

Bigorexia, Perfectionism and Overtraining among Tunisian Team Sport Players

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ABSTRACT: Our study aims to investigate the prevalence of the phenomenon of bigorexia (addiction to sport) through its relationship with perfectionism and overtraining among Tunisian players in team sports. 153 players from team sports with (mean age $19.97 \pm 03,018$) responded to various questionnaires such as addiction to sport scale (the EDS-R of Hausenblas and Downs, 2002), the questionnaire of overtraining (the SOSQ of Chatard et al., 2003) and the assessment of perfectionism developed by Burns (1981). The presented results indicate that the scale of dependence to physical exercise has a very good internal consistency ($\alpha = .889$). The results obtained from the correlation matrix between perfectionism, overtraining and the 7 dimensions of addiction to sport indicate that there is a negative correlation at $p < 0.1$ between perfectionism, overtraining and the majority of variables of addiction to sport. While the correlation between overtraining and the 7 dimensions is positive at $p < 0.1$ except the dimension of tolerance. We also note that there is an effect of sports on sports addiction and perfectionism only. These results are consistent with the work of Blaydon (2002), Valerie (2010); Velea (2002) who noted that the dependence is related to the hard practice and overtraining. However, perfectionism is negatively correlated with addiction to sport and overtraining and this contradicts with the most previous studies of (Velea, 2002; Guerreschi, 2008; Kern, 2009). In view of these factors, we realize that the issue of addiction to sport is multifactorial and complex as strongly linked to inter-individual variability.

KEYWORDS: Bigorexia, Perfectionism, Overtraining, Team Sports

I. INTRODUCTION

The benefit of regular exercise has been widely documented in the literature and includes psychological and physical improvements. A suitable physical activity prevents diseases such as diabetes, obesity, coronary heart disease (Josefson, 2000). However, several authors have highlighted the physical effects and / or psychological harm entailed sport when it is done excessively. One of the advantages of using the word of addiction is rather than to take note of the relationship between addiction to illegal drugs, alcohol, smoking, drug abuse. Another advantage, which should be more decisive, is to relativize the products place in the outbuildings, making an importance of drugless-addiction, also known as behavioral addictions, including gambling is the best known example and less discussed. The addiction to physical activity has become an object of study in its own right (Allègre & Therme, 2007). Clinical dependence to sport is clearly established (Avril et al., 2007).

II. BIGOREXIA

The addiction to sports is a real phenomenon, fairly widespread, at least in one of the various forms of felt this dependency. Though, the sport is considered favorable to the maintenance of health, addictive implies a strong negative reality. The Bigorexia is described for the first time by Baeckeland in 1970, and quickly picked up by Glasser in 1976 who called it as "positive addiction of runners" in reference to the benefits that sport provides. Since this early work, addiction to physical activity has become an object of study in its own right (Allègre & Therme, 2007). Clinical dependence to sport is clearly established (Avril et al., 2007). This dependence begins with the search for a sense of pleasure in physical effort. Through this pleasure will be born the sports obsession, the need to perform physical activity more frequent and more intense. In the early days of dependence, subjects found in their intensive physical activity a sense of well being and euphoria often. Currently, two definitions of addiction to sport seem to be necessary (Allègre and Therme, 2007). Hausenblas and Downs (2002) define the dependence on physical activity as "a need to engage in physical activity resulting in excessive uncontrolled behavior and practice manifested by physiological and psychological symptoms". Velea (2002) defines this as "a sensation seeking pleasure, disinhibition through sport, which led to the installation of a compelling need and growing with in the case of forced outages practice (injuries, employment

problems of the time), the manifestation of signs of physical and psychological withdrawal more or less intense". In addictive behaviors, it highlights the search for an excess of bodily sensations: "The object of addiction serves as a prosthetic body shaping not completed and can cope with the internalization of a pessimistic picture of body and avoid confrontation at all intolerable situations" (André et al., 2004). Pastor (2007) summarizes the various approaches using three interpretations. The first part of a comprehensive psychoanalytic vision of addiction where the presence of psychological factors such as anxiety, anxiety and alexithymia (maximum aerobic speed), lead to addiction to physical practice. The second proposes a situational interpretation that addiction would alleviate the discomfort of intensive sports such as personal and social sacrifices, pain, fatigue, injury and stress, and the resulting depression. Finally, a cognitive-behavioral perspective, it is the meeting of states (anxiety, depression ...) and / or personality traits (antisocial, narcissistic ...) with triggering situations that favor the emergence of addiction to sports.

III. PERFECTIONISM

It is defined as "personality style characterized by a continuation of faultless as well as the establishment of performance targets excessively high accompanied by a tendency to disproportionate critical evaluation of their own behavior" (Stoeber & Otto, 2006). According to Zinsser et al., (2001), "the pursuit of perfection (in the sport) will always commendable, but there is nothing to gain by demanding perfection». In contemporary literature, the normal version of perfectionism proposed by Hamachek (1978) in his anecdotal text is criticized by some authors who consider that it is not really about perfectionism, but rather a desire to excel to an ambitious and conscientious person and that the true perfectionism can be seen that the negative potential pest (Flett and Hewitt, 2005; Greenspon, 2000). In return, many researchers are working to compare two types of perfectionism, healthy and unhealthy (Stoeber and Otto, 2006; Stumpf and Parker, 2000). It seems that the debate on the beneficial or pathological perfectionism reached its limits differentiating debilitating dimensions of those facilitative. Indeed, the empirical evidence does not really possible to speak of a positive perfectionism and negative perfectionism, but rather a personality style with clearly negative aspects and facets which are mainly positive in optimum conditions, namely when the student is achieving its objectives, but can become negative when the student does not obtain the expected results (Stoeber and Yang, 2010). This is clearly explained by (Stoeber and Otto, 2006). On the one hand, even controlling the overlap between the two, the so-called adaptive perfectionism shows "mixed results". On the other hand, the positive aspects are not independent to negative dimensions in reality, because all studies on the subject without exception revealed a highly significant relationship between the two groups of elements (the group said functional and dysfunctional group says). It is therefore more accurate to say that perfectionism may be advantageous when the student has the means to achieve its ambitions, but it is a vulnerability factor likely to express themselves in less favorable conditions (Hewitt and Flett, 2007). It is clear that although perfectionism is not a psychological disorder in itself, it is a factor of vulnerability to psychopathology especially in times of stress (Blankstein et al., 2007; Flett et al., 2009).

Link between perfectionism and addiction to sport

Several studies have highlighted the relationship between perfectionism and addiction to sport (Hagan & Hausenblas, 2003; Hausenblas & Downs, 2002). The results show that most athletes are perfectionists; they are more prone to addiction to sport. Hall & Hill (2012), "in some people, regular exercise is more than a hobby; it is a burning priority, which they depend. We know very little about the subject, but this study leads us to believe that perfectionism plays a key role in the exercise addiction". Also the results of the study done by Jowett et al (2012), show that perfectionism plays a very important role in the development of exercise dependence. Hill et al (2011) explains that "perfectionists pursue high personal levels, and try to avoid any judgment fails focusing intensely succeed. Always strive to do more, an interrupted manner, gives a perfectionist way to maintain their self-esteem, and becomes part of their identity and self-worth". According to various studies (Jowett et al., 2012; Hall & Hill. 2012), a link between perfectionism and dependency sport could be established. It seems that perfectionist athletes are more prone to addiction to the sport that they must excel in what they do. These perfectionists expect them exceptional performance and set high goals. They give the best of themselves to acquire a very high level.

Overtraining :Overtraining was defined by Mackinnon (2000) as "neuro-endocrine disorder characterized by a reduction in performance at competition, inability to maintain the charge of habitual driving, persistent fatigue, reduced catecholamine secretion, frequent health problems also sleep and mood disruption "(Gazzano, 2003). In endurance sports (running, cycling ...), the overtraining syndrome can reach all sports including power sports, gear sports, team sports. May be overtraining athletes having an inadequate training load to the capacities recovery, whether dabster or elite athletes (Bricout et al., 2006). Overtraining is favored by a sudden increase in

training load (duration, intensity, frequency), but also by dietary errors, the monotony of training and elements of extra life sports (viral or bacterial infection or parasitology, occupational stress, changes in family or professional context), (Poortmans & Boisseau., 2009).

Link between overtraining and addiction to sport : Blaydon et al. (2002) have shown that addiction to sport correlates significantly with the intensity of practice, number of hours and level. Indeed, the more we practice a sport and more importantly at a high level, the more it is prone to addiction to sport. If the lure of performance committed to working ever more, the athlete cannot grow indefinitely its body workout without impact on health (Goodger et al., 2007). So for Velea what is certain is that this dependence is often associated with intense practice and for a long-term (Véléa, 2002). However, the origin of this disease, its causal mechanisms, diagnosis and treatment are widely debated. Overtraining is rarely associated with psychological factors (Brun et al., 2008), both in terms of cause and consequence.

IV. MATERIALS AND METHOD

Sampling

Our study population consisted of 153 volunteer players from 11 teams of male team sports (Table 1). The mean age is 19.97 ± 03.018 .

Table 1: Characteristics of the study population

Teams	Categories	numbers	Age	Training Frequency
Basketball	Senior	10	+17years	06 Hours/week
Rugby	Senior	11	+17 years	10 Hours/week
Handball (A)	Senior	9	+17 years	08 Hours/week
Handball (B)	Junior	7	14-17 years	08 Hours/week
Volleyball (A)	Senior	12	+17 years	10 Hours/week
Volleyball (B)	Junior	8	15-17 years	08 Hours/week
Football (A)	Senior	22	+17 years	10 Hours/week
Football (B)	Senior	21	+17 years	12 Hours/week
Football (C)	Senior	22	+17 years	14 Hours/week
Football (D)	Junior	15	15-17 years	12 Hours/week
Football (E)	Junior	16	16-17 years	12 Hours/week

Research Instruments

In our study we used three scales:

The scale of addiction to sport EDS-R «The Exercise Dependence Scale-Revised» of Hausenblas and Downs (2002). This scale consists of 21 items, combining seven dimensions: Tolerance, Continuity, Time, Intention, Reduction of Professional Activities, Social and Family activities, and the Lack of Control. The Subjects respond on a Likert scale ranging from "Never" (1) to "always" (6).

The Overtraining Questionnaire (SOS). Many scales measuring overtraining are available. Based on the literature review of sport science (Kellmann, 2002; Meeusen et al., 2006), we chose the Short Overtraining Symptoms Questionnaire. A French version of this questionnaire was done by Chatard et al., (2003).

The Evaluation Test of Perfectionism. This is a scale developed by Burns (1980), measures the state of perfectionism in athletes. This questionnaire of perfectionism has ten items with a Likert scale ranging from "I totally agree" to "I'm absolutely not agree".

Analysis of Data

We used a statistical tool for the interpretation of the questionnaire namely the calculation of the principal component analysis "P C A", the "ANOVA" and the correlation of (Spearman R) using the software Statistical Package for Social Sciences "SPSS".

V. RESULTS

Quality of built

To test the psychometric quality of the constructed by using an orthogonal factorial analysis type Varimax, Kaiser (1958) is performed on our questionnaire of addiction to sport Hausenblas and Downs (2002) from 21 items. To reduce the content of the table, the weight of the items, Factor is registered by .40 criteria also used by Acher and Haigh (1997). The presented results indicate that the dependence exercise scale (Addiction to sport) has a very good internal consistency ($\alpha = .889$) and good temporal stability ($r = \text{test and re-test} = .791$).

Principal Component Analysis of Addiction to sport

The results of the exploratory analysis show that the scale of the addiction to sport, reproduces the theoretical model with an interesting internal consistency ($\alpha = .889$).

Table 2: Correlation between the different dimensions of addiction to sport

	Lack	Continuity	Tolerance	Loss	Reduction	Time	Intention
Lack	1						
Continuité	,414**	1					
Tolérance	-0,058	0,049	1				
Loss	,166*	,255**	,223**	1			
Reduction	0,156	,353**	0,095	,317**	1		
Time	0,151	,187*	0,033	,213**	,393**	1	
Intention	,276**	,234**	0,026	,172*	0,124	,240**	1

The results obtained from the correlation matrix between the 7 assessments of the scale of dependence to sport (Table. 2) indicate that there is a positive correlation at $p < .01$ between most variables such as continuity (continued physical activity despite knowledge of having a physical or psychological problem that is caused by exercise) and withdrawal symptoms (presence of withdrawal symptoms (anxiety, fatigue) or use the physical activity to avoid symptoms) ($r = .414$; $p < .01$) or time (much time is devoted to physical activity) and the reduction of other activities (social, occupational or leisure are discontinued or reduced in favor of physical activity) ($r = .393$; $p < .01$) or reduction of other activities and continuity ($r = .353$; $p < .01$). However, there is some correlation coefficients that are small between the loss of control and withdrawal symptoms ($r = .166$; $p < .05$) or between the intention and effect of the loss of control ($r = .172$; $p < .05$). The matrix (Table. 2) has a total variance equal to 7 since there are 7 variables in the correlation matrix as each of steps in a correlation matrix therefore has a variable (1.0). To test the null hypothesis that athletes are subject to the addition to the sport, the Bartlett's test of sphericity, gives us a value of 126.652; $p < .001$, which can reject the hypothesis null and accept the alternative hypothesis (Table. 3).

Precision measurement of the sample Kaiser-Meyer-Olkin.	0,68
Bartlett's test of sphericity	Chi-square approximated 126,652
	Ddl 21
	Bartlett's Meaning .000

The review of individual variables is facilitated by the calculation of sampling adequacy of Kaiser-Meyer-Olkin (KMO). This index calculated by the inter correlation matrix, is particularly encouraging (.680).

Taking into account the specific conditions (inter correlation matrix, KMO and Bartlett sphericity), we now proceed to the extraction of the main components of such data (Table. 4).

Table 4: Total variance of the Principal Components of Addiction to sport

Components	Initial Eigenvalues		
	Total	% of variance	% cumulative
1	2,248	32,113	32,113
2	1,176	16,806	48,918
3	0,955	13,649	62,568
4	0,858	12,261	74,829
5	0,681	9,73	84,559
6	0,595	8,5	93,059
7	0,486	6,941	100

This variance is distributed between the different components that we want to extract by calculating the eigenvalue of each component. We note that the eigenvalue of the first component is 2.248, which corresponds to 32, 113% of the total variance (7.0 variables).The second component accounts for 1.76 to 7.0 unit variances variables, corresponding to 16.806% of the total variance. The third component explains 0.955 unit variances on variable 7.0, which corresponds to 13.649% of the total variance. Therefore we can say that after extracting two principal components, we would be able to say that 62.568% of the total variance of the dependence to sport.The examination of the matrix of factor loadings after Varimax rotation type (Table. 5) shows that the first component is defined by withdrawal symptoms: presence of withdrawal symptoms (anxiety, fatigue) or use the activity to avoid physical withdrawal symptoms (.836), for example, "I practice a physical activity or to avoid being irritable" or "I practice this (these) activity (ies) to avoid being anxious». Continuity: continue physical activity despite knowledge of having a physical or psychological problem that is caused by exercise (.705), for example, "I practice despite repeated physical problems" or "I practice this (these) activity (s) when I am hurt (e)". Finally, the effect of intention: use physical activity in larger amounts or for longer than initially expected (.601), for example, "I practice longer than I had intended".

Table 5: Matrix components after Varimax Orthogonal Rotation Type: Variance with Kaiser Normalization of dimension of Addiction to sport

	Component		
	1	2	3
Symptoms of Lack	.836	-.006	-.055
Continuity	.705	.222	.165
Effect of Intention	.601	.141	.023
Tolerance	-.086	-.061	.889
Loss	.263	.339	.602
Reduction of other activities	.163	.776	.195
Time	.108	.834	-.048

The second component (Table. 5) , is defined by the reduction of other activities: social, occupational or recreational abandoned or reduced in favor of physical activity (.776) , for example, " I prefer to practice this (these) activity (s) rather than spend time with family or friends . " Time : Much time is devoted to physical activity (.834) , eg , " I spend a lot of time practicing this (these) activity (ies) " or "I spend all my free time practicing " . And finally, the third component (Table: 5) , is defined by Tolerance: need to increase physical activity to achieve the desired effects , or a decrease in the effect for the same amount of physical activity (.889) , for example , "I constantly increasing the intensity of my physical practice to achieve the desired effect or the desired benefits' and the loss of control : persistent desire or unsuccessful efforts to stop or control the physical activity (.602) , for example , "I am unable to reduce the frequency of my practice sessions".

Correlation between Perfectionism, overtraining and Addition to Sport :The results obtained from the correlation matrix between perfectionism, overtraining and 7 dimensions of addiction to sport (Table. 6), indicate that there is a negative correlation at $p < .01$ between perfectionism, the overtraining ($r = -.512$) and the majority of variables of addiction to Sport (loss of control, $r = -.254$; reduction of other activities, $r = -.313$ and time, $r = -.231$).The correlation between overtraining and 7 dimensions of addiction to sports is positive at p

<.01 except for the dimension tolerance (withdrawal symptoms, $r = .309$, $r = .445$ continuity, loss of control $r = .349$; reduction of other activities $r = .403$, and finally the effect of intention $r = .243$).

Table 6: Correlation between the different dimensions of addiction to sport, overtraining and perfectionism

	Perfectionism	Overtraining	Lack	Continuity	Tolerance	Loss	Reduction	Time	Intention
Perfectionism	1								
Overtraining	-,512**	1							
Lack	-,181*	,309**	1						
Continuity	-0,067	,445**	,414**	1					
Tolerance	-0,028	-0,013	-	0,049	1				
Loss	-,254**	,349**	,166*	,255**	,223**	1			
Reduction	-,313**	,403**	0,156	,353**	0,095	,317**	1		
Time	-,231**	,361**	0,151	,187*	0,033	,213**	,393**	1	
Intention	-0,153	,243**	,276**	,234**	0,026	,172*	0,124	,240**	1

** . La corrélation est significative au niveau 0.01 (bilatéral).

* . La corrélation est significative au niveau 0.05 (bilatéral).

Perfectionism, overtraining and Bigorexia through the practiced sport :

We find that there is an impact of sport practice on the addiction to sport and on the perfectionism (Figure 1). Respectively, $F(4,148) = 5.144$; $p < .001$ vs $F(4,148) = 7.118$; $p < .001$. Despite a mean difference between overtraining and sport (BB = 6.14, . Etc. HB = 5.96), the difference is not significant ($F(4,148) = 2.044$ not significant at $p = .09$).

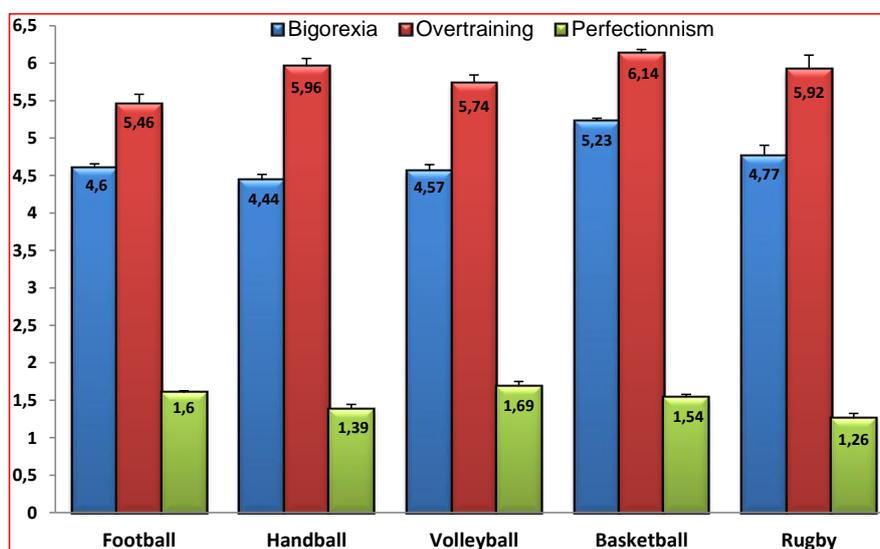


Figure 1: Impact of Bigorexia, Overtraining and Perfectionism on the type of sport

VI. DISCUSSION

This inventory "scale addiction sport, EDS-R" built by Hunsenblas & Downs (2002) built a strong support for our research to clarify this issue and to test our hypotheses. The results of the exploratory analysis show that the scale of addiction to sport reproduces well the theoretical model with satisfactory internal consistency ($\alpha = .889$) for all 21 items of the inventory (Kaiser, 1958). After this investigation, we found that addiction and overtraining are positively correlated. The study revealed that athletes that experience a recurrent failure to control the sport are athletes who suffer from overtraining, so they endure great fatigue, mood changes, infections etc... but despite these disorders and physical problems, these sports addicts cannot stop the practice, and the results obtained from the correlation matrix between overtraining and 7 dimensions of addiction to sports is positive at $p < .01$ except for the dimension of tolerance (withdrawal symptoms, $r = .309$,

$r = .445$ continuity, loss of control $r = .349$; reduction of other activities $r = .403$), also for many authors, people who have an addiction often manifest a disorder associated. However, on the level of practice, Blaydon et al. (2002) have shown that addiction to sport correlates significantly with the intensity of practice, number of hours and level. Indeed, the more we practice a sport and more importantly at a high level, the more it is prone to addiction to sport. This feature corresponds exactly to the youth in our study. Our results confirm those of Blaydon et al. (2002), and lead us to confirm that the bigorexia and overtraining are highly correlated. Moreover, Valerie (2010) showed that the first characteristic of bigorexia is the excessive side of sporting behavior observed from the point of view of training than competition. In addition Velea (2002) also states that addiction to sport is often linked to an intense practice for a long-term. So with regard to the link between bigorexia and overtraining, we checked our hypothesis that addiction to sports is significantly correlated with overtraining which conform with the studies of Hausenblas and Downs (2002) who noted that bigorexia leads to overtraining syndrome.

Regarding the relationship between addiction to sport and overtraining on the one hand and perfectionism on the other hand, our research demonstrates the existence of a negative correlation between them. The results obtained from the correlation matrix between perfectionism, overtraining and the 7 dimensions of addiction to sport, indicate that there is a negative correlation at $p < .01$ between perfectionism, overtraining ($r = -.512$) and the majority of variables of addiction to sport. This is in disagreement with the majority of previous studies (Velea, 2002) who noted that this investment is necessary therefore that undertakes research performance and perfection will generate a favorable environment for the development of addictive behavior. Also, Guerreschi et al. (2008) indicates that with respect to physical activity, the pleasure linked to the dynamics of victory and registered athlete in a gear where the lure of performance and renewal of sensations quickly become a fuel result that the athlete needs. A dependency is created (Guerreschi et al., 2008). So the results of our study contradict this research whose perfectionism is negatively correlated with addiction to sport and overtraining. Nevertheless, our results refute most of the work that studied the relationship between perfectionism and addiction to sport (Kern, 2009). In contrast, a study by Howard et al. (2010) examined 307 subjects and noted the level of dependency and perfectionism in every person, 52% of them were considered addicted to exercise and a link is reached between this dependency and perfectionism that confirms our hypothesis that there is a link between these two dimensions, but the correlation between them is negative. Previous studies on perfectionism and addiction to sport (Hausenblas and Downs, 2002; Hagan and Hausenblas, 2003) have shown that addiction is significantly correlated with perfectionism.

VII. CONCLUSION

Infact, and through our study, we find that there is a sport effect on bigorexia and perfectionism. It is noted that it is commonly found that sports endurance are the most endorphinogènes so in these types of sports you can find the most dependent sports (Bombard, 2010). It is precisely in these disciplines (biathlon, triathlon, marathon, race walking, cycling, mountain biking) found most athletes suspected dependence effort (Pastor, 2007). In these sports, aerobic intensities are frequent. However, according Purper-Ouakil et al. (2002), perfectionism may play a role in the choice of sporting activities and referral to a type of training.

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