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Study of physiological variables of Haryana and Punjab wrestlers

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Abstract

Games and Sports have high standards in Modern era. Different parameters are included in the growing of standard of Games and Sports i.e. Diet, labs for testing of Physiological components and scientific equipment's. Physiological variables play a vital role in improving the sports performance, without physiological testing we cannot think about good performance in games and sports. Therefore the objective of the research is to assess and compare the Physiological Variables of Haryana and Punjab Wrestlers. In this study there have 200 subjects as the sample size (100 of Haryana region and 100 of Punjab region) aged 18 to 24 years from different Colleges and Universities students. Vital Capacity, Resting Heart Rate, Maximum Heart Rate, Haemoglobin, LDL, HDL, VLDL, Triglyceride and total Cholesterol physiological variables taken for the study. The data related to Physiological Variables was collected blood sample of the subjects. The statistical analysis was performed by using the "t" test to achieve mean and standard deviation of the collected information. The results of study showed that the Haryana region male Wrestlers were better in vital capacity, haemoglobin level, total cholesterol, HDL and VLDL. Data also revealed that there was significance difference found between Haryana and Punjab Wrestlers whereas LDL was better found in male Punjab Wrestlers.

Keywords: Vital capacity, resting heart rate, maximum heart rate, haemoglobin, LDL, HDL, VLDL, triglyceride and total cholesterol

Introduction

Physiology belongs to the functional study of human as well as animals. We get information about the working condition of human and animals only through physiology. The study of physiology also holds importance in the medical health sciences as it enhances our understanding of disease in medicine and our ability to treat it effectively. In simple language we can say that how do the organs of living beings work? If we talk about physiology in the field of sports, then we can say that physiology is the central point of sports. Because without the knowledge of physiology, it is difficult to increase the performance of the sports person, along with this the sports person also will not be able to do good practice.

In human physiology, the functions of all systems of the human body and their interrelationships are studied. In fact, it is only through human physiology that we come to know that all the parts of our body work in coordinating way with each other.

Physiology is very important for both player and coach where with the help of physiology the player will be able to give good performance, choose the right game! At the same time, the trainer will know through physiology how to make a training program, what type of training to give, how to save the player from sports injury, how to provide first aid and rehabilitation and type of chemical changes happen in player's body during training.

Background

Wrestling is one of the toughest and the oldest forms of sports known to mankind. It is probably the 'father of all sports' being the Original means whereby human beings overcome each other when seeking to conquer or dominate without weapons of any sort. It develops soldierly the qualities of strength, agility, courage, tenacity and will power. Once a man steps on to the mat to face an opponent, he must take his own decision and execute them himself. Every wrestler knows that when he was pinned, his antagonist, he has done it himself. He has outmaneuvered, out-thought and out-lasted a man of equal ability. Apart from strength, the wrestler needs many other qualities such as alertness, agility, stamina, skill constant mental and physical exertion, carrying out strategy in the face of ever-changing situations, lighting speed in the right

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direction and timely and correct use of holds and counter-holds, etc. there is no denying and moral qualities it develops.

It is essentially a real man's pastime, and strenuous from of physical activity, developing the great characteristics of the "fighting spirit" as well as to love of fair play and true sportsmanship. The game wrestling has been in existence in India as far back as records go, and before that the sport is mentioned in the mythology of nations. Two ancient documents the Ramayana and the Mahabharata, give accounts of the famous wrestlers of thousands of years ago, and several holds, and throws have been named after these legendary heroes.

The best Indian wrestlers have always been large men, but their strength has always been subservient to their skill there are over a thousand holds in Indian wrestling and no man could become a champion through brute force alone. The wrestling style is a kind of catch-as-catch can. Both contestants, wearing lion-cloths, circle each other waiting for a chance to pounce. A great deal of the action takes place on the ground and a bout is won when a contestant has both shoulders pinned.

The study of Physiology is very important in sports. Physiology is the study of how an organ or cell works. It is about what the function is and what it can do and contribute to the wholeness of the human being. When talking about physiology, one does will always have to deal with anatomy. That is why in many institutions, the subject as named as Anatomy and physiology. Most of the times, the composition or what the organ is made up, anatomy can tell us about the physiology of the organ and vice versa.

Objective: To analyses and compare Physiological Variables of Haryana and Punjab male Wrestlers.

Material and Method

Data collection: Two hundred male Wrestlers (N=200) have been selected in this research work. All the players were from Sports Authority of India (SAI) Schemes. In current research work, the players were minimum level of National level and Inter University.

Sample selection: The current research work is limited to Haryana and Punjab state of India. This study considers 200 players as the sample size and using convenience sampling of the both two states. Out of these 200 players 100 from Haryana and 100 from Punjab selected as a Subjects.

Measurement procedure

Physiological Variables

Vital capacity: Is the "maximum amount of air a person can expel from the lungs after a maximum inhalation? It is equal to the sum of inspiratory reserve volume, tidal volume, and expiratory reserve volume. A person's vital capacity can be measured by a wet or regular spirometer".

Heart rate: "Heart rate is the number of heartbeats per unit of time, typically expressed as beats per minute".

Resting heart rate: "Resting Heart Rate (RHR) is how fast your heart beats at rest (i.e. not when exercising)". The faster it beats, the harder your heart is working. RHR is an indicator of heart health because it suggests how efficiently the heart is pumping blood. Resting heart rate will decrease as the

walker's heart becomes larger and stronger with training. A low resting heart rate is an indicator of fitness.

Maximum heart rate: "Maximum heart rate (MHR) is the fastest rate at which your heart is in one minute". You might wonder why you need to know this number and, unless you use track your heart rate during exercise, you may not have any need to calculate your MHR.

Hemoglobin: "Hemoglobin and abbreviated Hb or Hgb is the iron containing oxygen-transport metalloproteinase in the red blood cells of all vertebrates. Hemoglobin in the blood carries oxygen from the respiratory organs to the rest of the body i.e. the tissues, where it releases the oxygen to burn nutrients to provide energy to power the functions of the organism, and collects the resultant carbon dioxide to bring it back to the respiratory organs to be dispensed from the organism".

Lipid profile: "Lipid profile or lipid panel is a panel of blood tests that serves as an initial broad medical screening tool for abnormalities in lipids, such as cholesterol and triglycerides. The results of this test can identify certain genetic diseases and can determine approximate risks for cardiovascular disease, certain forms of pancreatitis, and other diseases".

Total Cholesterol: "Total cholesterol is a direct cholesterol measurement that measures all cholesterol molecules in the blood, including low density lipoproteins (LDL), high density lipoproteins (HDL), and very low-density lipoproteins (VLDL)". A total cholesterol measurement is the most common type of measurement used in a lipid profile, including home cholesterol tests and cholesterol tests performed in a healthcare provider's office.

LDL: Cholesterol isn't bad. It's an essential fat that provides support in the membranes of our bodies' cells. Some cholesterol comes from diet and some is made by the liver. Cholesterol can't dissolve in blood, so transport proteins carry it where it needs to go. These carriers are called lipoproteins, and LDL (low-density lipoprotein) is one member of the lipoprotein family.

HDL: "HDL cholesterol is the name given to the cholesterol in the bloodstream that is carried by "high density lipoprotein." HDL cholesterol has been called "good cholesterol" because reduced levels of HDL cholesterol have been associated with an increased risk of heart attack and stroke, while high HDL levels are associated with a reduced risk.

VLDL: Very-low-density lipoprotein (VLDL) is a type of lipoprotein made by the liver. LDL is one of the five major groups of lipoproteins i.e. chylomicrons, VLDL, low-density lipoprotein, intermediate-density lipoprotein, and high-density lipoprotein which enable fats and cholesterol to move within the water-based solution of the bloodstream. VLDL is assembled in the liver from triglycerides, cholesterol, and Apo lipoproteins.

Triglycerides: The major form of fat stored by the body. A triglyceride consists of three molecules of fatty acid combined with a molecule of the alcohol glycerol. Triglycerides serve as the backbone of many types of lipids.

Triglycerides come from the food we eat as well as from being produced by the body.

The entire above test was measured by Blood Test.

Results

Table 1: Comparison of vital capacity between Haryana and Punjab male wrestlers

Groups	Mean	S. D.	D. F.	S.E.D.	't'-value
Haryana	4456.20	84.30	98	16.75	8.05*
Punjab	4321.40	79.45			

*Significant at 0.05 levels of significance

Table 1: Represented the mean value of Haryana and Punjab Male Wrestlers in vital capacity was 4456.20 and 4321.40 respectively and the SD value of Haryana and Punjab Male Wrestlers in vital capacity was 84.30 and 79.45 respectively. The standard error difference was also finding out with the reading of 16.75. The 't' was calculated as 8.05, which was significant at .05 level of significance. Which was showed that significant difference in mean values of Haryana and Punjab Male Wrestlers in Vital capacity was found and our hypothesis was rejected.

Table 2: Comparison of resting heart rate between Haryana and Punjab male wrestlers

Groups	Mean	S D	D. F.	S.E.D.	't'-value
Haryana	69.62	2.00	98	0.64	7.41*
Punjab	64.88	4.05			

*Significant at 0.05 levels of significance

Table 2 represented the mean value of Haryana and Punjab Male Wrestlers in Resting Heart rate was 69.62 and 64.88 respectively and the SD value of Haryana and Punjab Male Wrestlers in resting heart rate was 2.00 and 4.05 respectively. The standard error difference was also finding out with the reading of 0.64. The 't' was calculated as 7.41, which was significant at .05 level of significance. This was showed that significant difference in mean values of Haryana and Punjab Male Wrestlers in Resting heart rate was found and our hypothesis was rejected.

Table 3: Comparison of maximum heart rate between Haryana and Punjab male wrestlers

Groups	Mean	S D	D.F.	S.E.D.	't'-value
Haryana	198.34	6.60	98	1.28	3.25*
Punjab	202.52	7.79			

*Significant at 0.05 levels of significance

Table 3 represented the mean value of Haryana and Punjab Male Wrestlers in maximum heart rate was 198.34 and 202.52 respectively and the SD value of Haryana and Punjab Male Wrestlers in maximum heart rate was 6.60 and 7.79 respectively. The standard error difference was also finding out with the reading of 1.28. The 't' was calculated as 3.25 which was significant at .05 level of significance. This was showed that significant difference in mean values of Haryana and Punjab Male Wrestlers in maximum heart rate was found and our hypothesis was rejected.

Table 4: Comparison of hemoglobin between Haryana and Punjab male wrestlers

Groups	Mean	S D	D. F.	S.E.D.	't'-value
Hockey	15.01	0.97	98	0.20	2.5*

Football	14.49	1.15			
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*Significant at 0.05 levels of significance

Table 4 represented the mean value of Haryana and Punjab Male Wrestlers in hemoglobin was 15.01 and 14.49 respectively and the SD value of Haryana and Punjab Male Wrestlers in hemoglobin was 0.97 and 1.15 respectively. Which was showed the slightly different between the Haryana and Punjab Male Wrestlers in hemoglobin. The standard error difference was also finding out with the reading of 0.20. The 't' was calculated as 2.5, which was no significant at .05 level of significance. This was showed that significant difference not found in mean values of Haryana and Punjab Male Wrestlers in hemoglobin and our hypothesis was accepted.

Table 5: Comparison of total cholesterol between Haryana and Punjab male wrestlers

Groups	Mean	S.D	D.F.	S.E.D.	't'-value
Haryana	175.52	17.02	98	3.37	4.53*
Punjab	160.24	23.15			

*Significant at 0.05 levels of significance

Table 5 represented the mean value of Haryana and Punjab Male Wrestlers in Total Cholesterol 175.52 and 160.24 respectively and the SD value of Haryana and Punjab Male Wrestlers in Total Cholesterol was 17.02 and 23.15 respectively. The standard error difference was also finding out with the reading of 3.37. The 't' was calculated as 4.53 which was significant at .05 level of significance. This was showed that significant difference in mean values of Haryana and Punjab Male Wrestlers in Total Cholesterol was found and our hypothesis was rejected.

Table 6: Comparison of ldl between Haryana and Punjab male wrestlers

Groups	Mean	S D	D.F.	S.E.D.	't'-value
Haryana	93.56	15.20	98	1.86	0.59
Punjab	92.46	10.72			

Not Significant at 0.05 levels

Table 6 represented the mean value of Haryana and Punjab Male Wrestlers in LDL was 93.56 and 92.46 respectively and the SD value of Haryana and Punjab Male Wrestlers in LDL was 15.20 and 10.72 respectively. The standard error difference was also finding out with the reading of 1.86. The 't' was calculated as 0.59, which was not significant at .05 level of significance. This was showed that significant difference not found in mean values of Haryana and Punjab Male Wrestlers in LDL and our hypothesis was accepted.

Table 7: Comparison of HDL between Haryana and Punjab male wrestlers

Groups	Mean	S. D.	D.F.	S.E.D.	't'-value
Haryana	64.82	10.04	98	1.79	6.35*
Punjab	76.24	7.82			

*Significant at 0.05 levels of significance

Table 7 represented the mean value of Haryana and Punjab Male Wrestlers in HDL was 64.82 and 76.24 respectively and the SD value of Haryana and Punjab Male Wrestlers in HDL was 10.04 and 7.82 respectively. The standard error difference was also finding out with the reading of 1.79. The 't' was calculated as 6.35, which was significant at .05 level of

significance. This was showed that significant difference in mean values of Haryana and Punjab Male Wrestlers in HDL was found and our hypothesis was rejected.

Table 8: Comparison of VLDL between Haryana and Punjab male wrestlers

Groups	Mean	S. D.	D.F.	S.E.D.	't'-value
Haryana	22.98	3.29	98	0.89	3.49*
Punjab	19.64	2.32			

*Significant at 0.05 levels of significance

Table 8 represented the mean value of Haryana and Punjab Male Wrestlers in VLDL was 22.98 and 19.64 respectively and the SD value of Haryana and Punjab Male Wrestlers in VLDL was 3.29 and 2.32 respectively. The standard error difference was also finding out with the reading of 0.09. The 't' was calculated as 3.49, which was significant at .05 level of significance. This was showed that significant difference in mean values of Haryana and Punjab Male Wrestlers in VLDL was found and our hypothesis was rejected.

Table 9: Comparison of triglycerides between Haryana and Punjab male wrestlers

Groups	Mean	S. D.	D.F.	S.E.D.	't'-value
Haryana	147.14	33.10	98	4.93	1.41
Punjab	140.20	12.27			

*Significant at 0.05 levels of significance

Table 9 represent the mean value of Haryana and Punjab Male Wrestlers in Triglyceride was 147.14 and 140.20 respectively and the SD value of Haryana and Punjab Male Wrestlers in Triglyceride was 33.10 and 12.27 respectively. The standard error difference was also finding out with the reading of 4.93. The 't' was calculated as 1.41, which was not significant at .05 level of significance. This was showed that significant difference not found in mean values of Haryana and Punjab Male Wrestlers in Triglyceride and our hypothesis was accepted.

Conclusions

The researcher analyses of data Physiological variables of Punjab and Haryana, male Wrestlers. The data related to physiological variables of male Wrestlers showed that the Haryana region male Wrestlers was better in vital capacity, hemoglobin level, total cholesterol, HDL and VLDL. Data also revealed that there was significance difference found between Haryana and Punjab Wrestlers whereas LDL was better found in male Punjab Wrestlers and our hypothesis related to the above variables was rejected. The following studies also supported to this study Mukesh Tiwari (2012) [11] studied the physiological variables among the Inter District & Inter State Levels of Basketball players. Sixty (60) Male basketball players (30 inter district and 30 interstate) were randomly selected from Uttar Pradesh as a subject. The age of the subjects was ranged from 17-28 years. The physiological variables were resting heart rate measured by manual methods and vital capacity which is measured by Spirometer. The results of the showed that the Physiological variables namely RHR and vital capacity both the group were not differ significantly. Pardeep Kumar (2013) [12] compared the physiological variables of Batsmen's, pace Bowlers, Spin Bowlers, Wicketkeepers and All Rounder's Men Cricketers of India. Total 140 players selected for the study. Resting Heart Rate Resting Blood Pressure, Hb contents Vital Capacity Anaerobic Power and Aerobic Capacity

Physiological variables. The results of study showed that Bowlers have good physiological condition than Batsmen's. Smilee Johny S 1, Vivian Samuel T 2 (2010) [15] Studied as Aerobic power is dependent on the ability of the respiratory and circulatory systems to transport oxygen from the air to the respiring tissues, and the ability of the tissues to use the oxygen to break down metabolic fuels. The present study has therefore been undertaken to investigate the cardiovascular and respiratory responses to submaximal exercise. and aerobic power or VO₂max in young healthy untrained Punjab and Haryana Indians. 50 Haryana Indians and 50 Punjab Indians, normal healthy normotensive male subjects in the age group of 18-25 years were selected for the study. In the present study the aerobic power is statistically increased in Haryana Indians compared to the Punjab which may be due regional variation of morphological characteristics, socioeconomic, climatic and genetically variations.

P. Vinoth Kumar, *et al.* (2010) [13], the purpose of this study was to compare the selected physiological variables among university men basketball football and volleyball players. To achieve the purpose each twenty-university level basketball, football and volleyball players were selected as subjects from Pondicherry. Data were collected on the selected variables namely resting pulse rate, and breathe holding time. One-way analysis of variance (ANOVA) was used for statistical analysis. The results of the study showed that there was significant difference among players in pulse rate and there was no significant difference in breath holding time.

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