



Evaluation of relationship of physical fitness index (PFI) with mizaj in young individuals

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Article Info

ISSN (online): 2582-7138

Volume: 03

Issue: 03

May-June 2022

Received: 27-03-2022;

Accepted: 12-04-2022

Page No: 18-22

DOI:

<https://doi.org/10.54660/anfo.2022.3.3.2>

Abstract

Mizaj concept in the Unani system of medicine is a wide area of research. Mizaj theory has its roots in the ancient four humors theory. It was the Greek physician Buqrat (Hippocrates 460-370 BC) who systematized and developed it into a medical theory. He believed certain human moods, emotions, and behaviors were caused by body fluids (called "Humor"): blood, yellow bile, black bile, and phlegm. So, it is necessary to find out its relationship with physical fitness which may be influenced by individual mizaj (body type) and it can be considered as a decisive advantage to selecting an appropriate exercise for each athlete. Research in this area is very scanty and inconclusive, therefore the participants of young age and clinically healthy have been chosen as the subject of study. The objective of the present study is to find out the nature of mizaj (body type) with physical fitness. The sample of the present study was drawn from Ayurvedic and Unani tibbia college students, both boys and girls. In the present study, mizaj was assessed by using a mizaj assessment questionnaire based on ten classical parameters described in the Unani classical literature category, and physical fitness was determined by physical fitness index (PFI) using a modified Harvard step bench test. Analysis of data in the current study was done by calculating the mean, standard deviation, and one-way ANOVA in SPSS 22.0 software for all the factors of mizaj and physical fitness. It is observed that PFI is highest in people having Damvi Mizaj and lowest in people having saudavi Mizaj and it is in concordance with the experimental hypothesis of this research work. From this study, it is clear that a possible correlation between PFI and Mizaj certainly does exist. After that, PFI could be considered as one of the diagnostic indices of temperament.

Keywords: Mizaj, Physical fitness index, Modified Harvard Step test, damvi, baghami, safravi, saudavi

Introduction

Physical fitness is generally achieved by physical exercise, proper nutrition, rest and sleep. An individual is considered to be fit for a particular task or activity when he can accomplish it with a reasonable degree of efficiency without under fatigue and with rapid recovery from effect of exertion ^[1]. It is defined as a healthy state of body's ability to carry out efficient function to produce effective routine work, without any hypokinetic disease and fatigue to tackle the emergency conditions. Currently, the physical fitness is considered as a measure of the body's ability to function efficiently in work and leisure activities to be healthy, to resist hypokinetic diseases and to meet emergency situations ^[2]. Previously fitness was defined as the capacity to carry out daily activities without undue fatigue. Physical fitness comprises two interrelated objects; general fitness and specific fitness. General fitness implies a healthy state of the body which reflects state of all the physiological functions. On the other hand, specific fitness indicates the task oriented ability to perform particular aspect of works, occupations and sports. There are many components of physical fitness such as cardio-respiratory endurance, muscle strength, muscle endurance, flexibility and body composition.

Physical fitness is a set of attributes a person has or achieved [3], which is linked to the person's capability to do physical activity [4]. The present era of machines and artificial intelligence and humans have been dependent on these devices leads to diminishing physical activities and sedentary lifestyles which have many serious consequences in the developed as well as developing countries. Inadequate physical activity is responsible for approximately 30% of all deaths mainly due to heart disease, diabetes, and colon cancer [5]. A sedentary lifestyle is the most prevalent modifiable risk factor for cardiovascular diseases and this is particularly important because of mounting evidence that physical activity and regular exercise may reduce the risk for chronic diseases and death especially from coronary heart disease. Inadequate physical activity and low levels of fitness in adults contribute to the development of obesity, type-2 diabetes mellitus, hypertension, metabolic syndrome, hypercholesterolemia, myocardial infarction, osteoporotic fractures, depression, and some cancers. Low fitness levels and child hood obesity have been shown to continue into adult-hood, with consequent health morbidity like cardiovascular and metabolic diseases [6].

The Unani System of Medicine pioneered in Greece and was developed by Arabs into an elaborate medical science based on the frame work of the teaching of Buqrat (Hippocrates) and Jalinoos (Galen). Since that time Unani Medicine has been known as Greco-Arab Medicine [7]. The Hippocrates (460-370BC) gave the fundamental principles of Greco-Arab System of Medicine with a belief that the body of the individual is composed of four basic elements, which together, are termed as 'Anasir-e-Arba' or Arkan' (Elements) comprising earth, water, air and fire. These Anasir-e-Arba possess four different qualities, i.e. hot, cold, dry and wet. The admixture of these four basic elements results in the formation of four biological fluids or Humors viz. Blood (Dam), Phlegm (Balgham), Bile (Safra) and Black bile (Sauda); a right proportion, according to quality and quantity constitutes health and upright proportion and irregular distribution, according to their quantity and quality constitutes disease [9].

Mizaj theory has its roots in the ancient four humors theory. It was the Greek physician Buqrat (Hippocrates 460-370 BC) who systematized and developed it into a medical theory. He believed certain human moods, emotions and behaviors were caused by body fluids (called "Humors"): blood, yellow bile, black bile, and phlegm. Next, Galen (AD 131-200) developed the first typology of Mizaj in his dissertation *De temperamentis*, and searched for physiological reasons for different behaviors in humans [9]. Unani physician have devised some means and ways to diagnose the temperament. There are ten classified parameters to diagnose or assess the mizaj called Ajnas-e-Ashrah which is purely based on the certain morphological, physiological, and psychological features. These parameters are described in ancient unani literature:

1. Malmas (Tactus),
2. Lahm-wa-Shahm (Flesh and fats),
3. Ashaar (Hair rate of growth, colour, distribution),
4. Laun-e-Badan (Body Complexion),
5. Hayyat-e-Aza (Physique),
6. Kaifiyat-e-Infaal (Responsiveness of organs),
7. Afal-e-Aza (State of functions),
8. Fuzlaat-e-Badan (body waste),
9. Nom-wa-Yaqza (sleep and wakefulness),

10. Infalat-e-Nafsaniya (Psychic Reactions)

Based on the unani system of medicine, it has been suggested that physical fitness may be influenced by individual mizaj (body type) and it can be considered as a decisive advantage to selecting an appropriate exercise for each athlete. Given to the importance of body types and mizaj in sports performance and Even after thorough review of literature, we didn't find articles related and due to lack of related data in the literature, this study was conducted to assess and analyze the relationship between mizaj and physical fitness index (PFI).

Materials and Methods

Participants

The participants were screened according to the following Inclusion criteria

1. Individual of 18-29 years of age
2. Either gender
3. Clinically healthy individuals and

Exclusion criteria Person with

1. age below 18 years
2. Person with age above 29 years
3. Alcoholics
4. Smokers and tobacco users
5. Pregnancy and lactation and
6. Past history of trauma.

Research methods

Questionnaire design for Determination of mizaj (body type)

Mizaj of each subject was assessed with the help of mizaj assessment Questionnaire for assessment of mizaj (body type) i.e. Damvi (Sanguineous), Safravi (Bilious), Balghami (Phlegmatic), Saudavi (Melancholic) which is based on Ajnas e Ashra or ten classical parameters i.e. Malmas (Tactus), Lahm-wa-Shahm (Flesh and fats), Ashaar (Hair rate of growth, colour, distribution), Laun-e-Badan (Body Complexion), Hayyat-e-Aza (Physique), Kaifiyat-e-Infaal (Responsiveness of organs), Afal-e-Aza (State of functions), Fuzlaat-e-Badan (body waste), Nom-wa-Yaqza (sleep and wakefulness), Infalat-e-Nafsaniya (Psychic Reactions) described in Unani classical literature and generated by Central Council for Research in Unani Medicine (CCRUM), Ministry of AYUSH, New Delhi. The participants respond the questionnaire according to their characteristics and were calculated for score and whichever of these Mizaj scored highest, patient had that Mizaj dominating and controlling his or her body anatomically, physiologically and psychologically.

Determination of physical fitness index

Material Used

Modified Harvard step bench = 33cm, Stop watch, Metronome, Weight & Height measurement machine
PFI was calculated by using following formula.

Physical fitness Index (%) (PFI %) [22]

PFI = Duration of exercise in seconds x 100/2(pulse 1+2+3)

Procedure: The Subject was advised to step up on the modified Harvard steps of 33cms height once every two seconds (30 per minute) for 5 minutes, a total of 150 steps. At one, three and five minutes during the test, pulse rate was recorded as

- (a) **PR1 (Pulse Rate 1)** – 1 min after exercise
 (b) **PR2 (Pulse Rate 2)** – 3 min after exercise.
 (c) **PR3 (Pulse Rate 3)** – 5 min after exercise.

Sampling method

Using simple random sampling in Delhi (India) Sixty two (62) college students from Ayurvedic and Unani Tibbia college and Hospital, Karol Bagh were selected as per inclusion and exclusion criteria and asked to complete the Mizaj questionnaire and after physical fitness index was checked with the help of Modified Harvard Step Test. The data collection process started on 16 August, 2021 and ended on 21 August, 2021. The participants were adequately informed about all relevant aspects of survey and each step of Harvard step test. All participants voluntarily participated in the survey and survey was anonymous.

Investigation methods

The study conducted in the form of one-by-one by individually giving the questionnaire face to face for approximately 10 participants each day at-least. To ensure the authenticity and effectiveness of the outcome only one proforma of mizaj along with informed consent was given to participants. Participant either responded the questionnaire by giving reply face to face. All the questions raised by participants were answered by investigator without interfering with their choices. After completion of mizaj assessment each participant were asked to perform modified Harvard step test to evaluate physical fitness index.

Statistical methods

SPSS statistics software 22.0 was used for was used to

establish a database for statistical description. The One-way ANOVA test in SPSS was used to analyze the differences between the groups. $P < 0.01$ suggested that the difference was statistically significant.

Consent of participants

All the participants gave their consent to participate within the study. All participants were altogether got an evidence regarding research ethics and signed a consent form after being fully apprised of the aim of the study, the advantage of participation, and withdrawal of participation. Identifiable personal information was deliberately deleted during the transcription process, and were recorded on the questionnaires' transcripts only as ID numbers.'

Results

Out of the 62 participants, Damvi mizaj composed the majority of the 23 participants (37.09%), Balghami mizaj composed of 14 (22.58%), Safravi Mizaj composed of 19 (30.60%), and saudavi composed of 6(9.67%) participants. Undergraduate students and unmarried students accounted for the largest proportions of the sample.

Table 1: Distribution of subjects according to Mizaj

Mizaj	Number of Individuals
Balghami	14
Damvi	23
Safravi	19
Saudavi	6
Total	62

Table 2: One way ANOVA for PFI score for different mizaj

Mizaj	Mean	Standard Deviation	Test for homogeneity of variances		ANOVA	
			Levene Statistic	Significance	F	Significance
Balghami	71.77	6.664	2.466	0.071	55.620	0.000
Damvi	102.46	11.809				
Safravi	85.11	7.809				
Saudavi	55.10	8.987				

Table 3: Statistical Significance

Mijaz	Mean Difference	Sig.	95%C.I.[LL-UL]	
Damvi vs Safravi	17.353	0.000	9.63	25.08
Damvi vs Balghami	30.698	0.000	22.25	39.14
Damvi vs Saudavi	47.363	0.000	35.94	58.79
Safravi vs Balghami	13.345	0.001	4.57	22.12
Safravi vs Saudavi	30.010	0.000	18.34	41.68
Saudavi vs Balghami	18.665	0.003	-28.82	-4.51

Statistical Decision

The ANOVA as shown in Table 2 results suggests PFI score for different mizaj groups differs significantly. ($F_{3,58}=55.620$, $P < 0.01$) and H_0 is rejected.

Since, the Levene Statistic is not significant, the equal variance is assumed. In order to check for individual difference between the group post-hoc comparison using the **Tukey HSD** was selected. In table 3, test indicated that the mean PFI score of *saudavi* ($M=55.10$, $SD=8.98$) is significantly different from *damvi* ($M=102.46$, $SD=11.80$), *saudavi* ($M=55.10$, $SD=8.98$) also significantly different from *safravi* ($M=85.11$, $SD=7.80$), *safravi* ($M=85.11$, $SD=7.80$) is significantly different from *damvi* ($M=102.46$, $SD=11.80$), *saudavi* ($M=55.10$, $SD=8.98$) is significantly

different from *balghami* ($M=71.77$, $SD=6.66$, *balghami* ($M=71.77$, $SD=6.66$) is significantly different from *damvi* ($M=102.46$, $SD=11.80$), and *damvi* ($M=102.46$, $SD=11.80$) is significantly different from *safravi* ($M=85.11$, $SD=7.80$). The mean difference was significant at the level of 0.01.

Discussion

The present study evaluated the physical fitness of young students using modified Harvard step method in relation to different mizaj. After performing modified Harvard step test results comes up in form of score which has four grades. This is proven suitable method to assess physical fitness index [10]. In the view of traditional medicine, typically, damvi mizaj persons has a muscular body with large muscle mass, strong

body, energetic traits and enjoy physical movements^[11]. Mahdizadeh R in 2013 argued that individual temperament is a determinative factor of human motivation to have body activity^[12] and damvi mizaj persons have a physical structure that is essential for hard physical activity^[13]. Zar A, *et al.* observed that there is a significant correlation with the level of body activity and damvi mizaj is in accordance with mesomorph somatotype components^[16] which was mostly observed in trained martial art players in another study^[17]. This suggests that results of our study that Damvi mizaj has highest mean physical fitness index is in concordance with these studies.

Based on the studies in traditional medicine, Phlegm temperaments have over developed digestive system, low muscle mass, round shape with more body fat and heavy body weight^[18, 19, 20]. Rahati M, *et al.* in 2018 reported that Phlegm temperaments have the low muscle mass in comparison with people who have hot temperaments and in the other hand, they were more obese than the hot temperaments²¹. This suggests that our results are significant with these studies which shows that balghami mizaj has less PFI than damvi and saudavi mizaj individuals.

According to the sight of traditional medicine, safravi mizaj individual have a high energy level, thin with low and dense muscle and low body fat, our study also showed that safravi mizaj individual has quite good PFI while saudavi mizaj individual have a thin, weak body with light muscle and high abdominal obesity and our studies showed that saudavi mizaj has lowest PFI^[23, 24, 25].

This study has limitations are 1.) female are larger in sample size than male participants, 2.) sample size is small and 3.) Assessment of Mizaj was based on the subjective parameters as defined by ancient Unani Physicians, 4.) physical fitness index was calculated by modified Harvard step test. so, this study can't be generalised over whole population. Further study needs to be conducted with a large sample size to get a better understanding of the correlation of PFI with mizaj.

Conclusion

Based on the various observations it is found that PFI, is highest in people having Damvi Mizaj and lowest in people having saudavi Mizaj and it is in concordance with the experimental hypothesis of this research work. From this study it is clear that a possible correlation between PFI and Mizaj certainly do exist. After that, PFI could possibly be considered as one of the diagnostic indices of temperament.

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