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DIAGNOSING ANXIETY WITH THE AYURVEDIC PULSE READING METHOD

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ABSTRACT

Background and Objective: One of the biggest disorders that most often affects the performance of athletes before sports competitions is anxiety, and its rapid and timely diagnosis is very important. Questionnaires are considered important tools in diagnosing mental disorders. The use of questionnaires has its own problems and we cannot expect them to be fast in diagnosis. The aim of the above study is to investigate the diagnosis of anxiety disorder using the Ayurvedic pulse reading method among athletes. Methods: The present study is descriptive and correlational in nature, considering its fundamental purpose and method. A total of 80 football players from club teams participating in football competitions in Tehran province in 2018 were selected through single-stage cluster sampling from all members of 3 football teams in Tehran. The participants' pulses were taken by the researcher as a pulse reading expert and the data were recorded. Then, the participants completed the Beck Anxiety Questionnaire without any time interval. Findings: The data were analyzed using SPSS version 22 and the Pearson correlation coefficient was measured based on the normality of the data. The results of the Pearson correlation test show that there is a positive and significant correlation between these two methods. Conclusion: The Ayurvedic pulse reading method can be used as a suitable and reliable alternative in diagnosing anxiety disorders.

Keywords: Anxiety, Diagnostic Methods, Ayurvedic Pulse Reading, Beck Anxiety Questionnaire, Ayurveda

1.0 INTRODUCTION

In today's world of sports, physical, tactical and specialized skills are not the only guarantee of success. Many athletes show their best performance in training, but when competing and facing rivals, media and spectators and other stressful situations, they experience emotional reactions. There are different emotions, including anger, fear, hope, despair, worry, inferiority complex, pride, sadness, happiness, etc., and they are used to express all positive and negative emotional and psychological states and their accompanying physical symptoms (Bernstein, Clark-Stewart, Roy and Wickens, 1997).

Also, in societies that have high expectations of athletes, sports competition is of particular importance. In such societies, sports competition places high demands on competitive athletes,

and often the results of sports competitions are determined by differences in the perception and skill of the competitors. This creates high stress in the participants, and this stress is usually caused by competitive anxiety in athletes (Keshawari and Arian Pourian, 2010).

The competitive and stressful nature of sport imposes many demands on the athlete. Accordingly, emotional responses to these stressors, especially competitive anxiety, are one of the research areas in sport psychology. Three main dimensions have been distinguished in the experience of competitive anxiety: cognitive anxiety, physical anxiety, and self-confidence. Cognitive anxiety is the psychological component of anxiety and is characterized by negative expectations and cognitive concerns about the self, the situation, and possible outcomes (such as the possibility of failure). Physical anxiety is the physical component of anxiety and reflects the individual's perception of physiological responses and negative arousal. Self-confidence refers to the individual's belief in mastery of the task and the ability to successfully perform it. A set of research findings has generally shown that the relationship between cognitive and physical anxiety and performance is negative (Basharat and Hosseini, 2012)

Anxiety disorder is a mental state or intense arousal whose main characteristics are: excessive fear, doubt, and worry. In people with anxiety disorder:

- The level of fear is much higher than the level of threat or danger. That is, the intensity of fear is not logically proportional to the threat (for example, in specific phobias)
- People constantly find themselves in a state of fear and worry without a clear cause.
- Fear and worry are chronic and constantly torment the person, to the point where they cannot carry out their daily life in normal conditions. This condition may cause the person to be unable to keep their job, or have long-term relationships with friends, spouse, or family members.

A person is officially diagnosed with an anxiety disorder when mental anxiety is constantly present and occurs regularly, to the point where normal life is impossible (Ganji, 2017, p. 444).

In modern sports competitions, given the advancement of sports equipment technology and sports science, and the access of most athletes, sports clubs, and countries participating in international, world, and Olympic competitions to this equipment and sports science, almost most of the world's top athletes have the same level of physical fitness. Apart from the technical and tactical aspects of each sport, the only thing that can create superiority in sports competition is the athlete's mental techniques and psychological fitness. Motivation is one of the most important of these advantages. However, this motivation, goal-orientedness, and perfectionism bring with them anxiety, which if not controlled, acts as a destructive and inhibiting force. This is where an athlete, coach, or sports psychologist must seek to improve the situation, and this is not possible without timely diagnosis of anxiety.

Su et al. (2013) in their research on the effect of anxiety on heart rate variability showed that anxiety may act as a confounding factor of heart rate when describing the HRV[1] response to a psychosocial stressor.

[1] Heart rate variability

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The findings of a meta-analysis by Kalmers et al. (2014) showed that anxiety disorders are associated with significant decreases in HRV. Importantly, medication use or comorbid medical and psychiatric effects did not influence these findings.

What is heart rate and how does the heart work? In short, sympathetic stimulation increases the overall activity of the heart. Stimulation of sympathetic nerves causes the release of the hormone norepinephrine from the sympathetic nerve terminals. In the sinus node, increased permeability to sodium and calcium causes a greater increase in the positive charge of the resting potential and, as a result, accelerates the membrane resting potential reaching the excitation threshold, and as a result, self-excitation is accelerated and therefore the heart rate increases (Guyton and Hall, 2006, translated by Rouhani, Sepehri and Rastgarfarjzadeh, 2008, p. 115).

Many neurotransmitters in the fear circuit are involved in the development of anxiety disorders. For example, anxiety disorders are associated with poor functioning of the serotonin system and abnormally high levels of norepinephrine (Davison et al., A. 2014, p. 207).

Moghaddisian, Dibajnia, and Lal Sadeghi (2014) showed in their research that athletes are also exposed to psychological harms such as anxiety, depression, and stress, and that attention should be paid to the prevention, assessment, and treatment of these harms in athletes, as in non-athletes.

Blasquez, Fonte, and Ortiz (2009) reported in their study that there is evidence of changes in heart rate rhythmicity in the presence of high-level pre-competition stress.

Elwis and Vogt (2005) reported in their study of students who were scheduled to give speeches that their heart rates increased by 35%.

Early and rapid diagnosis of anxiety in athletes can be a very positive step in increasing the performance of athletes in competitive sports. One of the methods of diagnosing anxiety is questionnaires, which are widely used in diagnosing this disorder, but due to the conditions of the competition field, these questionnaires cannot always be used or there is not enough time to complete them. For this reason, psychology is always looking for more accurate and faster ways to diagnose anxiety so that it can create enough time to resolve this disorder in athletes with a quick, timely, and accurate diagnosis.

In the present study, we want to get acquainted with another diagnostic method and try to see if this diagnostic method can help us diagnose anxiety disorder better, faster and cheaper? This diagnostic method is the pulse diagnosis method in the Ayurvedic system. Jaiswal and Williams (2016) say that Ayurveda has a history of two centuries BC. Ayurveda was founded by the ancient school of teachings of the philosophical school called Vaishishika and the logical school or Nayaya, and emerged based on a specific framework, which is the philosophy of Samkhia and was created at the same time as the Naya and Vaishishika schools flourished.

Ayurveda is the oldest system of disease prevention and treatment, dating back more than five thousand years. The principles of this knowledge are mentioned in the Vedas, especially in the Rig Veda and Atharvaveda, which are the oldest manuscripts found by humanity (Sheikhlarabadi, 2016, p. 11). Pulse reading is considered one of the most accurate and reliable

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diagnostic methods in the world and one of the most difficult topics in Ayurveda or any other traditional medicine (Sheikh Larabadi, 2015, p. 37). In Ayurveda, pulse examination (nadipariksha) is an important tool for examining the status of the three doshas (temperaments): Vata, Pitta and Kapha, which has been used for a very long time as a valid and effective document with a qualitative and reliable measurement of the pulse examination method (Waagpeterson, Rasmus, Tuft, Egon, Prasad and Ramjid, 2013).

The five elements of ether, air, fire, water and earth are unable to control vital functions. For this purpose, as soon as life enters the body, three elements are created that control and regulate the physiological functions of the body. These three elements are Vata, Pitta and Kapha, which are called Doshas (Sheikhlarabadi, 2016, p. 27).

Walia and Singh (2010) showed in their research that pulse diagnosis in Ayurveda is an accurate tool for diagnosing diseases in a non-invasive manner.

In this study, we are trying to harmonize Ayurvedic pulse reading data for use as a useful tool in diagnosing anxiety. The Ayurvedic pulse reading rating in this study is as follows: zero for no or minimal anxiety, 1 for mild anxiety, 2 for moderate anxiety, and 3 for severe anxiety.

Correct and timely diagnosis of the level of anxiety in athletes before sports competitions is a very important point that all sports coaches acknowledge. The symptoms of anxiety in athletes vary and sometimes diagnosing this anxiety is not easy and sometimes causes irreparable damage to the athlete and the sports team.

Ayurvedic pulse reading, with its special delicacy, is capable of diagnosing numerous mental illnesses, one of which is anxiety. In this article, we are trying to use the correlation research method between these two methods of diagnosis, namely the Beck Anxiety Inventory and the Ayurvedic Anxiety Pulse, to see if there is a correlation between the two methods of diagnosing anxiety. And also, in line with the implementation of the above research, we are trying to examine the frequency and severity of anxiety among the above athletes.

2.0 METHOD

The present study is of fundamental type according to the purpose and is descriptive and correlational in nature. The statistical population of this study was football players who were members of club teams participating in football competitions in Tehran province in 2017. The sampling method was a single-stage cluster sampling of all members of 3 football teams in Tehran. Based on Green's formula, the sample size for correlational research is calculated as follows: m 8 + 50 < N where m is the number of independent variables (van Voorhis and Wilson, 2007). The sample size according to this formula is 59 people, but because this method is new and the design of the scoring system required more work to determine a very accurate score for it, the sample size in the study is 80 people, for each of whom the Beck Anxiety Disorder Questionnaire was completed separately, the anxiety disorder pulse was read separately, and the results were recorded. An attempt was made to determine the correlation coefficient between the two methods of diagnosing anxiety and to examine the relationship between these two methods. The procedure in this study was as follows: First, the participant's pulse was taken by the researcher and a number was assigned to it, which will be discussed in

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the following section on the numbering and scoring system. Then, the subject was immediately given a Beck

questionnaire and the subject filled it out. Of course, sometimes the interviewer asked questions and recorded the subject's answers. The numbers from these two methods were recorded together. Finally, using the Pearson correlation coefficient, the correlation between these two methods was compared.

2.1 Measurement tool

To examine how successful Ayurvedic pulse reading is in diagnosing anxiety disorders, it is necessary to compare this method with a standardized method that has appropriate validity and reliability. In the present study, this standard and reference method is the Beck Anxiety Inventory, and we will examine its validity and reliability in its place. Now, let's look at these tools:

2.2 Beck Anxiety Inventory (BAI)

In 1990, Aaron Beck and his colleagues introduced the BAI scale, which specifically measures the severity of clinical anxiety symptoms in individuals. The score is shown in Table 1.

Table 1: Beck Anxiety Inventory Scoring

Option	Score
Not at all	0
Mild (not very upset)	1
Moderate (very unpleasant but I tolerated it)	2
Severe (couldn't stand it)	3

The entire questionnaire consists of 21 questions. By answering all the questions and adding up the final scores, the anxiety level based on the final score will be as follows: for a sum of scores of 0 to 7, no or minimal anxiety is considered, 8-15 is considered weak anxiety, 16-25 is considered moderate anxiety, and for a score of more than 25, severe anxiety is considered. Validity measurement by comparing the quantitative assessment of the clinical expert with the scores obtained from the subjects' performance in the questionnaire in question indicates good validity of this questionnaire ($p > 0.01$, $r = 0.72$). Given this finding, specialists and researchers can use this questionnaire with more confidence for clinical and research purposes. Also, the test-retest reliability coefficient of the Persian version of the Beck Anxiety Inventory ($p > 0.01$, $r = 0.83$) indicates that this questionnaire can provide reliable results in different time and place conditions. In addition to this finding, the internal consistency or correlation of the BAI questionnaire items (Alpha = 0.92) shows high internal consistency, which can be considered in favor of the reliable reliability of the questionnaire (Kaviani and Mousavi, 2008).

In studies conducted abroad to assess the reliability and validity of the Beck Anxiety Inventory, the results indicated that the Beck Anxiety Inventory can very well determine the anxiety of the subjects and has good reliability and validity. The reliability of this instrument has also been reported to range from 0.8 to 0.92 (Carney et al., 2011, Lebach, Wetherall, and Gatts,

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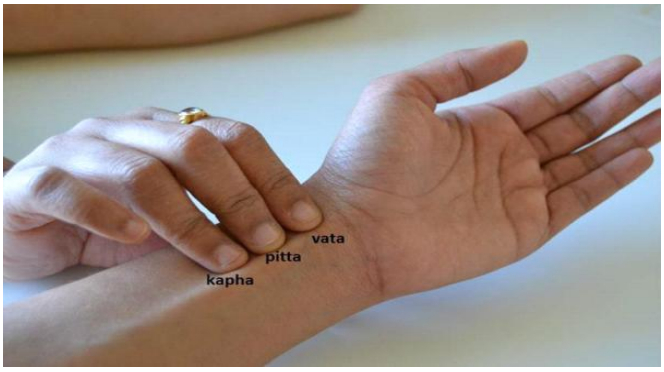
2005, cited by Rafiei and Seifi, 2013). In the present study, Cronbach's alpha for this questionnaire was 0.937, which is consistent with previous research.

2.3 Ayurvedic Pulse Reading for Anxiety (APR for Anxiety)

According to the Ayurvedic pulse reading method, which will be briefly explained, three fingers are used to read the pulse, and each finger collects its own information, which includes seven pulse characteristics and seven levels of pulse that can be read by applying pressure from the least to the most on the fingers, and the summation of this data creates the final diagnosis.

So far, the research and articles that have been conducted and written about Ayurvedic pulse reading have been mostly on the aspect of diagnosing diseases and physical disorders, although Ayurvedic pulse reading also has the ability to diagnose mental and mental disorders, and in the present study, an attempt has been made to address this aspect of the Ayurvedic pulse reading diagnosis method. In Ayurvedic pulse reading, seven characteristics and seven pulse levels are addressed, and each of these is assessed using three fingers and three locations of the pulse at the fingertips, as shown in the figure below, showing the locations and names of the fingers:



In pulse reading, sometimes the pulse of both hands or only the pulse of one hand is checked, and finally, the summation of all this data leads to the final result, which is the diagnosis. Given the vastness of this knowledge, only the necessary practical tools used in the diagnosis of anxiety disorder are included in this study. The steps of pulse reading and scoring for each step are given below, and we should remember that at each step, if the pulse reading response is negative, the reading is over and the work is stopped, and that number will be considered the pulse score.

- First step: Left hand, Vata finger, seventh level, after part, the patient's pulse is taken. (LV7+)
- Second step: If the previous step is positive, we take the pulse of the right hand, Kapha finger, first level, before part. (RK1-)
- Third step: We take the pulse of the hand corresponding to the gender, Vata finger, fifth level, before part (SV5-) and if this step is positive, the highest anxiety score, i.e. number 3, is assigned to the individual.

Table 2 lists these steps for the anxiety pulse:

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Table 2 Anxiety Pulse

anxiety level	Puls score	result	Puls
First stage	-	0	0
First stage	+	1	1
Second stage	+	2	2
Third stage	+	3	3

Kurande, Waagepetersen, Toft, Prasad, Raturi (2012) showed in their study that measuring based on pulse detection and body composition variables and replacing these two methods with Cohen's kappa weighted coefficient is statistically usable for future research. Kurand (2013) also showed in his study that he investigated the reliability of this method and obtained favorable results from it.

In the present study, Cronbach's alpha for the Ayurvedic pulse reading method in anxiety was 0.754, and considering that this is the first study in mental disorders, it indicates the favorable reliability and validity of this method.

3.0 RESEARCH FINDINGS

3.1 Descriptive statistics

The frequency of participants' scores is given in Table 3.

Table 3. Frequency of participants' anxiety scores

Pulse score	Anxiety Questionnaire Score	Interpretation	Number	Percentage
0	0-7	None or less	21	26.2
1	8-15	Weak	28	35
2	16-25	Moderate	12	15
3	Over 16	Severe	19	23.8
total			80	100.00

The mean and standard deviation of the questionnaire and pulse data are given in Table 4.

Table 4: Descriptive statistics of anxiety

	Min	Max	Average	standard deviation
anxiety	0	62	16.41	12.567
puls	0	3	1.36	1.117

To examine the necessary assumptions of the hypothesis test, including normality, skewness and kurtosis are examined next. The values of skewness and kurtosis of the descriptive statistics of the data are given in Table 5:

Table 5: Skewness and kurtosis values of depression

	Skewness	kurtosis
Anxiety	1.192	1.905
puls	0.299	-1.259

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And from here it can be concluded that the obtained data are normal and homogeneous because the obtained values are in the numerical range between 2 and negative 2, and therefore we are allowed to use the Pearson correlation test to examine the relationship between the diagnosis of depression and anxiety through the questionnaire and the pulse.

3.2 Inferential statistics

Table 6 shows the results of the inferential statistics for anxiety.

Table 6: Correlation coefficient between the questionnaire and the anxiety pulse

		questionnaire	anxiety pulse
1	questionnaire	1	0.895
2	anxiety pulse	0.895**	1

**Significant correlation at the 0.01 level (two-sided)

According to the results obtained, there is a positive and significant correlation between anxiety and pulse at the 0.01 level, and the Pearson coefficient for anxiety and pulse is 0.895.

4.0 DISCUSSION AND CONCLUSION

Regarding the main research question, the results showed that the Ayurvedic pulse reading method can be used to quickly and accurately diagnose athletes' anxiety just before the desired match and competition, and this can be of great help to sports coaches, sports psychologists, and even the athletes themselves, so that they can reduce anxiety by using appropriate solutions and start the competition with good mental peace.

Before we interpret the data from this study, let's examine the logic and mechanism behind the ability of pulse reading to diagnose depression and anxiety. Heart rate is the result of several events and the cooperation of several factors, one of the most important of which is the sympathetic and parasympathetic systems, and by nature, the hormonal secretion system and chemical transmitters are involved in it, so any factor that can affect the autonomic nervous system will in turn affect the heart rate. Mood disorders are related to the transmitters of norepinephrine, dopamine, and serotonin. The type of connection is not important to us at this stage, the main importance is the existence of a connection that can affect the heart rate with the amount and intensity of secretion or lack of secretion of these transmitters. Ayurvedic pulse reading has made optimal use of this feature and has used these effects considering its several thousand years of history.

The behavior of the pulse is directly influenced by these transmitters and the functioning of the autonomic nervous system, and any changes in this system are reflected in the heart's rhythm. Ayurveda, and subsequently the Ayurvedic pulse reading method, has been able to take good steps to introduce itself to the medical and health community in the present era, given its power and logic in diagnosing various physical diseases, but it has not been recognized as it should be in the diagnostic field of mental health and psychology, and it is very gratifying that with recent research we were able to show that this diagnostic method is able to help the

psychological community, especially sports psychologists, in mood disorders and help them in timely and accurate diagnosis of this inhibitory disorder.

Competition anxiety has always been a deterrent for athletes, both during training and competition. This deterrent has played a significant role in the analysis of the physical and mental strength of athletes. Therefore, the ability to quickly and timely diagnose this disorder will be a huge step in eliminating or reducing this deterrent.

4.1 Suggestions

First: Given the high frequency of anxious athletes, as shown in Table 3, only 26.2% of the athletes in this study had no or minimal anxiety, and 73.8% of the participants had anxiety, of which about 23.8% experienced severe anxiety. This indicates the high frequency of anxiety among athletes before sports competitions, which requires rapid and timely diagnosis, and subsequently shows the urgent need for prevention and treatment of this disorder before the competition by the athlete himself, the coach, and the team psychologist. A detailed study should be conducted on the pathology of this phenomenon, as well as methods for reducing and treating it.

The second suggestion is the severity of anxiety among athletes, which stands out as a side finding of this study. Given the destructive effects of anxiety before sports competitions, anxiety levels were about 40% above the average intensity of anxiety, and this could provide room for further research to investigate the pathology of this disorder through more detailed research, as well as efficient and practical methods to address this problem among athletes before sports competitions.

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