RELATIONSHIP BETWEEN PERSONALITY TRAIT AND MUSCLE INJURIES IN TENNIS PLAYERS

ORIGINAL ARTICLE

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ABSTRACT

Introduction: The personality of an individual is the result of a complex network of influences of various independent factors such as biological and psychological constitution, besides the social, environmental and cultural influences of where they live. It is the integration of these parts that interacting makes the whole. Objective: To verify if there is a cause/effect relationship between personality traits, gender and injury in sport. Method: The sample consisted of 60 athletes with mean age of 15.6 (SD = 1.5) years old, being 35 male athletes and 25 female athletes belonging to children and youth category, participating in tennis on grass tournaments of the Federation of Santa Catarina and Paraná. Data were collected with the use of the Factor Personality Inventory – FPI. For data processing MANOVA and ANOVA at a level of $p < 0.05$ were used. Results: The results showed significance for the variables injury with aggression ($p = 0.01$) and heterosexuality ($p = 0.00$). Regarding gender, there were significant differences with intraception ($p = 0.02$); succorance ($p = 0.02$), dominance ($p = 0.004$), autonomy ($p = 0.03$) heterosexuality ($p = 0.00$). Conclusion: We conclude that aggressiveness is an important personality trait to be considered in being controlled in order to prevent and reduce the incidence of injuries in tennis athletes.

Keywords: sports, psychophysiology, tennis players.

INTRODUCTION

An individual's personality is the result of a complex network of influences of many independent factors such as the biological and psychological constitution, besides the influences of the social, environmental and cultural media one lives in. It is the integration of these parts that when interacting makes the whole[1].

The search for evidence and success exposes the athletes to a condition to be submitted to physical and psychological exertion very close to the physiological thresholds, remarkably increasing hence the number of injuries. Although medicine and the connected fields have improved not only in prevention but also in the treatment of injuries, it is still insufficient to avoid their onset[2,3].

Despite the efforts of researchers, the record on the onset of sports injuries in Brazil, even in high performance sports, besides not being standardized, it is still restricted. Difficulty in accessing the information about the athletes and their injuries results in lack of control over the real situation of the installation of health aggravation of the ones involved with sports[4].

However, there are some investigations which try to evaluate the number of injuries occurred, in what modality it occurs, as well as the type of the most frequent injury[5-9].

If on one hand these injuries may be caused by physical factors such as training load, fatigue, performed actions and accidents, on the other hand, it has been also stressed that the psychological factor can determine predisposition of the athlete to this condition. Since injuries can present a devastating effect on an athlete's life, it is important to improve the information about te psychological variables which interfere on the injury as well as alternatives which psychology offers as an aid in their prevention and rehabilitation[10].

Concerning the psychological previous factors sports injuries, many studies have reported a consistent association between stressful life and injury in sports[4,11-13]. However[12], they highlight that almost all the investigations have been based on the stress theory and a few on an approach of a personality profile. Out of the countless psychological attributes which have been investigated concerning sports injuries, only competition anxiety has been consistently demonstrated to be associated with injury onset.

The first studies and discussions on the influence of psychological factors as risks for sports injuries were empirically performed through experience of coaches and/or of distinct and various clinical factors[13]. However[14], in their investigations, it has been demonstrated that tendency to accident evidenced by the injured athletes is more connected with one's personality than with effective danger of the many sports modalities.

The personality traits are among the first factors aassociated with sports injuries[15]. The same authors mention that the majority of the research about personality and injury has been inconsistent, which confirms the statement of other researchers on this issue[12,16]. It means that until now the characteristics of specific personality aassociated with the onset of sports injuries have not been identified and measured.

In a meta-analysis study it was concluded that there is no consensus on which personality traits would influence more in the predisposition of the athletes to injuries. However, it was stressed that the correlation exists and should be considered[12].

Based on these theoretical assumptions one can infer that the personality traits may have a cause/effect ratio with the injuries in tennis played on grass.

Thus, the aim of this study was to verify if there is any influence between personality traits and injuries in children and youth tennis athletes of tennis on grass.

METHODS

The present study applied research outlining *ex post facto*[17], 2 (male sex x female sex) by 2 (injured athletes x not injured athletes).

60 tennis players of grass court tennis participated in this study, namely 35 male and 25 female ones, enrolled in the Tennis Federation of Paraná State and/or Santa Catarina State, aged range of 14 and 18 years, included in the Brazilian elite child-youth category.

The selection process of the sample was applied with a stratified random system, in order to guarantee balance and homogeneity between groups. The choice considered male and female athletes with muscular, bone and articular injury onset or absence during training and/or competition, members of the Tennis Federation of Paraná State and Santa Catarina State.

The subjects were informed about the used procedures, possible benefits and risks associated with the study performance, having their participation been voluntary through the signature of a Free and Clarified Consent Form. The research protocol was outlined according to the guidelines proposed in the Resolution 196/96 of the National Health Board, on research involving human beings and subsequently approved by the Ethics in Research Committee of the Health Sciences Sector of the Federal University of Paraná (# 407.087.07.08).

Data collection used anamnesis for socio-demographic data of the athletes and the Factor Personality Inventory – FPI[18], which was applied and interpreted by a psychologist. All participants received individual orientation prior to collective orientation about the instrument's completion. The answers' anonymous and secret nature was guaranteed to preserve the participants' identity. The researchers were available during the entire application of the instruments to clarify any occasional doubts from the side of the athletes.

The FPI is composed of 15 Personality Traits and applies a Likert scale, consisting of seven points ranging from one (1) = Nothing characteristic to seven (7) = Totally characteristic. Each Personality Trait includes nine statements comprising scale variability amplitude with zero (0) to sixty-three (63) ratio.

The personality traits assessed are: Succorance: tendency to reach for support and protection; Affiliation: tendency to give and receive affection from friends; Agression: tendency to feel anger, irritation and rage; Nurturance: tendency of desires and feelings of pity, compassion and tenderness; Autonomy: tendency to feel free, get out of confinement, resist to coercion and opposition; Deference: tendency to have respect, admiration and reverence which expresses the desire to admire and give support to a superior person, likes to compliment and honor superior people, as well as imitates and obeys them; Abasement: tendency to surrender to resignation, apathy; Achievement: tendency to be ambitious, which expresses the desire to achieve something difficult, as dominating, manipulating and organizing objects, people and ideas; Dominance: tendency to be self-confident, to control others, influence or guide their behavior through suggestion, seduction, persuasion or command; Exhibition: tendency to be vain, which expresses the wish to impress, be heard and seen; Heterosexuality: tendency to wish to keep relations, from romantic to sexual, with individuals of the opposite sex; Intraception: tendency to be subjective, imaginative, personal in the judgment, little practical, metaphysical, partial in his/her opinions; Change: tendency to disconnect from everything which is routine and steady, engaged in new things and adventure; Order: tendency to put all things in order, keep cleanliness, organization, balance and accuracy; Endurance: tendency to end any initiated task, no matter how difficult it seems to be.

Descriptive data were presented as mean (M) and standard deviation (SD). The data were analyzed applying Multifactorial Analysis (2 x 2 MANOVA) and one ANOVA was used to examine the differences between groups (male and female; injured and not injured), through the Statistical Package for Social Sciences software (SPSS, version 16.0) for Windows, with significance level set at $p < 0.05$ for all analyses.

RESULTS

The incidence of injuries of the participants of the study of both sexes was of 45%, with mean age of 14.8 (SD = 1.5) years. Only 55% of the tennis players did not refer any kind of injury during their competitive lives.

The results presented significance for the variable injury, Wilks' $\lambda = 0.483$; $F_{(60.16)} = 2.758$; $p < 0.01$ and the variable sex Wilks' $\lambda = 0.235$; $F_{(60.16)} = 8.345$; $p < 0.01$. The interaction between the independent variables, sex and injury, did not present significance at the probability level expected of $p < 0.05$.

Concerning the variable sex, the results demonstrated significance in the dependent ones Intraception $F_{(1.60)} = 5.041$, $p = 0.02$; Affiliation $F_{(1.60)} = 5.684$, $p = 0.02$; Dominance $F_{(1.60)} = 9.196$, $p = 0.004$; Autonomy $F_{(1.60)} = 4.790$, $p = 0.03$; Heterosexuality $F_{(1.0)} = 69.989$, $p = 0.00$. The remaining variables did not present significance at $p < 0.05$ level.

When the injured and non-injured athletes were compared, the results of the analyses presented significance for the traits Agression $F_{(1.60)} = 6.246$, $p = 0.01$ and Heterosexuality $F_{(1.60)} = 10.851$, $p = 0.002$. The other traits did not present significance at the probability level $p < 0.05$, according to table 1.

Table 1. Means and standard deviations of the dependent variables (personality traits) and independent variables (sex and injury).

Personality traits	Male	Female	Injury	Non-injury
Nurturance	46.0 (9.0)	48.0 (4.9)	46.9 (7.7)	49.6 (7.5)
Intraception	41.2 (7.6)*	44.5 (5.6)*	42.4 (7.0)	44.6 (7.9)
Succorance	41.3 (11.9)*	47.2 (7.0)*	43.5 (10.7)	47.4 (8.9)
Deference	45.9 (9.3)	47.3 (7.0)	46.4 (8.4)	47.2 (8.3)
Affiliation	53.7 (5.9)	55.9 (5.6)	54.5 (5.8)	53.6 (7.6)
Dominance	47.7 (8.1)*	34.4 (12.1)*	40.2 (10.6)	37.6 (11.4)
Abasement	34.7 (9.0)	39.2 (5.2)	36.4 (8.0)	36.8 (7.0)
Achievement	55.0 (5.8)	52.2 (6.5)	54.0 (6.1)	52.5 (8.6)
Exhibition	45.4 (10.5)	39.4 (8.6)	43.1 (10.2)	41.4 (9.2)
Agression	40.6 (11.6)	37.2 (8.5)	39.4 (10.5)*	36.3 (10.1)
Order	43.7 (11.0)	46.6 (10.3)	44.8 (10.7)	45.8 (11.7)
Endurance	42.9 (8.6)	42.3 (11.8)	42.7 (9.7)	44.1 (8.5)
Change	47.1 (7.2)	46.4 (5.7)	46.9 (6.6)	48.7 (9.2)
Autonomy	47.0 (4.8)*	41.1 (3.3)*	44.8 (5.1)	44.3 (8.0)
Heterossexuality	52.5 (6.6)*	35.7 (9.1)*	46.2 (11.1)*	40.6 (14.1)

*$p < 0,05$.

DISCUSSIONS

Except for the personality trait agression, the results of this study disagree with the research by Bara and Ribeiro[16], who concluded that the Brazilian high-performance athletes present differences when separated by sex. Using another research instrument (Freiburg Personality Inventory – FPI) it was collected that men and women athletes are different in the variable self-confidence, aggression, inhibition, irritability, physical complaints and emotiveness, when they were generally sorted without considering their respective modalities. In the study developed by Pedersen[19], concerning the variable aggression, the male athletes presented higher levels of aggressiveness than the female ones, which also disagrees with the results presented in this study.

Society demands some specific patterns of behavior which are given to men or women according to socially imposed characteristics which interfere in the sports practice[20]. It states that men are more aggressive and women less aggressive, which is different from the study under consideration.

The results of the present study also reinforce the statements that the collection of psychological characteristics of the personality is extremely important for the development of practical actions such as prognostic and diagnostic ones, besides psychological interventions in sports[15,16,21,22].

The interactions between the variables sex and injury were not significant, demonstrating hence that there is not cause/effect relation between sex and injury incidence. That fact suggests that girls athletes are as aggressive as the boys, exposing them to the same injury incidence.

These results corroborate the studies carried out by Mendelsohn[14], which suggest the tendency to accident evidenced by the injured athletes is more associated with the personality of each individual than with sex and the effective danger of the many different sports modalities. The personality traits are within the first psychological factors associated with sports injuries[15]. On the other hand, they seem to disagree with the studies by Junge[12], when he mentions that only the competition anxiety has demonstrated to be associated with the onset of injuries and that there is not a typical athletic personality profile prone to injury.

Considering the assessed population for this study concerning age, we suggest that other categories and modalities should be investigated concerning the occurrence of the variable heterosexuality. For this population, this characteristic becomes relevant when we consider they are at the beginning of adolescence, where the desire for individuals of the opposite sex is predominant in their thoughts and can cause increase in lack of attention, distraction and decrease in concentration[23]. We raise the issue here whether the significant difference in the same variable would occur in ages older than the ones tested in this study.

CONCLUSION

It can be concluded from the results that there are similar and distinct personality traits in male and female athletes when they are grouped and that they directly influence on the incidence of injuries, as in the case of aggression. It can be deduced that more aggressive athletes present more tendency to expose themselves more, leading them to higher injury probability.

There is evidence that continuous and deeper studies should be carried out in this field. The importance of the influence of psychological factors in the risk of sports injuries has been taken for granted when we consider that psychological factors also interfere in recovery and adjustment of the athlete when he/she had some time away from sports.

It is important to highlight the need for investigations which involve aggression and heterosexuality in sports with the aim to analyze dimensions and onset conditions. This can be the a way of acquiring consistent data, through a measurement instrument which has been efficient, besides allowing further investigation on the personality cause/effect correlation with injuries in sports.

All authors have declared there is not any potential conflict of interests concerning this article.

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