Assessment of Personality in Brazilian Athletes

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Abstract   One topic of great interest in the context of high performance sport is the quest for understanding the personality of an athlete. In sports, the personality instruments adapted to this reality regarding Brazilian population are scarce, but specific measures to the situation of the sport can help with more specific measures of personality in sport context. This study aims to analyse the personality profile of the athlete in a specific sport, and especially explore the adjustment of personality test used for this research in sport context. The instrument used was the Personality Factorial Battery "Bateria Fatorial de Personalidade" (BFP) which covers the Big Five Factor Model of personality in 17 athletes of the Brazilian table tennis. The results indicate the need for more comparative studies between standardization samples in characteristic sport groups, considering the existence of sub-factors of the big five factors of personality that have variations in results when the context is changed.

Keywords   Psychology of sport, Athlete, Sport, Psychological assessment, Personality

1. Introduction

In the last century, sport and physical activity have earned a great importance in society. With this enhanced awareness, physical, technical and psychological improvements have become priority in sport teams with the intent of making the most of the athlete's potentiality. In this regard, the known sport sciences such as physiology, biochemistry, medicine, biomechanics, sociology and psychology have been improved, researched and applied in competitive sport (Gould & Weinberg, 2008).

In order to illustrate it, let's see the growth of importance of the Olympic Games observed between Greece in 1896 and London in 2012. Compared with the 241 athletes in Greece, the total amount of athletes in London was around 10500. Furthermore, the number of countries with Olympic Commissions climbed from 13 to 204 and the number of sport modalities climbed from 9 to 34 (Olympic, 2013).

Sport psychology evolves in this path, in order to keep pace with the demands of athletes, coaches and institutions. One of the major quests of current competitive sport is the expertise regarding personality in sport and in exercise. The questioning on why some people continue practicing sports while others withdraw is continuous; whether personality tests should be used in order to select athletes for a team; whether athletes' standard personality profiles exist; whether the success as a professional athlete can be predicted by a certain type of personality. The fact is that the study of personality helps professionals to work with people regardless the performance area (Gould, 2008).

One of the most recent sport modalities included in the Olympic Games was table tennis. This modality is part of the Olympic Programme since the Olympic Games of Seul in 1988 (FPTM, 2013).

Table tennis, commonly known as ping-pong, is one of the most practiced sport modalities in the world. This sport has its origin in England in the 19th Century and it has spread all over the world during the 20th Century. It was brought to Brazil by English tourists, but it was the large Asian colony existing in the country - basically their descendants - that developed the modality (Marinovic; Lizuka; Nagaoka, 2006).

Brazil has participated in its first official table tennis championship in 1947, in the Third Latin American Championship. In 1942, the official rules were translated causing the formalization of Table Tennis by Brazilian Sport Confederation (Confederação Brasileira de Desporto - CBD) (Nagaoka, Lizuka, p.21, 2006). Again according to the authors, table tennis modality is a sport that is

emphasized by the participants' capacity of learning and controlling their movements. It's an indoor activity for two or four people (when it's played in pairs). The table is divided by a net and a racket is used to hit the small light ball to the other side in a way that the opponent is not able to hit it back. Table tennis is a multi-coordinated activity, controlled by hard limits of time, low prediction of the opponent's actions and high accuracy. The player's task is complex and it changes all the time, causing different kinds of emotions that must be managed by the athlete in order to succeed. Table tennis has many conflicts and psychological tensions, since the player needs to realize his/her opponent's intentions and to anticipate them without revealing his/her own.

Nizetich (1994) claims that table tennis has high complexity coordination techniques, due to its rhythm, its physical exercise cumulative / explosive quality, its high accuracy and a wide target so that the ball can be placed in the entire area. The main motor skills involved in this modality are reaction speed, movement speed, power and spatial orientation. These skills are requisites for a stable technique, tactical, physical and mental performance during the competition.

Another important aspect to be observed in a table tennis athlete is the psychological one. Researches show that psychological variables are representative in high performance sports. Thus, mood states, personality and cognitive factors are related to sport performance (Raglin, 1992).

There are different types of instruments, in form of scales, to assess personality.. International researches have shown that these instruments are among the most used ones for personality assessment in collective applications, because they can generate important data to clinical practice (Piotrowski, 2000). Besides, personality assessment instruments through questionnaires bring benefits regarding the non-structured ones, since its items are empirically selected (Meehl, 2000).

Based on the search of points in common between theories and models of personality, the Big Five Factor (BFF) was developed, composed by factors such as Neuroticism, Extroversion, Agreeableness, Conscientiousness and Openness to Experience. Such model is also understood as an updated version of Trait Theory, which basic idea is that people present vast behavioral predispositions to respond in certain situations. To this theory the likelihood of a person to behave, feel or think in a certain way, also named tendency, is what defines a trait (Pervin & John, 2004; Hall, Lindzey & Campbell, 2000; Cloninger, 1999).

Followers of BFF argue that the model factors can be found in almost every personality instruments. They note that the identification of such factors is not random, since different researches have obtained consistent results (Costa & McCrae, 1995; Digman, 1990). Thus, BFF would denote both a conceptual and an empirical advance in the personality field and it would describe essential human

domains in a consistent and replicable way (Hutz, Nunes, Silveira, Serra, Anton & Wieczorek, 1998). Such model appeared through the analysis of existing personality instruments, such as 16 Personality Factors (16PF), Minnesota Multiphasic Personality Inventory (MMPI), Comrey's Personality Scale (CPS), Murray's System of Needs, among others, which factorial solutions demonstrated the existence of the same five factors, despite the diversity in terms of theoretical ground. With the increasing recognition of FFM, instruments specially designed for personality assessment according to this model assumptions began to emerge.

Among the Brazilian scales used for measure of the personality we have, among the tests, an instrument called Neuroticism Factorial Scale, which evaluates one of the five dimensions of the model (Hutz & Nunes, 2001), followed by Extroversion Factorial Scale and Agreeableness Factorial Scale, both from Nunes e Hutz (2007a, 2007b). Subsequently and based on the design of these first scales, the complete design of Personality Factorial Battery, in portuguese "Bateria Fatorial de Personalidade", from Nunes, Hutz and Nunes (2010) was created.

However, this study is important because there are few researches on personality traits in the context of sport with Brazilian athletes. General scales provide useful information on personality characteristics, however measures specific to the situation of sport can come to preview, with more specificity, particularities of personality in sport context, since they take into account the individual's personality in a specific situation and how individuals respond to a certain situation. According to Gould (2008), until recently, measures of personality trait and state in Sport Psychology came from general psychological inventories, without specific reference to sport. However, specific tests provide more reliable and valid measures of an athlete's personality since they take into account the personality and reaction variations in sport environments.

Thus, the aim of the current study is to raise the athlete's average profile and also to analyze the adaptation of the personality test used for this research in sport context.

2. Method

Participants

Seventeen high performance athletes answered the instrument, being 10 male individuals (58.8%), with education varying from primary school (11.8%), to high school (64.7%) and higher education (23.5%), which are athletes of the Brazilian Olympic Team of Table Tennis, with headquarters in São Paulo. Their ages vary from 13 to 30 years old, with average of 19.4, median of 18 and standard deviation of 4.72.

Instrument

"Bateria Fatorial de Personalidade", Personality Factorial Battery, (Nunes, Hutz & Nunes, 2010) embrace the facets

composing the Big Five Factor model, which considers factors such as Neuroticism, Extroversion, Agreeableness, Conscientiousness and Openness to experience. The test is composed by 126 items describing feelings, opinions and attitudes. Responses are registered in a 7-point Likert scale (from 1 to 7), according to how much the individuals identify themselves with each sentence. The instrument aims to assess personality and its design is based on BFF. The Brazilian normative study used 6599 people, most of them college students or high school students from 11 Brazilian States (Nunes et al., 2010).

Procedures

Data collection procedure lasted four weeks, between December 2010 and January 2011. Instrument application was performed in the second stage of initial data collection for the interventions of multidisciplinary team composed of doctors, psychologists, nutritionists, physiotherapists and physical trainers of the Olympic Table Tennis Team. Initial contact was made through an individual interview and anamnesis collection. Application scheduling was made by the athletes' sponsors, as well as the previous authorization through the signature of the Informed Consent Form. Prior to the application, athletes were briefed on the aim of the instrument and of the research. Subsequently, the instrument

was individually applied. For data analysis, SPSS statistical software version 17.0 was used.

3. Results and Discussion

Considering the aim of the current study, regarding the general reliability of the scale, taken into consideration from the accuracy analysis of the 126 items (full scale), an alpha coefficient of Cronbach of 0.76 was observed. Once the rate is satisfactory, that is to say, higher than 0.70, it can be inferred that the test has a good level of reliability, being considered a reliable instrument to the measure of the respective construct in the analyzed group. Factors composing the battery present the following rates of alpha coefficient of Cronbach: Neuroticism=0.85 (29 items), Conscientiousness=0.83 (21 items), Agreeableness=0.81 (28 items), Extroversion=0.70 (25 items), and Openness to experience=0.48 (23 items).

In order to study the relation of athlete's scores with the data standardization of the instrument manual, a comparison of means by T-test (*one-sample t test*) was made. Results obtained from this analysis can be seen in table 1.

Table 1.　Score description of general sample from BFP's manual and of athletes' sample

FACTOR / FACET	Manual			Sport		t	p
	Mean	SD	N	Mean	SD		
NEUROTICISM	3.19	1.00	3291	3.50	0.77	1.675	0.113
N1. Vulnerability	3.49	1.23	3322	4.33	1.08	3.203	0.006
N2. Instability	3.68	1.42	3299	3.41	1.19	-0.928	0.367
N3. Passivity	3.45	1.24	2351	3.93	1.01	1.964	0.067
N4. Depression	2.33	1.11	3301	2.35	0.85	0.083	0.935
EXTROVERSION	4.34	0.87	2959	4.14	0.61	-1.386	0.185
E1. Level of communication	4.28	1.28	3193	3.90	1.32	-1.182	0.254
E2. Pride	3.67	1.07	2961	3.27	0.84	-1.976	0.661
E3. Dynamism	4.79	1.03	1884	4.85	0.81	0.290	0.775
E4. Social interactions	4.82	1.11	3195	4.52	0.63	-1.959	0.068
AGREEABLENESS	5.30	0.75	3328	5.32	0.65	0.143	0.888
S1. Kindness	5.59	0.93	3325	5.61	0.85	0.115	0.910
S2. Pro-sociability	5.59	1.01	3331	5.61	0.96	0.068	0.947
S3. Trust in people	4.73	1.01	3329	4.75	0.99	0.100	0.921
CONSCIENTIOUSNESS	4.96	0.82	2353	5.07	0.88	0.532	0.602
R1. Competence	5.17	0.93	2354	5.13	0.73	-0.231	0.820
R2. Weighting	4.92	1.20	2315	4.84	1.43	-0.236	0.816
R3. Engagement	4.78	1.07	2355	5.25	1.16	1.688	0.111
OPENNESS TO EXPERIENCE	4.68	0.72	1995	3.93	0.53	-5.767	<0.001
A1. Openness to ideas	4.58	1.02	1996	3.86	0.96	-3.105	0.007
A2. Liberalism	4.84	1.01	1994	4.12	0.72	-4.144	0.001
A3. Search for novelties	4.61	1.03	2009	3.83	0.96	-3.339	0.004

Table 1 shows that the group presented an average score next to the standardization manual in most of the factors and their facets. However, it was observed that facet Vulnerability to suffering (N1) presented an increase in the score average of the athletes' group, changing from medium grade rating to high grade rating, which may infer that this athletes group tends to experience, a little more intensively, emotional suffering and anxiety and finds it more difficult to tolerate the frustration caused by the lack of fulfilment of their wishes and poorly adapted coping responses.

According to a Brazilian research on 42 college students regarding their temperament, self-esteem and Neuroticism (Ito, Gobita & Guzzo, 2007), authors used Neuroticism Factorial Scale, in portuguese "Escala Fatorial de Neuroticismo" (EFN) (Hutz & Nunes, 2001), Rosenberg's Self-esteem Scale, in portuguese "Escala de Autoestima de Rosenberg", and Pavlovian Temperament Survey (PTS). PTS assesses three factors: inhibition, mobility and excitement powers, which respectively correspond to the ability to inhibit some behaviors when necessary, to change reaction and, finally, to remain uninhibited facing a situation of intense and prolonged stimulation. Rosenberg's Self-esteem Scale assesses a general factor referring to the construct bound with the scale's name. As to the results found, we observed significant negative correlations of facet Vulnerability (N1) with self-esteem (r=-0.67) and with excitement power (r=-0.40); of anxiety (N3) with excitement power (r=-0.36) and inhibition power and significant positive correlations between psychosocial maladjustment (N2) and mobility power (r=0.38). Depression (N4) did not show significant correlation with any of the analyzed variables. In the results interpretation, authors suggested negative correlations coherent with the theory, due to the fact that the high levels of Neuroticism suggest individuals' adaptation problems to the environment in relation to the high frequence of emotional outbursts, tending to hamper the temperament control regarding excitement and inhibition aspects (Nunes et al., 2010).

It is worth to emphasize the facets of openness to experience factor, data can be observed in Table 1, which also showed changes of percentile rankings and of interpretation when compared with the samples from instrument's standardization manual. In facets A1, A2 and A3, results changed from medium to low grade rating, decreasing from percentiles higher than 45 to percentiles lower than 20.

Regarding Openness to experience factor, the athletes group showed an average percentile of 19.71 that compared with the average is interpreted as low grade rating. It is worth emphasizing that this difference was statistically significant regarding the comparison between the results obtained from the manual and the ones obtained from the sample collected in this research. Openness to experience factor refers to exploratory behavior and to the search for new experiences.

According to the instrument's manual, high performance individuals tend to be curious, imaginative, creative, and to have fun with new ideas and non-conventional values. In this

context, low grade ratings tend to suggest a conventional people's behavior in their beliefs and attitudes, being conservative, dogmatic and rigid in their preferences (Costa & Widiger, 2002; Nunes et al., 2010).

It was also observed that facets such as Passivity (N3) and Social Interactions (E4) showed variations in their score when compared with the samples in sport context. However, such variation kept the interpretation grade rating average within the same median level, and the significance level, although slight over 0.05, did not show statistical relevance.

It is still worthwhile to note that some items such as Level of communication (E1) and Engagement (R3) showed a higher increase of percentile variation, changing from 45 to 65. However, as this increase still maintains median interpretation grade rating according to the instrument manual which defines median grade rating with a percentile between 30 and 70, and the comparison between the scores through one-sample t test did not show a statistically significant difference.

These findings may indicate the need of further comparative studies between the instrument standardization samples in sport context specific groups, because we observed that there are facets that show different aspects when the context changes. This may be related to the athletes' specific traits regarding their way of facing the challenges, their interaction with people around them, whether it is cooperatively or competitively, and different aspects such as effort perception, limits overcoming, among other characteristics that differ athletes from individuals that comprise instruments' standardization samples, which in general, do not consist of athletes and physical activity practitioners of high performance programmes.

In order to verify the relation between the factors and their BFP facets and the athletes' percentile, Pearson correlation coefficient with significance level of 0.05 was used. The results of these analyses showed significant correlation ranges as shown in table 2.

Table 2. Significant correlations between facets (N=17)

	N4	S2	R1	R2	R3	A2	A3
N1	0.73**			-0.48*			
N2							0.50*
N4		-0.54*				0.51*	0.50*
E3			0.60*				-0.57*
S2			0.56*				-0.53*
S3				0.53*			
R1						0.56*	-0.69**

** p< 0.001 ; * p < 0.05

Table 2 shows significant moderate correlations between different facets, both positive and negative. High correlation obtained between N1 and N4 (r=0.73; p<0.01) stands out between data obtained, indicating a strong tendency of the individuals with high vulnerability to show high scores in Depression facet, and vice versa.

It also highlighted the negative moderate correlation

between Depression and Pro-sociability ($r=-0.54$; $p<0.05$). This result allows us to infer an inverse relation between these two facets in the researched sample, which may indicate that the individuals with higher depression level could show low rates of pro-sociability. According to the instrument's manual, the interpretation of this second factor should mean risky behaviors, a tendency to confront laws and social rules, morality, self and hetero-aggressiveness, and consumption patterns of alcoholic drinks. Individuals with low scores in pro-sociability tend to get involved in situations that could put themselves and other people in danger.   It is also important to emphasize that very low rates in depression can also mean people with good results in Pro-sociability, who tend to avoid risky situations as well as transgression of the laws or social rules. They tend to show an honest attitude with people, avoiding putting pressure upon them or inducing them to do something they do not want to do (Nunes et al., 2010).

We also observed negative moderate correlations between Vulnerability and Weighting ($r=-0.48$; $p<0.05$), and between Search for novelties facet and Dynamism ($r=-0.57$; $p<0.05$) and Pro-sociability ($r=-0.53$; $p<0.05$). This result allows us to infer an inverse relation between these facets in the studied sample.

Finally, we verify a highly significant and negative correlation between Competence and Search for novelties, also indicating an inverse relation between these two facets. According to the instrument's manual, Competence facet is composed by items that describe an active attitude in the pursuit of goals and the conscience that it is necessary to make some personal sacrifices in order to obtain the expected results, while Search for novelties facet is related to items that describe the preference for experiencing new events and actions. People showing high levels in this facet report that they do not like routines in a number of different situations. They exhibit little motivation to perform repetitive tasks and they get easily bored when they cannot experience new events. People with low levels of A3 report that they feel uncomfortable with the breakup in their routine, as well as they show little interest in doing things they never did before and knowing new places and objects (Nunes et al., 2010).

Significant positive moderate correlations ($p<0.05$) were also verified between Depression and facets such as Liberalism and Search for novelties, between Competence and facets such as Dynamism and Pro-sociability, and also between facets such as Trust in people and Weighting and between Instability and Search for novelties. The other facets did not show statistically significant correlations.

4. Conclusions

Considering that the current study aimed to analyse the personality profile athlete in a specific sport, and also to analyze the adaptation of the personality test used in this research and applied in the analysis of high performance

athletes of a table tennis Olympic team, in which concerns scale reliability, we verified satisfactory rates in general scale (126 items). We also verified satisfactory rates of reliability in most part of the factors and facets making the scale, indicating that the instrument is reliable for measuring the respective construct in the analyzed group.

It was observed that the group of athletes showed an average score next to the one from the instrument's standardization manual in most part of the factors and their facets. However, Vulnerability to suffering facet showed an increase in the athletes' average score, suggesting a tendency to experiencing emotional suffering a little more intensively, with the presence of anxiety, more difficulty in tolerating frustration caused by the non-fulfilment of wishes and maladjusted coping responses, according to the interpretation of test manual for the group's average score in this facet.

Openness factor and its facets also showed changes in ranking when compared with the samples from instrument's standardization manual, being lower in this group of athletes, in a statistically significant way. According to the instrument's manual, lower rankings in this dimension tend to suggest a conventional people's behavior regarding their beliefs and attitudes, being conservative in their preferences, and also dogmatic and rigid.

We also observed moderate significant correlations and some high correlations between different facets, both positive correlations and negative. All these results obtained in this research may indicate relations between facets and factors in the group of subjects. Once they are analyzed with caution, added to the other data composing the athlete's psychological evaluation, they may allow an initial analysis of the psychological profile of athletes from this specific modality.

In conclusion, such findings, above all, aim to indicate the need of further comparative studies between the samples of standardization in sport context characteristic groups, considering the existence of facets which show different characteristics when the context is changed. We should mention that psychological evaluation is a dynamic process in which the use of psychological tests is only part of the entire evaluation process.

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