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REVISIÓN / REVIEW

THE ATHLETE'S PERSONALITY: A THEORETICAL REVIEW FROM THE TRAITS PERSPECTIVE

LA PERSONALIDAD DEL DEPORTISTA: UNA REVISIÓN TEÓRICA DESDE LA PERSPECTIVA DE RASGOS

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ABSTRACT

The aim of this study was to perform a review of representative studies concerning the personality of the athlete against those who do not play sports using models of Cattell, Eysenck and Costa and McCrae, representatives of the theory of traits. Therefore we have performed a literature review of research articles with the Sport Discus search engine updated until July 2013, using the keywords "personality" and "sport". We have selected a total of 35 items related to the theme. We conclude that athletes are characterized by higher Extraversion, Emotional Stability and Responsibility than non-athletes. Openness to Experience and Affability according the characters from Costa's and McCrae's model, and the Psychoticism dimension from Eysenck's model does not seem to be associated with physical activity. Results are being discussed.

KEY WORD: personality, athletes, nonathletes, individual differences.

RESUMEN

El objetivo del presente trabajo ha sido realizar una revisión de estudios representativos relativos a la personalidad del deportista frente aquellos que no practican deporte desde los modelos de Cattell, Eysenck y Costa y McCrae como máximos representantes de la teoría de rasgos. Para ello se ha realizado una revisión bibliográfica de artículos de investigación con el buscador Sportdiscus actualizados hasta julio de 2013, utilizando las palabras clave “personalidad” y “deporte”. Se han seleccionado un total de 35 artículos relacionados con la temática. Se concluye que los deportistas se caracterizan por una mayor Extraversión, Estabilidad Emocional y Responsabilidad frente a los no deportistas. Los rasgos Apertura a la Experiencia y Afabilidad del modelo Costa y McCrae, y la dimensión Psicoticismo del modelo de Eysenck no parece que se asocien con la actividad física. Se discuten los resultados.

PALABRAS CLAVE: Personalidad, deportistas, no deportistas, diferencias individuales.

INTRODUCTION

By approaching the essays that collect reviews of topics studied in Sport Psychology (Bakker, Van Der Drug Whiting, 1993; Cox, 2009; Dosil, 2008), we can see that researches on personality, among others, have been an appellant topic throughout the years. Weinberg and Gould (2010) point out that until 1992 more than 1,000 publications related to work and sports personality (Vealey, 1989, 2002) had already been carried out, this proves the importance given to this subject and the fact that it is one of the most researched topics in Sport Psychology.

However, different authors (García-Naveira, 2010, Nuñez, 1998; Ruiz, 2004) point out that the study of personality in the sport field has gone through different times throughout history (high interest and getting clear results vs. low interest and obtaining contradictory or inconclusive results) in which the focus of attention has been focused on different analysis variables (features, values, motivation, emotion, etc.). These aspects have contributed to create certain confusion, discouragement or rejection among some researchers in the field, whereas others have kept on to go deeply into the subject defending its importance and usefulness.

In this regard, the study of personality in sport has progressed over the past few years by means of considering the feature as the unit of analysis, which has allowed to distinguish the athletes by stable behavior patterns. The starting point was to identify the features of those athletes as well as their degree, and to understand, explain and predict sports behaviour (García-Naveira, Ruiz and Pujals, 2011, Rhodes and Smith, 2006; Ruiz, 2012). For example, Costa and McCrae (2008) state that personality is a series of basic behavioral trends that influence the thoughts, emotions and actions of individuals. Their origin is biological and they develop from childhood to become stable structures in adulthood. The personality development is understood from the interaction

between the subject's genetics (inherited) and the environmental influence of physical activity and sport (Allen , Greenlees and Jones , 2013) .

The field of study of personality features in athletes has been tried to get organized in several essays. The classical contributions by authors such as Davies (1991) and Valdés (1998), who state the main lines of research in the study of the relationships between personality and sport stand out. Davies (1991) defines several areas of study such as: a) comparison of elite athletes with those of lower performing, b) personality differences between athletes and nonathletes c) depending on the sport of practice (e.g., athletics, football, etc..)

Subsequently and in a deeper way, Valdés (1998) highlights the main lines of research studied between personality and sport: 1) analysis of the selection of a specific type of physical activity or sport according to the personality features of the subjects , 2) the study of the development of specific personality features by the influence of a regular and systematic practice of sport and physical activity, 3) the study of the differences between those subjects who practice different kinds of physical activity and sport, 4) the influence of personality on sport performance, and 5) the establishment of potential level features differences between athletes and nonathletes.

Among the different possibilities of study, the aim of this study is to analyze whether athletes have a different personality than non-athletes. To that end, a brief historical survey of the study of the personality of athletes in terms of their features is firstly carried out. Second, we review some relevant research on feature differences between athletes and non-athletes, limited to those works in which only the models proposed by Cattell (1975), Eysenck (1985) and Costa and McCrae (2008) are used, as they are heads of the three main theories on features (Garcia-Naveira, 2010). Finally, some reflections on the current state of the study of personality in combination with athletes are included.

PAST AND PRESENT IN THE STUDY OF PERSONALITY IN COMBINATION WITH ATHLETES

The relationship between personality and sport has been studied since the early '60s and '70s, when this area grew significantly and became one of the most explored fields in Sport Psychology (Vealey, 2002). The published literature in the '60s showed that personality factors (eg., Extroversion and emotional stability) moderate and are positively associated with sports participation and success, while in contrast, the literature published over the '70s conclude that the study of personality is meaningless in sports due in part to the variety of contradictory obtained results (Raglin, 2001).

Credulous perspective vs. skeptical perspective

As a result of this controversy, several authors (Bakker et al., 1993, Cox, 2009; Weinberg and Gould, 2010) revealed two well-established positions, the "skeptical" one and the "gullible" one. In the first, under a skeptical perspective, the authors state that there are no differences in personality in the sporting

context. In addition, the theory of feature critics attribute little value to the usefulness of personality features for predicting and explaining sportsmanship as it lacks practical use. These authors suggest that when it comes to the personality of the athlete it is referred to a static description of personality as a stable set of characteristics that are expressed in all situations and they believe that this approach is inadequate because personality is described by means of diagnostic methods such as the standard personality questionnaires.

For instance, Esposito and Consiglio (1988) found no differences in personality between athletes and non-athletes by using the 16 PF in a sample of 90 physical education students (male and female) with an average age of 21.5 years. Vealey (1992) concluded that although the evidence suggests that the personality of the runners is characterized by introversion, emotional stability, low anxiety, self-sufficiency, high self-determination, and imagination, there is no such a personality of the athlete that shows the existence and consistency of features which differentiate athletes and non-athletes from different sports (eg., athletics vs . basketball). This way, Guillen and Castro (1994) did not find differences in personality either when applying the EQP to a sample of 80 athletes from different sports (eg., Football, handball and swimming) who used to train a minimum of 7 hours a week and 80 high school and college students (men and women), all aged between 15 and 30 years.

Under the credulous perspective, on the contrary, researchers can find differences in personality, in which certain features are considered to be relevant in relation to physical activity and sports performance (Allen et al., 2013; Garcia Naveira et al., 2011; Ruiz, 2012). Moreover those who defend the feature theory do support the use of these variables because it provides a relevant theory and multivariate statistical methodology, such as regression analysis, which are routinely used and cover the role of personality in sport and physical exercise (Cox, 2009; Ruiz, 2004, 2008).

As evidence thereof we may point out the first contributions to this area by Coleman R. Griffith between 1920 and 1940 by different studies on Sport Psychology, for example, differences in personality between football players and basketball players (Green, 2003) or reviews on sports and personality by Neumann (1957; quoted by Thomas, 1982), Morgan (1972), Sack (1975), Alderman (1983) and Marrero (1989). These authors conclude that there are several differences in terms of personality between athletes and non-athletes (eg., a higher extroversion, emotional stability and dominance in athletes versus nonathletes), depending on the sport type of practice (eg., greater introversion in individual sports athletes vs. team ones) and the competition level (eg., higher extroversion, dominance and aggression in elite athletes compared to the lower level ones).

More recently, the work of Allen et al. (2013), Rhodes and Pfaeffli (2012), Rhodes and Smith (2006) and Hoyt, Rhodes, Hausenblas and Giacobbi (2009) concludes that sport practice is positively associated with features of responsibility (eg., tendency to order, self-discipline and achievement orientation) and Extroversion (eg., sociability, activity, pursuit of stimulation and

positive affection) and negatively associated with Neuroticism features (eg, emotional instability, anxiety and vulnerability to depression).

Hypothesis development vs. selection hypothesis

Another aspect to consider is whether taking part in sport practice is one of the reasons that have an influence in personality differences or those differences do preexist and people choose their sport according to their personality characteristics (Cox, 2009 , Wann, 1997; Weinberg and Gould, 2010). The theoretical approach which states that sport activity influences the athlete's personality is called *development hypothesis* (eg., An introverted athlete may be less introverted due to the influence of participating in a sports team).

By contrast, when the personality characteristics of the athletes make them to choose certain sports it is called *selection hypothesis* (eg., An extroverted athlete takes part in a sports team as it promotes relations between its members) in which the personality profiles of the participants of each sport are usually shared.

Most likely, in terms of theoretical development and research in personality, both the "development" and the "selection" of any sport practice influence together on the individual's personality profile (García-Naveira et al. 2011). On this premise, mainly the development of personality within the sporting context makes sense when we focus on the study of children and youth (Rodríguez, 2003; Ruiz, 2006) and the stability of personality and sport selection when studying adult athletes (Elman and McKelvie, 2003; McKelvie, Lemieux and Scott, 2003).

In addition to both hypotheses, it is necessary to consider other factors such as the modulating effect of age, sex and residence population size of people in relation to their sporting behavior (Martinez-Tur, Peiro and Ramos, 1995). Results reveal that older people, women and users who live in cities or villages have less interest in sports activities and work out less often.

This way, Castillo, Balaguer and Thomas (1997) point out that sports participation involves both personal factors (eg., sports fitness evaluation), social factors (eg., It is easy to make friends) and environmental factors (eg., membership of a sports club). Thus, the relationship between personality and sport discipline must be considered a dynamic and probabilistic one in the sense that many variables come into play (Vitoria, 2005).

CURRENT PERSPECTIVE IN THE STUDY OF PERSONALITY WITH ATHLETES

Nowadays, there is still a debate on all these aspects and the authors note that one of the possible causes of lack of definitive conclusions in the study of personality with athletes is mainly derived from methodological, statistical and interpretive problems (García-Naveira, 2010 , Ruiz, 2004; Vealey, 2002).

Researchers criticism mainly focuses on the variety of theories and tools used in the analysis of personality (O`Sullivan, Zuckerman and Kraft, 1998), the difficulty for establishing the study sample (Elman and McKelvie, 2003), the use of small samples (Vealey, 1992), the lack of research replicability (Eysenck, Nias and Cox, 1982) and the inter-cultural studies (Cox, Liu and Qiu, 1996).

By analyzing the previous items, this scenario allows at least three areas of work in the study of personality within the sport context: a) The conduction of reviews of major research on personality and sport from Cattell (1975), Eysenck (1985) and Costa and McCrae (2008) models, as heads of the features theories, b) The continuation of research into the personality of athletes from these models with greater methodological rigor in order to control potential mediating variables, and this way, to study sport contribution on personality in depth and c) to do essays that, with different models and methodologies, let us open new lines of research in the study of personality within the sporting context.

In order to contribute to the understanding of the study of personality in sports from a featuristic perspective, this review aims to answer one of the main issues that has been debated among researchers over the last years, which is the study of personality differences between athletes and non-athletes by using the Cattell, Eysenck and Costa and McCrae models. To this end, a literature search of research articles has been carried out by using the SportDiscus search engine. We focused on articles updated until July 2013 of which we selected a total of 35 items that fit the subject. We used "personality" and "sport" as keywords.

Review from Cattell's model (1975)

Cattell's theory is one of the first models used in the study of personality with athletes. Important work was carried out during the '70s (Shurr, Ashley and Joy, 1977) by this model. By following a review of 10 essays from this model, no definitive conclusions among the different researches within the sporting context come up. Despite this assessment, some studies agree that athletes are more self-sufficient (Marrero, Martin-Albo and Nuñez, 2000; O'Connor and Webb, 1976; Renfrow and Bolton, 1979), relaxed (Bolton and Renfrow, 1979; Magni, Rupolo, Simini, De Leo and Rampazzo, 1985) and emotionally stable (Bolton and Renfrow, 1979; Garland and Barry, 1988; Tripanthi, 1980) than non-athletes. A summary of these studies is shown in Table 1.

Table 1. Review of studies of personality in athletes following Cattell's model.

AUTHOR	SAMPLE	INSTRUMENT	RESULTS
O'Connor and Webb (1976)	Athletes (Basketball, gymnastics, tennis and swimming) and non-athletes	16 PF	Athletes get higher scores in the factors like radicalism, self-reliance, intelligence and control than non-athletes.
Bolton and Renfrow (1979)	52 adult young women sprinters and non-sprinters	16 PF	The young ones were more stable and less anxious and tensed than the inactive ones.
Renfrow and Bolton (1979)	46 active and inactive male university students	16 PF	The inactive subjects get a higher score in extraversion, responsibility and astuteness. On the other hand the active subjects get a higher score in suspicion, freedom and self-reliance.
Tripanthi (1980)	Students football players and non-athletes	16 PF	The footballers showed a higher score in extroversion, emotional stability, assertiveness, responsibility, adventurous, suspicion, and lower score in seriousness, group dependence, indiscipline and relaxation than on-athletes.
Valliant, Simpson-Housley and Mckelvie (1981)	61 students divided in groups: athletes who compete, athletes who do not compete and non-athletes.	16 PF	Athletes were more dominant and less imaginative than non-athletes. The athletes who did not compete were less self-reliant than the other two groups.
Magni, Rupolo, Simini, De Leo and Rampazzo (1985)	22 mountain climbers.	16 PF	The athletes tend to be less anxious, they are more egocentric and they adapt to different situations more easily.
Howard and Cunningham and Rechnitzer (1987)	121 male managers and professionals.	16 PF	The introverted ones achieved higher scores in gardening and home improvement and the extroverted ones showed high scores in fishing, swimming, dancing, aerobics exercises and tennis.
Garland and Barry (1988)	272 school football players, divided in 3 categories (main player, substitute and not called)	16 PF	The group main players were more directed towards mental strength, extraversion, emotional stability, performance and self-confidence than with the other groups.
Marrero, Martín-Albo and Nuñez (2000)	64 tennis players, 63 individual athletes and 64 non-athletes aged between 14 and 25.	16 PF	The athletes are self-reliant, individualist and supportive, apart from tensed, energetic, impatient and uneasy and, on the other hand, responsive and emotionally changing.
Arbinaga and Caracuel (2008)	150 bodybuilders and 68 non-athletes.	16 PF	The non-athletes get higher scores in the traits reasoning, sensitivity and abstractedness than athletes, whereas these ones are more perfectionistic than the non-athletes.

16 PF= Cattell's 16 Personality Factors

Review from Eysenck's model (1985)

Based on a review of 12 studies from the Eysenck model, athletes are characterized by greater extroversion (Kirkcaldy, 1982 Kirkcaldy and Furnham, 1991, Szabo, 1992; Potgieter and Venter, 1995, Yeung and Hemsley, 1997; Arai and Hisamichi, 1998; Sale, Guppy and El-Sayed, 2000; Van Loon, Tjihuis and Surtees, 2001; Mckelvie, Lemieux and Scott, 2003; DeMoor, Beem and Stubbe, 2006) and *lower neuroticism* (Kirkcaldy and Furnham, 1991; Szabo, 1992; Potgieter and Venter, 1995; Droomer, and Van de Mheen Schrijvers 1998; Mckelvie et al. 2003; De Moor et al., 2006) than non-athletes. The results are shown in Table 2.

Table 2. Review of studies of personality in athletes following Eysenck's model.

AUTHORS	SAMPLE	INSTRUMENT	RESULTS
Kirkcaldy and Furnham (1991)	306 college and university students (active and inactive)	EPQ	Extroversion is positively linked with active people whereas neuroticism is positively related to inactive participants.
Szabo (1992)	35 athlete students and non-athletes	EPI	Athletes are more extraverted and less neurotic than non-athletes.
Potgieter and Venter (1995)	116 active students and inactive students	EPI.	Higher neuroticism in retired people from physical activity and no significant differences in extroversion are noticed.
Herrera and Gómez-Amor (1996)	25 women (14 athletes and 11 sedentary)	EPQ	It was noticed that athletes get higher scores in psychoticism than non-athletes.
Yeung and Hemsley (1997)	252 physically active adults	EPQ	Neuroticism is negatively linked with sport practice whereas no relation was found with psychoticism and extraversion.
Yeung y Hemsley (1997)	46 female athletes	EPQ	Sport practice is positively linked with extraversion; however, there is no evident association between psychoticism and participation in physical activity.
Arai and Hisamichi (1998)	22448 adult japanese athletes	EPQ	Extroversion is positively linked with physical activity whereas such relation is missing for neuroticism.
Droomers, Schrijvers and Van de Mheen (1998)	2598 adult athletes	EPQ (only neuroticism)	Neuroticism is negatively linked with physical activity.
Sale and Guppy and El-Sayed (2000)	187 adult athletes	EPI	Extroversion is significantly linked with physical activity.
Van Loon , Tjihuis and Surtees (2001)	2514 adult Dutch athletes	EPQ	Extroversion is linked with sport practice in males.
Mckelvie, Lemieux and Scout (2003)	86 athletes and non-athletes	EPQ	It was found that athletes got high scores in extraversion and low score in neuroticism as regards non-athletes.
De Moor , Beem and Stubbe (2006)	19288 adult Dutch athletes and non-athletes	EPQ	Those who practiced sport got a high score in extroversion and a low score in neuroticism.

EPI= Eysenck's Personality Inventory; EPQ= Eysenck's Personality Questionnaire

Review from Costa and McCrae's model (2008)

By rating 13 reaserches from Costa and McCrae's model, athletes are shown as people with higher scores on extroversion (Courneya and Hellsten, 1998; Courneya, Bobick and Schinke, 1999; Dineen, 2003; Garcia Naveira et al., 2011; Hausenblas and Giacobbi, 2004, Rhodes and Courneya, 2003, Rhodes, Courneya and Bobick, 2001, Rhodes, Courneya and Hayduk, 2002, Rhodes, Courneya and Jones, 2005; Wilson, Krueger and Gu, 2005), emotional stability (Courneya and Hellsten, 1998; Courneya et al. 1999; Dineen, 2003; Naveira Garcia et al., 2011, Rhodes et al., 2001, Rhodes et al. 2002; Rhodes and Courneya, 2003; Rhodes et al., 2005 , Wilson et al., 2005) and liability (Courneya et al. 1999; Conner and Abraham, 2001, Courneya and Hellsten, 1998; Naveira Garcia et al., 2011, Rhodes et al., 2001, Rhodes et al ., 2002, Rhodes and Courneya, 2003, Rhodes et al., 2005) than non-athletes. The results are shown in Table 3.

Table 3. Review of studies of personality in athletes following Costa and McCrae's model.

AUTHOR	SAMPLES	INSTRUMENT	RESULTS
Courneya and Hellsten (1998)	264 primary pupils (100 males and 164 females)	NEO-FFI	Physical activity is linked with lower neuroticism and higher extroversion and responsibility.
Courneya, Bobick and Schinke (1999)	300 female university students (Average=19,6 years; 67 women from Gymnastics classes (Average= 25 years)	NEO-FFI	Physical activity is positively linked with extraversion and responsibility, and negatively linked with neuroticism.
Rhodes,Courneya and Bobick (2001)	175 surviving women with breast cancer metastasis	NEO-FFI	Activity is negatively linked with neuroticism and it is positively linked with extroversion and responsibility.
Conner and Abraham (2001)	123 university students (104 females and 19 males)	NEO-FFI	It was noticed that there is a positive correlation between activity and responsibility.
Courneya, Friedenreich and Sela (2002)	51 cancer survivors (43 females and 8 males)	NEO-FFI	There is a positive relation between adherence to exercise, extraversion and openness to experience, and a negative relation with neuroticism.
Rhodes, Courneya and Hayduk (2002)	300 students	NEO-FFI	Extraversion and responsibility are positively linked with sport practice whereas neuroticism is negatively linked with such traits.
Dineen (2003)	105 athletic university students and 104 non-athletic university students	NEO-FFI	Non-athletes show higher scores in neuroticism, athletic women are more extroverted than non-athletic ones; non-athletic women have higher levels in openness to experience.
Rhodes and Courneya (2003)	n ¹ = 303 school pupils (223 females and 80 males) n ² = 272 cancer survivors (190 females and 80 males)	NEO-FFI	In n ¹ a positive relation was noticed between physical activity and extraversion and responsibility, and a negative relation with neuroticism, whereas in n ² an important positive relation with extroversion was found.
Hausenblas and Giacobbi (2004)	390 university students (187 females and 203 males)	NEO-FFI	Physical activity is positively linked with extraversion.
Giacobbi,Hausenblas and Frye (2005)	106 college students (84 females and 24 males)	NEO-FFI	No significant difference was found.
Rhodes,Courneya and Jones (2005)	298 students	NEO-FFI	Extraversion and responsibility are positively linked with sport activity whereas neuroticism is negatively related to these traits.
Wilson, Kruerger, Gu <i>et al.</i> (2005)	6158 adults (3738 females and 2420 males)	NEO-FFI	Physical activity is positively linked with extraversion and negatively linked with neuroticism.
García-Naveira, Ruiz and Pujals (2011)	66 high level adult footballers, 32 adult <i>amateur</i> footballers and 34 non-athletic adults	NEO-FFI	No differences are found between <i>amateur</i> athletes and non-athletes. High level footballers are more extraverted, emotionally stable and responsible than non-athletes.

NEO-FFI= Five factor inventory

DISCUSSION AND CONCLUSIONS

The aim of this review was to examine whether athletes have a different personality than non-athletes under a featuristic perspective. The conclusions from the reviewed literature (35 items) on major personality features under the models of Eysenck (1985) and Costa and McCrae (2008) suggest that sport and physical activity is positively associated with Extroversion features (active, optimistic, impulsive and easily able to establish social contacts), Emotional Stability (calm, serene and carefree) and Accountability (tendency to be tidy and the achievement-orientated), which was not true for features like Openness to Experience and Agreeableness from the Costa and McCrae's model (2008) and the Psychoticism dimension of the Eysenck's model (1985). Furthermore, under Cattell's model (1975), the data tends to reveal a greater self-sufficiency,

relaxation and emotional stability in athletes versus non-athletes, although conclusive results are not observed .

These results support the conclusions obtained by Allen et al. (2013), Rhodes and Pfaeffli (2012), Rhodes and Smith (2006) and Hoyt, Rhodes, Hausenblas and Giacobbi (2009) in which the traits Extraversion, Emotional Stability Responsibility and are associated with physical activity and sport. This aspect also reinforces the credulous perspective study of personality in which certain personality traits are considered relevant in relation to physical activity and sport (Allen et al., 2013; Garcia Naveira et al., 2011; Ruiz, 2012).

In this regard, extraversion, emotional stability and responsibility make sense when considering sport as a social context (eg., Interaction between athletes, coach, general public, etc.), in which people have tasks to perform (eg., to make a circuit in a gym with different exercises like performing 20 sit-ups, 15 minutes bike ride, etc.) and schedules to meet (eg., training beginning), for which a certain emotional balance to address these and other issues is required.

As it can be noticed, this revision is quite temporarily exhaustive since papers from the year 1976 until 2013 are used. The rationale for the election of relatively old sources is due to the fact that the production of papers has been intermittent throughout the history of the study of personality in physical activity and sport. If the criterion of the last 10 years is considered, following Cattell's model there is 1 in 10 papers published in that period; 2 in 10 papers following Eysenck's model and 7 in 13 papers following Costa and McCrae's model (54% of all the studies). The remaining papers that are presented: 9 in 10 following Cattell's model, 10 in 12 following Eysenck's model and 6 in 13 following Costa and McCrae's model (25 in 35 papers, which represents 71, 5% of the revised references) were published more than 10 years ago. That is why "old" papers are mentioned (with a publication date of more than 15-20 years), which have had a great impact and must appear as they released contents that are still valid today and which are relevant to the issue of this study.

Furthermore, it is obvious that, with Eysenck and Costa and McCrae's models being the latest ones, the revised papers are also necessarily the latest one, whose model has been the prevalent one over the last years of research. Nowadays the Five Big Factors model of personality has prevailed and there is an important number of instruments designed for their measurement, the most prototypical of which is the NEO-PI-R, *Revised Neo Personality Inventory* (Costa and McCrae, 1995). Its use is recommended in all those evaluative circumstances where it is convenient to measure personality (clinical, educative, organizational or sport) since this model in the last twenty years has been accepted as the most validated and consensual ranking of the personality traits (Allen, et al., 2013; García-Naveira et al., 2011; Official College of Psychologists of Spain, 2011).

As a matter of fact, different studies in this decade are still conducted with the NEO-FFI questionnaire (Costa and McCrae, 2008), as we have noticed in this revision, in which those studies linking the five factors model with other

psychological variables are also highlighted such as the challenge strategies in sport (Allen, Greenless and Jones, 2011), aggressiveness (Kerulis, 2012) and the self-reliability in people practicing sport (Ebstrup, Aadahl, Eplov, and Pisingerm, 2013; Ebstrup, Eplov, Pisinger, Jorgensen, 2011), among others. En relation to this aspect, what we need to bear in mind when evaluating the production of studies is that the researchers' attention was also focused on other analysis variables such as the connection between athletes' personality, performance and age (García-Naveira et al., 2011; Ruiz, 2008, 2012). In this sense, the study of the differences in personality according to the sport practice may have relatively been "left side". Moreover, as García-Naveira et al. point out (2011), the differences in personality are essentially found when samples between non-athletes, athletes and high-performance athletes are compared since the latter have a homogenous personality profile because certain traits are necessary to reach a high performance (extraversion, responsibility and emotional stability).

As regards the methodological, statistical and interpretational problems which traditionally appeared in the study of the athletes' personality and which have undermined its progression (García-Naveira, 2010; Ruiz, 2004; Vealey, 2002), we must point out that this study is focused on Cattell, Eysenck and Costa and McCrae's models, which provide enlightening results as it was mentioned earlier, although not conclusive, far beyond the approach that was used. Neither are variations noticed taking the gender (males and females) into account or the home country for the study (Spain, The Netherlands, England, etc.).

There is a relevant aspect we need to improve in future studies, which is to further specify the formation of the study sample. As it is noted in this study, the words "personality" and "sport" have been defined as the criterion for the search and the studies that include samples made up of athletes have been selected. Following a general criterion of the concept of athlete, different conditions have been grouped (athletes who regularly practice sport, competition athletes or *amateur*, active adults, aerobics sessions, bodybuilders, students, etc.) considering them as being similar although it is understood that it is not the same from an applied and investigation approach. This was due to the variety of samples found in a not very high number of revised studies. Therefore, it is necessary that the meaning of "athlete" be defined and that the practice intensity (days and hours of weekly training) and the competition level be specified (high performance, high competition levels or amateur), among others, in order to achieve a more accurate analysis.

It is also necessary that the selection of the non-athletes sample be taken care of since it was noted that "false non-athletes" might appear, people who say that they do not practice sports even though they do engage in some type of physical activity or were former athletes (García-Naveira et al., 2011).

Another unsolved issue in this study is related to the selection hypothesis or development hypothesis of personality. Despite this, as Costa and McCrae (2008) point out, the origin of personality is biologic and keeps developing from childhood until it turns into stable structures in adulthood. Different studies (Ruiz, 2006, 2008; García-Naveira et al., 2011) tend to show that, on the one

hand, regular practice of sport contribute to the development of specific personality characteristics although children and youngsters' maturational aspects also get involved, whereas adults usually maintain regular personality patterns over time. The interaction of genetic and environmental influences appears to be a promising avenue for research that can improve the understanding of the personality effects on physical activity and sport and sport success (Allen et al., 2013).

To sum up, over the last years (since the year 2010) the research into personality in sport has started to reappear as an important academic activity after an interruption of almost 20 years (Allen et al., 2013), although this line of study in Spain has a tradition from previous stages (García-Naveira, 2010; Nuñez, 1998; Ruiz, 2004) which are still valid today (García-Naveira et al., 2011, Ruiz, 2008, 2012). As it can be noticed in this revision, there are sufficient studies that demonstrate the existence of differences in personality between athletes and non-athletes. Particularly, the results suggest that athletes are characterized by higher extraversion, responsibility and emotional stability against non-athletes. Although these results somehow clarify the relation between personality and sport, the study of personality in athletes needs to be continued. In this regard, certain aspects should be kept in mind:

- a) Greater control in the elaboration and definition of the sample of athletes and non-athletes. As it was commented earlier, we need to establish a more rigorous theoretical and methodological control of what it means to be an "athlete" and a "non-athlete". From a methodological approach, the inclusion of the sample of those who occasionally practice sport, as well as those who were former athletes at different levels (*amateur*, high performance, etc.), may be minimizing the possible differences in personality.
- b) To set up the sample of athletes considering team as well as individual sports. When it comes to establishing the differences between athletes and non-athletes, it is convenient that the establishment of possible differences be achieved from a multi-sport approach in order to ensure a greater universality and generalization level in case possible differences between athletes and non-athletes are confirmed.
- c) To clearly and specifically determine the performance level of the analyzed athletes. It would be advisable to determine this level not only according to the sport results obtained during competition (high-performance athletes vs. *amateurs*), but also the other equally relevant performance variables such as the quality and amount of the training (technical, tactical, physical and psychological), longitudinal performance analysis over the competitions and the season, etc. (García-Naveira, 2010; Piedmont, Hill and Blanco, 1999; Ruiz, 2004).
- d) To carry out not only descriptive and correlational studies, but also predictive (ex post facto prospective and retrospective), quasi-experimental and experimental ones, which can more accurately determine the relations between personality and sport.
- e) To study the sub-dimensions of the personality traits since they provide differential and complementary information (Ruiz, 2008).

- f) To introduce some change in the methodology. For instance, a design with consider how certain traits influence performance from an interactional approach, analyzing the effect of personality in certain situations, sport behaviors, etc.
- g) To study physical activity and sport from a global and multi-factorial approach, where the personality traits, other psychological characteristics (motivation, self-efficiency, anxiety, etc.), the athlete's abilities (physical, technical and tactical) and sport-based external actions (performance, adherence to activity, etc.) may be analyzed. For example, this trait approach may complement the studies which characterize expert athletes in perceptive-cognitive, emotional, psychological and voluntary practice (Ruiz, Durán and Arruza, 2007; Ruiz, Sánchez, Durán, Jiménez, 2006) or their relation to anxiety levels dimensions, success and sport injuries (Arruza, González, Palacios, Arribas and Cecchini, 2012; Olmedilla, Andreu, Ortín and Blas, 2009).
- h) To achieve longitudinal designs. It is important to conduct longitudinal studies (with young athletes; García-Naveira et al., 2011; Ruiz, 2006, 2008) that determine the increase, decrease or stability of the trait and to analyze the possible implications of these results from the sport practice approach.
- i) Following the approach of Cox (2009) and Vealey (2002), we feel the necessity for progression towards paradigmatic, theoretical and methodological approaches of the study of personality in sport that may complement the current results. In this regard, Millon's theory (2001) is presented as another opportunity for the study of personality in athletes (García-Naveira, 2004, 2008, 2010). The selected instrument for the measurement of personality in athletes is the Millon's Inventory of Personality Styles (MIPS), which allows to consider a wide range of the traits previously described and to extend them to others in order to get a greater view of the issue.
- j) Finally, to point out the need for evaluation tools to continuously be developed and designed in a specific way for its application in sport and not only with the application of the instruments mentioned earlier which are directly connected with other psychology areas (Clinical Psychology) and that have been applied to sport. For instance, Rodríguez's study (2003) with the Battery of Psychological Test for Competition Athletes (Fernández, Fernández and Mielgo, 1999). Both contributions can provide a greater and fuller view of the athlete's personality.

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