sample of marathoners in Spain. Valuable descriptive data were collected from the sample, leading to the hypothesis that commitment and negative addiction in marathon runners are different concepts, as they are predicted using different sociodemographic variables, training and performance, and also differences in gender. Nevertheless, there is high correlation between the two, leading to the conclusion that marathoners usually acquire negative addiction (not desirable) as a consequence of commitment (healthy and desirable) and of training more times per week in order to escape or forget: in the case of men, to escape from worries about children and work, and in the case of women, worries about children, especially those who are new to running. Finally, some variables which were dealt with as predictors could not be classified within either construct; personal record level, age, number of training companions, BMI and with whom the subject lives. It is advisable to continue to study these constructs from a psychological point of view, the motivations.

KEY WORDS: Commitment, Negative Addiction, Marathon.

RESUMEN

El compromiso y la adicción negativa al entrenamiento y competición son estudiados en una amplia muestra de maratonianos en España. El día previo a la carrera, durante la "Feria del corredor", se administró un cuestionario con la *CR-11*, *RAS-8* y valiosos datos descriptivos de la muestra. Se comprobó que era correcta la hipótesis de que el compromiso y la adicción negativa en los maratonianos son conceptos diferentes; puesto que se predicen por diferentes variables sociodemográficas, de entrenamiento y rendimiento, existiendo también diferencias por sexos. No obstante, existe una alta correlación entre ambos, concluyéndose que en los maratonianos la adicción negativa (no deseable) suele adquirirse como consecuencia del compromiso (sano y deseable) y de entrenar más días a la semana para evadirse u olvidarse, en el caso de los hombres, de las preocupaciones de los hijos y el trabajo, y en el caso de las mujeres, de las preocupaciones de los hijos, sobre todo cuando estas llevan menos años corriendo. Por último, algunas variables manejadas como predictoras, finalmente no resultaron serlo.

PALABRAS CLAVE: Compromiso, Adicción Negativa, Maratón.

INTRODUCTION

The degrees or levels of commitment towards and dependence upon sport are two psychological constructs which have been widely tackled in international literature within different areas. On a general level, etymologically commitment simply means a “contracted obligation” (DRAE, 2004¹). On a sporting level, commitment is a psychological construct which signifies the desire and will to continue practicing sport, (Scanlan, Carpenter, Schmidt, Simons & Keeler, 1993a; Scanlan, Simons, Carpenter, Schmidt & Keeler, 1993b) which is associated with positive factors (such as intrinsic enjoyment of the activity itself, the opportunity to successfully participate, the investment of personal time, money and experience into the sport, social pressure from parents, trainer, friends, etc), although alongside the increase in these factors also comes an increase in commitment, and when there is an association with negative factors (such as alternative successful participation in other attractive sports), commitment decreases.

Investigators' efforts have usually been concentrated on why many sportsmen, who commit to training and competing on a regular basis, eventually become dependent upon practicing their sport (Adams & Kirkby, 2003; Anthony, 1991; Ogden, Veale & Summers, 1997; Pierce, 1994). Raedeke (1997) called this dependency *entrapment* (the sportsman's perception that he or she has to participate obligatorily). Alternatively, Rodríguez, (2007) and Contreras and González (2009), with reference to body builders, used the term *vigorexia*, whilst Hailey and Bailey (1982) and Morgan (1979), with specific reference to marathoners, termed it *negative addiction*.

The majority of investigators agree that this dependency, entrapment or negative addiction, is equally due to psychological factors (improvement in mood, health, self esteem, confidence and social relationships) as it is to physiological ones (activation of the opioid system, endogenous in the brain, the working of catecholamines and the activation of specific cerebral structures) which are produced through regularly practicing sport (Adams & Kirkby, 2003; Antolín, De la Gándara, I. García & Martín, 2009; Arbinaga & Caracuel, 2007; Hamer & Karageorghis, 2007). However, definitive conclusions have not yet been reached to explain this dependency on sport.

If we consider the group which demonstrates perhaps the highest level of commitment and negative addiction in terms of their sport, marathoners (Ogles & Masters, 2000), we can see that, particularly in Spain, there are few examples of studies which show the degree of commitment or negative addiction present during training and competing, despite the fact that in recent years, in the first marathons of the Spanish athletics calendar, we see that year after year there are record numbers of participants signed up to complete this tough race. In addition, despite there being general measures of commitment and negative addiction in sport (such as the *Sport Commitment Model Questionnaire -SCMQ-* by Scanlan, et al., 1993a, and the *Exercise Dependence Questionnaire -EDQ-*

¹ Translation note: I have literally translated the definition from the DRAE rather than taking a new one from an English dictionary, and will continue to translate in this way for all quotes and references. KB

by Ogden, Veale & Summers, 1997), it is worth noting that for groups of marathoners on Spanish, there are only two specific questionnaires: the *Commitment to Running Scale-11 (CR-11)* by Ruiz-Juan and Zarauz (2011) for measuring commitment to running and the *Running Addiction Scale-8 (RAS-8)* by Zarauz and Ruiz-Juan (2011) for measuring negative addiction to running.

It is important to highlight that, even just crossing the finishing line requires a level of cardiorespiratory capacity and both physical and psychological resistance which can only be achieved over several months, even years, of committed preparation and training. In fact, the majority of marathoners train much more than is necessary to keep in shape (which is also the case for the majority of sportspersons) and they continue to work in this rhythm for many years. At this high level of commitment to running (CC) as much with training as with competing, Masters, Ogles and Jolton (1993) term it “*super-adherence*”.

However, when these levels of CC reach an above-reasonable level, to the detriment of the runner's quality of life (Ardila, 2003), we enter into the realms of negative addiction to running (ANC)²; the addict's work and social life, and even health then deteriorate (Coen & Ogles, 1993; Glasser, 1976; Hamer & Karageorghis, 2007; Morgan, 1979; Ogden, Veale & Summers, 1997), be that on a physical level (continuing to run with injuries against medical advice) or a mental level (withdrawal symptoms, anxiety and irritability when unable to train). These undesirable effects can have disastrous consequences for both runners and their friends and family (Jaenes, 1994; Rudy & Estok, 2007), who see how their loved ones organise their entire lives around training and participating in a particular race, to the point where they even begin to plan family holidays around a marathon.

Glasser (1976) differentiated between two types of addiction to running. On the one hand, he spoke of *positive addiction to running (APC)*³, understood to be an enjoyable activity causing extreme pleasure, even euphoria, with mental effects which make the experience as pleasant as it is addictive. Kostrubala (1977) indicates that these desirable mental effects are only achieved by regularly running for at least forty consecutive minutes, terming them *runner's euphoria*. On the other hand, Glasser (1976) referred to ANC, which eventually dominates a person's life, and which would, for example, be comparable to an impulsive and compulsive addiction to shopping (I. García, 2007). The undesirable and negative effects of ANC appear in addicted runners after not running for 24-36 hours (Sachs, 1981).

Subsequently, Carmack and Martens (1979) drew a comparison between the concepts of APC and CC, in a study in which they also developed and validated an instrument with which to measure it: the *Commitment to Running Scale (CR)*. Chapman and De Castro (1990) for their part argue that CC and ANC are two concepts which we have no reason to bind together, so in their study, as well as developing and validating a way of measuring the latter, the *Running Addiction Scale (RAS)*, they proved that in the case of women, it is possible to be committed but to not develop ANC as a result. Horton and Mack (2000) also

² Acronym of the Spanish 'adicción negativa a correr'

³ Acronym of the Spanish 'adicción positiva a correr'

explained that runners with a high sense of *athletic identity* had no reason to neglect aspects of their personal lives in order to fulfil their role as an athlete, again dispelling the myth in which there is a necessary link between a high degree of CC and ANC.

However, other authors (Thornton & Scott, 1995; Dawson & Peco, 2004) came to the conclusion that there was in fact high correlation between CC and ANC, given that the latter usually comes as a consequence of the former. For this reason, Thornton and Scott (1995) warned that the consequences of ANC should not be taken lightly, as runners with a tendency to stress who start continuous racing as a means of improving their health could develop pathological obsessive behaviour as well as their CC, this aspect subsequently corroborated by Leedy (2000).

On the other hand, it is logical that both concepts would be influenced by a series of independent variables which explain or predict their level. In this way, we see that Thornton and Scott (1995) concluded that CC could be predicted by a higher *number of training sessions per week* and higher *number of km/week*. Chapman and De Castro (1990) also concluded that the amount of CC could be predicted in men by a greater ANC and by a greater *number of days of training per week*, while in women it could only be predicted by a greater ANC. Carmack and Martens (1979) previously concluded that CC could be predicted both by a greater *number of days of training/week* and by *minutes/training session*, equally with men as with women.

With respect to ANC, Dawson and Peco (2004) concluded that it was equally possible to predict heightened commitment in men and women. Meanwhile, Chapman and De Castro (1990) found that ANC could be predicted in men by a greater amount of CC, *number of days of training/week* and *minutes/training session*, whereas the same was only true for women in terms of greater amount of CC and *number of days of training/week*.

But the authors who used more independent predictor variables in marathoners were Master, Ogles and Jolton (1993) and in their study, amongst others, they used a rather different method of measurement, the *Demographic and Training Questionnaire (DTQ)*. This was subsequently used by Ogles, Masters and Richardson (1995) and Ogles and Masters (2000), evaluating sociodemographic variables such as *age, gender, ethnicity and annual income*, as well as training and performance variables such as *average kilometres of training per week, length of training session, training days per week and training companions, percentage of training alone per week, years spent running, number of completed marathons, record time for a marathon and average time for completed marathons*.

Few investigators have studied the specifically Spanish marathoners. We have available Jaenes (2000) who, in a study of precompetitive anxiety in Spanish marathoners, differentiates between the concepts of ANC and APC. Furthermore, Jaenes (2003) and Jaenes and Caracuel (2005) explain the psychological preparation necessary to take on a marathon. Bueno, Capdevila and Fernández (2002) show how competitive suffering affects the runners'

performance. Buceta, López, Pérez, Vallejo and Del Pino (2003) and later Larumbe, Pérez and López (2009) study the psychological state (anxiety, self-confidence...) of marathoners in the hours prior to a race. Jaenes, Godoy and Román (2008) and Jaenes (2009) discuss a one-dimensional psychological construct, *Resistant Personality (PR)*⁴, which refers to a constellation of personality traits related to marathoners' personal perceptions of control, commitment and challenge.

However, we can say that the lack of specific studies of *CC* and *ANC* with an ever-expanding group of Spanish runners has seemed reason enough to justify our study of both constructs, given the great interest in their consequences. Furthermore, the sample groups of marathoners in the majority of specific studies used never exceed 300 subjects, the minimum amount recommended by Carretero-Dios and Pérez (2005) in order to obtain reliable results, providing another reason to justify the necessity for our study.

Therefore, our objective is to shed light on the controversy of the correlation between the two specific psychological constructs at the centre of our investigation (*CC* and *ANC*) in Spanish marathoners. To this end, we will study which variables have the greatest predictive influence upon one construct or the other, analysing gender differences. We will begin with the hypothesis that, although *CC* and *ANC* are different, there is a high correlation between both constructs in the case of Spanish marathoners. Furthermore, these cannot be predicted only by *average training sessions/week* and *minutes training/session* as is the case for the majority of consulted authors, but through a greater number of sociodemographic variables and training and performance factors, as there are also gender differences in terms of the variables which determine one or the other construct, which could clarify why both sexes pass from simply being committed to running to becoming negatively addicted to running, the other key objective of our investigation.

METHOD

Participants

We began with the total number of marathoners signed up to the 2008 San Sebastian marathon and to the 2009 Seville and Barcelona marathons. To ensure that the samples were representative (error $\pm 3\%$, confidence interval 95.5%), a form of stratified sampling was employed for proportional affixation taking gender sex into account (88.94% men and 11.05% women) and age. A questionnaire was given out to 1226 marathoners who ran in the marathons in San Sebastian (30-11-08), Seville (22-02-09) and Barcelona (01-03-09). The random sample (Table 1) was composed of 1108 men (90.37%) with an age range of 17 to 71 years old ($M=39.92$; $SD=8.91$) and 118 women (9.63%) with an age range of 21 to 57 years old ($M=38.10$; $SD=8.02$).

Table 1. Participants (*n*), Age range, Average age (*M*), Standard deviation (*SD*)

<i>n</i> (%)	Age range	<i>M</i>	<i>SD</i>
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⁴ Spanish acronym 'Personalidad Resistente'

Men	1108 (90.37%)	17 to 71	39.92	8.91
Women	118 (9.63%)	21 to 57	38.10	8.02

Instruments. Psychometric properties

□ *Commitment to Running Scale-11 (CR-11)* by Ruiz-Juan and Zarauz (2011); validated Spanish version (Appendix 1) of the *Commitment to Running Scale (CR)* by Carmack and Martens (1979). This contains 11 items for measuring CC. Responses are collected through a Likert scale from 1 (*completely disagree*) to 5 (*completely agree*), so that we would move between a minimum score of 11 on the *CR-11* (minimum CC) and maximum of 55 (maximum CC). The scale's internal consistency is $\alpha=.87$. This presents correct values which allow us to determine an acceptable level of adjustment to the original model. The results of the confirmatory factorial analysis were: $\chi^2/df=2.93$; $GFI=.91$; $IFI=.93$; $CFI=.93$; $TLI=.91$; $SRMR=.05$; $RMSEA=.05$.

□ *Running Addiction Scale-8 (RAS-8)* by Zarauz and Ruiz-Juan (2011); validated Spanish version (Appendix 2) of the *Running Addiction Scale (RAS)* by Chapman and De Castro (1990). This contains 8 items for measuring ANC. The results from the evaluated subjects are collected through a Likert from 1 (*completely disagree*) to 7 (*completely agree*), so that we would move between a minimum score of 11 on the *RAS-8* of 8 (minimum ANC) and maximum of 56 (maximum ANC). The scale's internal consistency is $\alpha=.84$. This presents correct values which allow us to determine an acceptable level of adjustment to the original model. The results of the confirmatory factorial analysis were: $\chi^2/df=4.07$; $GFI=.88$; $IFI=.90$; $CFI=.90$; $TLI=.88$; $SRMR=.05$; $RMSEA=.07$.

□ Sociodemographic variables: *age, sex, with whom the subject is currently living, number of children and/or dependent family members, body mass index, level of study and dedication or working activity.*

□ Training and performance variables: *average kilometres per week in training, length of training sessions, number of days training per week and training companions, percentage of time training alone per week, years of running experience, coach or no, number of marathons completed, record marathon time and average time for completed marathons.*

Procedure

We requested the racing organisation's permission via letter, in which we explained the investigation's objectives and how it would be carried out, accompanied by a model of the means of measurement. Permission was granted, and also our own stand for this purpose. The questionnaire was conducted by investigators while participating athletes' bibs were being collected, during the rest and relaxation periods of the visit to the *Running Festival* in the days prior to the race. All subjects were made aware of the study's objective, and informed that it was completely voluntary, that all answers and data were absolutely confidential and that there were no correct or incorrect

answers. They were also asked to answer as sincerely and honestly as possible.

Statistical data analyses

Item analyses, homogeneity of scales, internal structure, correlation between scales (Pearson's coefficient), internal consistency (Cronbach's alpha) different in measurement by gender (*t* Student) and linear regression were carried out with SPSS 17.0. To evaluate factorial structure, a confirmatory factorial analysis was carried out using AMOS 18.0.

RESULTS

Initial description of data according to sex

The average score for the *CR-11* was 3.84 (out of 5) with a typical deviation of .71, that is, 3.82 in men (*SD*=.70) and 4.04 in women (*SD*=.69). For the *RAS-8*, the average score was 4.95 (out of 7) (*SD*=.92) for the whole sample, and 4.94 (*SD*=.92) and 5.06 (*SD*=.95) respectively for men and women. The test results *t* indicate that there are no significant differences in *ANC* (*RAS-8*) between men and women, but that there are in the *CC* (*CR-11*) in favour of women ($F=.026$, $p<.001$). In addition, the correlation between both scales, *CR-11* and *RAS-8*, is high, positive and significant ($r=.59$) and with no differences between the sexes.

In the continuous independent variables that we have used as hypothetical predictors of *CC* and/or *ANC*, that is to say, training habits, we encounter significant differences according to sex, with the exception of *kilometers per week in training*, as the values are significantly greater with men (Table 2). In this way, the male marathoners in our sample average 54.71 kilometers during training per week compared to the 45.78 kilometers of their female counterparts. Equally, both sexes exceed one hour and ten minutes per training session, with an average of more than 4 days of training per week; they usually run alone and when they go with others it is with 3 other runners; they have been running for between 9 and 10 years and the majority have finished between 4 and 6 marathons.

Table 2. Averages, *F* and significance of continual independent variables in men ($n=1108$) and women ($n=118$).

	Men	Women	<i>F</i>
Km/week	54.71	45.78	4.00***
Hours of training per session	1.18	1.11	3.00
Training days per week	4.31	4.24	.05
% of solo training per week	69.29	67.42	.54
Years of running experience	9.90	8.92	4.75
Nº of training companions	2.63	3.03	1.95
Nº marathons completed	5.52	4.22	3.04

***($p<.001$)

Table 3 shows the categorical variables, which correspond to sociodemographics and performance, for which we can confirm that in all

cases, there are significant differences in terms of sex. We can see that the majority of our sample hasn't a coach (85.7% of men and 77.1% of women), that the record level is proportionally higher for men than it is for women, although the latter are on average half as young, slim, with a higher level of study and with no children. The majority of marathoners live with their partner or with friends or family (minus almost a quarter of women who live alone) and , although the majority of runners work or study, there is a significantly greater difference between the amount of housewives and househusbands (4.2% and .4% respectively).

Table 3. Percentages, Pearson's Chi-squared and significance of categorical independent variables in men (n=1108) and women (n=118).

	Men	Women	X ²
Coach?			
No	85.7	77.1	6.18*
Yes	14.3	22.9	
Personal best			
None	26.0	23.7	17.88**
Men: up to 2.30'/Women: up to 2.45'	1.0		
Men: 2.31' to 3.00' Women: 2.46' to 3.15'	10.2	1.7	
Men: 3.01' to 3.30/ Women: 3.16' to 3.45'	26.5	23.7	
Men: 3.31' to 4.00'/ Women: 3.46' to 4.15'	24.1	29.7	
Men: More than 4.01'/ Women: more than 4.16'	12.2	21.2	
Average time			
None	26.0	23.7	19.37**
Men: up to 2.30'/Women: up to 2.45'	.3		
Men: 2.31' to 3.00'/ Women: 2.46' to 3.15'	6.0	0.8	
Men: 3.01' to 3.30/ Women: 3.16' to 3.45'	24.6	15.3	
Men: 3.31' to 4.00'/ Women: 3.46' to 4.15'	27.1	32.2	
Men: More than 4.01'/ Women: more than 4.16'	16.1	28.0	
Age			
Up to 33	24.6	31.4	10.22*
34-39	28.2	23.7	
40-46	24.4	32.2	
More than 47	22.7	12.7	
Who you currently live with			
I live alone	13.7	22.9	7.26*
I cohabit with my partner	54.6	50.0	
I live with friends or family	31.7	27.1	
Children and/or dependents			
0	47.8	64.4	17.68**
1	15.2	16.1	
2	26.5	17.8	
3 or more	10.5	1.7	
BMI			
Underweight	.9	6.8	49.14***
Normal weight	72.7	88.1	
Overweight	25.5	4.2	
Obese	.9	.8	
Education completed			
None	.5		11.40*
Primary	11.6	4.2	
Secondary	30.5	23.7	
University	57.4	72.0	
Main occupation			
Housewife	.4	4.2	26.88***
Retired/pensioner	1.9		
Student	3.7	6.8	

Employed	94.0	89.0
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*(p<.05), **(p<.01), ***(p<.001)

Bivariate linear regression

We carried out a bivariate linear regression analysis, taking average *CR-11* and *RAS-8* score as the dependent variable and each of the sociodemographic variables of training and performance as the predictor variable, the selection variable being sex. From said analysis, we used the value *Beta* to explain the prediction between variables, the value *F* to see if a relationship exists between the selected variables and their significance (Table 4).

Table 4. Bivariate Linear Regressive Analysis; prediction and significance of *CC* and *ANC* by sex according to sociodemographic, training and performance variables.

	CR-11				RAS-8			
	Men		Women		Men		Women	
	Beta	F	Beta	F	Beta	F	Beta	F
Km/week	.27	88.48***	.27	9.25***	.28	91.49***	.20	5.02**
Hours of training per session	.12	16.64***	.02	.04	.10	10.81***	.07	.64
Days of training per session	.20	45.47***	.26	8.42***	.28	93.35***	.26	8.51***
% training alone per week	.00	.01	.13	1.91	-.01	.05	.02	.06
Years of running experience	.10	11.78***	.09	.98	.03	.87	-.10	1.28
Coach?	.07	6.61**	.06	.41	.09	9.04***	.06	.45
Nº of training companions	.05	2.91	-.13	2.21	.05	3.12	-.09	1.03
Nº marathons completed	.12	15.75***	-.04	.23	.04	1.52	-.14	2.36
Personal best	.04	1.59	.11	1.45	-.01	.17	.00	.00
Average time	.04	2.22	.09	.86	-.01	.13	-.01	.01
Age	.03	.97	-.04	.17	.02	.47	-.07	.54
Lives with	-.00	.02	.01	.01	.05	3.37	-.05	.25
Children and/or dependents	.01	.14	.19	4.41**	.06	4.44**	.19	4.29**
BMI	.02	.53	-.01	.01	.01	.28	-.09	.87
Education completed	-.11	14.85***	.09	.89	-.08	7.44***	.04	.23
Occupation	.04	1.55	-.10	1.25	.07	6.51**	-.02	.06

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

Two variables clearly predict *CC* and *ANC*, both in men and women; the greatest *number of km/week* and *training days/week*. Others predict both constructs only for men (greatest *number of hours of training/day*, lowest *level of study* and *whether they have a coach*). Another variable predicts both for women only (*number of dependent children/family members*). There are others which only predict one of the constructs for men (greatest *number of years running experience* and *number of marathons completed* only predict their *CC*, and *whether working* only predicts their *ANC*). In short, only three variables influence women, significantly predicting both *CC* and *ANC* (greatest *number of km/week*, of *days of training/week* and of *dependent children/family members*).

The rest of the sociodemographics variables, of training and performance do not significantly predict *CC* or *ANC* (*% who train alone*, *number of training companions*, *record or average time*, *age*, *with whom they live* and *BMI*).

Multivariate linear regression

In order to find a model which explains variation to the greatest extent possible,

we carried out two multivariate linear regression analyses. In the first, we took the average *CR-11* score as the dependent variable followed by the *RAS-8* score, and then the sociodemographic, training and performance variables as predictor variables, and finally taking sex as the selection variable. In the second we did the same as the previous one, although this time including average *RAS-8* or *CR-11* score respectively as predictor variables.

As a result of the first analysis, we encountered some models which barely exceeded 10% of explanatory variation, for which reason they were discarded due to their weakness. However, the second analysis presented much more solid models since, in all cases, they explained almost 40% of the variation. From this second analysis, we used the value R^2 to explain the variation, *Beta* to explain the prediction between variables, *F* to see if a relationship exists between selected variables and their significance (Table 5).

Table 5. Multivariate Linear Regressive Analysis; models which significantly predict *CC* or *ANC* by sex according to sociodemographic, training and performance variables.

	CR-11				RAS-8			
	Men		Women		Men		Women	
	<i>Beta</i>	<i>Sign.</i>	<i>Beta</i>	<i>Sign.</i>	<i>Beta</i>	<i>Sign.</i>	<i>Beta</i>	<i>Sign.</i>
CR-11					.55	***	.60	***
RAS-8	.55	***	.55	***				
Km/week	.09	***	.15	*				
Days of training per week					.17	***		
Years of running experience	.05	*					-.16	*
Nº of marathons completed	.06	*						
Children and/or dependents					.05	*		
Education completed	-.05	*						
Occupation					.04	*		
	$R^2=.368;$ $F=128$		$R^2=.373;$ $F=34.17$		$R^2=.378;$ $F=167$		$R^2=.374;$ $F=34.38$	

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

According to the set of results obtained in this second analysis, the models show us that *CC* in men can be predicted significantly, in this order, by its greater *ANC*, greater *number of km/week*, *completed marathons* and *years of running experience*, as well as lower *level of studies* (this first model explains 36.8% of variation) and, in women, it can be significantly and uniquely predicted by greater *ANC* and greater *number of km/week* (this model explains 37.3% of variation).

The *ANC* model, in men, indicates that it can be significantly predicted by its greater *CC*, greater *number of training days/week*, *dependent children and/or family members* and *whether working or not* (this model explains 37.8% of variation) and, in women, it can be significantly predicted only by greater *CC* and lower *number of year of running experience* (this model explains 37.4% of variation).

DISCUSSION AND CONCLUSIONS

Only from the current postmodern viewpoint of the times in which we live can we understand the emergence of phenomena such as commitment and negative addiction to training and sporting competitiveness, so we have borne

witness to the devaluation of work as a source of production and satisfaction (Águila, 2005) and to the fact that spending leisure time practicing sport is increasingly important in our lives (Gómez, Ruiz-Juan, M. E. García, Flores & Barbero, 2008; Flores & Ruiz-Juan, 2010), to the point where sport has gone from being merely a healthy physical activity or competitive spectacle to being a recreational and social ritual which is almost obligatorily undertaken (Antolín, et al., 2009; Abrales & Argudo, 2009).

In our study we have tackled the concepts of commitment (healthy and desirable) and negative addiction (undesirable) in Spanish marathoners with the hypothesis that they could be predicted by a good number of sociodemographic, training and performance variables. This presents us with our investigation's objective of shedding light on the controversy of the similarities between both constructs and proving whether or not gender differences exist within them. The results of the investigation analyses show, as they did for Chapman and De Castro (1990), that both concepts are different, since not only are they predicted by different variables, but the variables which predict the same concept in both men and women also only coincide in some cases, having ended up with four different models which are solid and consistent in both constructs for both sexes, as was hypothesized.

Despite that, like Thornton and Scott (1995) and Dawson and Peco (2004), we have found a high correlation between *CC* and *ANC*, both with men and women, although Carmack and Martens (1979) and Chapman and De Castro (1990) did not find the same result. This could be due to societal changes in recent years (Antolín, et al., 2009), since our results coincide in this sense with those of more recent studies, for which reason we can affirm that currently, generally, an increase in *CC* means an increase in *ANC*, as well as the fact that both concepts are predictable using different variables with one sex or the other, confirming our initial hypothesis in this respect.

In order to try to achieve our investigation's other objective, that is to say, to clarify why someone may go from being a committed runner to a somebody who is negatively addicted to running, from observing which variables predict *CC* and *ANC* in both sexes (Tables 4 and 5), we can conclude that, in men, having a greater *number of children* and *to be working* are the variables which provoke this change, whilst for women, these variables are having a greater *number of children* and to have fewer *years of running experience*. We do not have references against which to contrast these results, for which reason, as a contribution to our study as well as because of physiological and psychological factors previously mentioned in the introduction (Adams & Kirkby, 2003; Antolín, et al., 2009; Arbinaga & Caracuel, 2007; Hamer & Karageorghis, 2007), we can infer that a marathoner with *ANC* develops it as a result of training more days a week than a committed marathoner, probably to escape or forget themselves. In the case of men, this could be to escape from worries about children and work, and in the case of women, from worries about children, especially if they have not been running for many years.

However, we did not anticipate that some of the sociodemographic, training and performance variables that we used hypothetically as predictors so as to

indicate *CC* or *ANC* in both sexes, turned out not to be predictors (*personal record level, age, number of training companions, BMI and with whom they live*) according to what regressive analyses suggest. The fact that practically half of the expected variables were rejected as predictor variables is very probably due to the ambitiousness of our hypothesis in terms of its number of factors, which is in contrast to the majority of references thus far recorded (Carmack & Martens, 1979; Chapman & De Castro, 1990; Dawson & Peco, 2004; Thornton & Scott, 1995), which barely incorporated 2 or 3 into their hypotheses (*number of days of training/week, number of hours training/session and/or number of kilometers/week*).

It was also unexpected that the women in our sample turned out to have similar or only slightly inferior training habits to those of their male counterparts, which indicates a clear change towards balancing out the traditional tendencies of significant differences in favour of men in terms of these variables (as Carmack & Martens, 1979, also encountered). So, despite this unexpected balance between the sexes in terms of their training habits, we did not expect the women in our sample to achieve higher average scores than men, both in *CC*, and, significantly, in *ANC*, which is in contrast to all previous references thus far (Carmack & Martens, 1979; Chapman & De Castro, 1990) and again confirms the differences between the sexes as we hypothesized.

This marked change in tendency both in training habits and women's average scores obtained for *CC* and *ANC*, we think could be due to the equally noticeable change of the role of women of the past into the current women of our current postmodern, 21st century society, which is evidenced in the works of M. García (2005) and Águila (2005).

It is important to also underline that, contrary to the popular belief that having a trainer is something which only concerns the marathon-running elite, in our study we have corroborated that this is not so, since both in the cases of men and women, the vast majority are concerned with having one.

Other differences between the sexes were found within certain sociodemographic, training and performance variables. For example, the greater *number of years of running experience* significantly predicts *CC* in men, whereas in women, it is the fewer *years of running experience* which predicts *ANC*. These results are in contrast with those obtained by Thornton and Scott (1995), as *years of running experience* was not a predictor variable of *CC* for either sex. As for why these noticeable differences exist between the sexes in terms of the variables which predict commitment and negative addiction in marathoners, we can venture that men and women run for very different reasons and equally they hope to benefit in different ways through doing it, as suggested by Masters, et al. (1993).

So, for future investigations, given the conclusiveness of the results obtained on a sociodemographic, training and performance level which explain a large part of the variation within this group, it would be highly useful to investigate the correlates or reasons for running and the benefits that marathoners hope to achieve on a psychological level, relating them to their *CC* and *ANC*, to

therefore be able to understand them in depth, as well as the differences between the sexes.

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Total references: 49 (100%)

Own Journal references: 0 (0%)

Appendix 1. CR-11 (Ruiz-Juan & Zarauz, 2011).

The following phrases may or may not describe your feelings towards running. Mark how far the following statements describe your general feelings towards running from 1 (completely disagree) to 5 (completely agree).

1. I am eager to run	1	2	3	4	5
2. Running is enjoyable	1	2	3	4	5
3. I don't enjoy running (R)	1	2	3	4	5
4. Running is of vital importance to me	1	2	3	4	5
5. My life is much more fulfilled because I run	1	2	3	4	5
6. Running is pleasant	1	2	3	4	5
7. The idea of running terrifies me (R)	1	2	3	4	5
8. I would reorganise or change me timetable in order to satisfy my need to run	1	2	3	4	5
9. I have to force myself to run (R)	1	2	3	4	5
10. To go a day without running is a relief for me (R)	1	2	3	4	5
11. Running is the climactic point of my day	1	2	3	4	5

(R) These items reverse the scoring

Appendix 2. RAS-8 (Zarauz & Ruiz-Juan, 2011).

Mark the following statements from 1 to 7 regarding your running habits (1 indicates that you do not agree with the statement and 7 indicates that you completely agree).

1. If the weather is too cold, hot or windy, I choose not to run (R)	1	2	3	4	5	6	7
2. I would not change plans with friends so that I could go running (R)	1	2	3	4	5	6	7
3. I have stopped running for at least a week for other reasons than having an injury (R)	1	2	3	4	5	6	7
4. If there were another way to maintain my current fitness level, I would never run again (R)	1	2	3	4	5	6	7
5. After running I feel better	1	2	3	4	5	6	7
6. I would continue running while recovering from an injury	1	2	3	4	5	6	7
7. Some days I run even if I don't feel like it	1	2	3	4	5	6	7
8. I feel that I need to run at least once every day	1	2	3	4	5	6	7

(R) These items reverse the scoring

Total references: 49 (100%)

Own Journal references: 0 (0%)