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COMPARISON OF PHYSICAL PHYSIOLOGICAL AND ANTHROPOMETRICAL VARIABLES BETWEEN BASKETBALL AND HANDBALL PLAYERS

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ABSTRACT

To achieve the purpose of this study, 50 inter-collegiate athletes comprises of basketball and handball players (boys) studying at Selvam College of Technology and Selvam Arts and Science college, Namakkal those who were participated in Inter-collegiate tournaments, during this academic year 2016 – 2017. The selected subjects were divided into two equal groups as according to their specialization in which they play in this competition namely Basketball (BB), and Handball (HB). Their ages ranging from 18 to 26 years with mean age of 22.46 years. To test the significance of the mean difference among the basketball and handball inter-collegiate players on physical, physiological and anthropometrical characteristics, Independent "t" - test was used. Level of significance was set at 0.05 level. The result reveals that there was significant mean difference among Physical, Physiological and Anthropometric characteristics of basketball and handball inter-collegiate players on all the criterion variables except the speed of physical parameter. It was found that mean values of Physical, Physiological and Anthropometric characteristics of basketball and handball inter-collegiate players were compared, the basketball players have maximum values in all the parameters than the handball players.

KEYWORDS: Speed, Flexibility, Breadth Holding Time, Pulse Rate, Standing Height, Body Weight, Arm length, Leg length.

INTRODUCTION

Basketball and Handball are among the world's popular sports, played practically in every nation at varying levels of competence**.** Successful participation in these sports requires from each player a high level of physical and physiological capabilities and suitable anthropometric characteristics. All ball games require comprehensive abilities including physical, technical, mental, and tactical abilities. Among them, physical abilities of the players are more important as these have marked effects on the skill of players and the tactics of the teams because ball games require repeated maximum exertion such as dashing and jumping (Tsunawake, 2003). Such physical abilities are important for both basketball and handball players to achieve higher levels of performance. For optimal performance during play at an elite level a variety of areas must be addressed.

Physiological testing provides an assessment of physiological status which can be used as a measure of sports performance. It must be noted that many factors contribute to the performance of the basketball and handball athlete. This includes a combination of technical and tactical abilities as well as a high degree of physical fitness (Smith and Thomas 1991). Testing physiological requirements for basketball and handball have become more specific over the past decade with further advances in both sports science technology and general understanding of the physiological requirements for testing basketball and handball. Besides the importance of physical fitness and physiological features of basketball and handball players, Anthropometry plays an important role in providing distinct advantage in playing these games. Anthropometry is used to provide a basis for training and dietary interventions. This includes measurements of age, height, mass and skinfolds. A multifaceted approach is generally utilized for basketball and handball teams combining all aspects of the game.

METHODOLOGY

To achieve the purpose of this study, 50 inter-collegiate athletes comprises of basketball and handball players (boys) studying at Selvam College of Technology and Selvam Arts and Science college, Namakkal those who were participated in Inter-collegiate tournaments, during this academic year 2016 – 2017. The selected subjects were divided into two equal groups as according to their specialization in which they play in this competition namely Basketball (BB), and Handball (HB). Their ages ranging from 18 to 26 years with mean age of 22.46 years. To test the significance of the mean difference among the basketball and handball inter-collegiate players on physical, physiological and anthropometrical characteristics, Independent "t" - test was used. Level of significance was set at 0.05 level.

RESULT

TABLE 1
ANALYSES OF "T" – VALUE AMONG THE BASKETBALL AND HANDBALL INTER-COLLEGIATE PLAYERS ON SPEED

Group	Mean	Standard Deviation	Mean Difference	Standard Error Difference	"t" - Vaule
Basketball	4.64	1.41	0.26	0.36	0.69
Handball	4.89	1.15			

***** P < 0.05 Table t, df (2, 48) (0.05) = 2.01

In table 1, the results of Independent "t" - test analysis of significant mean difference on speed among the two groups namely basketball and handball were presented. It was observed that the mean and standard deviation values on speed were 4.64 and 4.89 & 1.41 and 1.15 respectively. The calculated t - value of 0.69 among the two groups was less than the table value of 2.01 indicating that it was significant (P < 0.05) for the degrees of freedom (2, 48) at 0.05 level of confidence. Since the t - value was not significant, there was no significant mean difference exists on speed parameter among basketball and handball inter-collegiate players.

TABLE 2
ANALYSES OF "T" – VALUE AMONG THE BASKETBALL AND HANDBALL INTER-COLLEGIATE PLAYERS ON FLEXIBILITY

Group	Mean	Standard Deviation	Mean Difference	Standard Error Difference	"t" - Vaule
Basketball	22.08	1.86	7.08	0.46	15.50*
Handball	29.16	1.32			

***** P < 0.05 Table t, df (2, 48) (0.05) = 2.01

In table 2, the results of Independent "t" - test analysis of significant mean difference on flexibility among the two groups namely basketball and handball were presented. It was observed that the mean and standard deviation values on speed were 22.08 and 29.16 & 1.86 and 1.32 respectively. The calculated t - value of 15.50 among the two groups was greater than the table value of 2.01 indicating that it was significant (P < 0.05) for the degrees of freedom (2, 48) at 0.05 level of confidence. Since the t - value was significant, there was a significant mean difference exists on flexibility parameter among basketball and handball inter-collegiate players.

TABLE 3
ANALYSES OF "T" – VALUE AMONG THE BASKETBALL AND HANDBALL INTER-COLLEGIATE PLAYERS ON BREADTH HOLDING TIME

Group	Mean	Standard Deviation	Mean Difference	Standard Error Difference	"t" - Vaule
Basketball	32.08	2.19	3.68	0.53	6.92*
Handball	35.76	1.49			

***** P < 0.05 Table t, df (2, 48) (0.05) = 2.01

In table 3, the results of Independent "t" - test analysis of significant mean difference on breadth holding time among the two groups namely basketball and handball were presented. It was observed that the mean and standard deviation values on speed were 32.08 and 35.76 & 2.19 and 1.49 respectively. The calculated t - value of 6.92 among the two groups was greater than the table value of 2.01 indicating that it was significant (P < 0.05) for the degrees of freedom (2, 48) at 0.05 level of confidence. Since the t - value was significant, there was a significant mean difference exists on breadth holding time parameter among basketball and handball inter-collegiate players.

TABLE 4
ANALYSES OF "T" – VALUE AMONG THE BASKETBALL AND HANDBALL INTER-COLLEGIATE PLAYERS ON PULSE RATE

Group	Mean	Standard Deviation	Mean Difference	Standard Error Difference	"t" - Vaule
Basketball	67.32	1.51	6.02	0.59	10.13*
Handball	61.30	2.55			

***** P < 0.05 Table t, df (2, 48) (0.05) = 2.01

In table 4, the results of Independent "t" - test analysis of significant mean difference on pulse rate among the two groups namely basketball and handball were presented. It was observed that the mean and standard deviation values on speed were 67.32 and 61.30 & 1.51 and 2.55 respectively. The calculated t - value of 10.13 among the two groups was greater than the table value of 2.01 indicating that it was significant (P < 0.05) for the degrees of freedom (2, 48) at 0.05 level of confidence. Since the t - value was significant, there was a significant mean difference exists on pulse rate parameter among basketball and handball inter-collegiate players.

TABLE 5
ANALYSES OF "T" – VALUE AMONG THE BASKETBALL AND HANDBALL INTER-COLLEGIATE PLAYERS ON STANDING HEIGHT

Group	Mean	Standard Deviation	Mean Difference	Standard Error Difference	"t" - Vaule
Basketball	178.94	1.44	0.2	0.44	18.67*
Handball	170.79	1.64			

***** P < 0.05 Table t, df (2, 48) (0.05) = 2.01

In table 5, the results of Independent "t" - test analysis of significant mean difference on standing height among the two groups namely basketball and handball were presented. It was observed that the mean and standard deviation values on standing height were 178.94 and 170.79 & 1.44 and 1.64 respectively. The calculated t - value of 18.67 among the two groups was greater than the table value of 2.01 indicating that it was significant (P < 0.05) for the degrees of freedom (2, 48) at 0.05 level of confidence. Since the t - value was significant, there was a significant mean difference exists on standing height parameter among basketball and handball inter-collegiate players.

TABLE 6
ANALYSES OF "T" – VALUE AMONG THE BASKETBALL AND HANDBALL INTER-COLLEGIATE PLAYERS ON BODY WEIGHT

Group	Mean	Standard Deviation	Mean Difference	Standard Error Difference	"t" - Vaule
Basketball	56.98	2.01	0.87	0.68	7.22*
Handball	55.11	2.71			

***** P < 0.05 Table t, df (2, 48) (0.05) = 2.01

In table 6, the results of Independent "t" - test analysis of significant mean difference on body weight among the two groups namely basketball and handball were presented. It was observed that the mean and standard deviation values on body weight were 56.98 and 55.11 & 2.01 and 2.71 respectively. The calculated t - value of 7.22 among the two groups was greater than the table value of 2.01 indicating that it was significant (P < 0.05) for the degrees of freedom (2, 48) at 0.05 level of confidence. Since the t - value was significant, there was a significant mean difference exists on body weight parameter among basketball and handball inter-collegiate players.

TABLE 7
ANALYSES OF "T" – VALUE AMONG THE BASKETBALL AND HANDBALL INTER-COLLEGIATE PLAYERS ON ARM LENGTH

Group	Mean	Standard Deviation	Mean Difference	Standard Error Difference	"t" - Vaule
Basketball	108.46	1.93	4.65	0.55	8.51*
Handball	113.11	1.92			

***** P < 0.05 Table t, df (2, 48) (0.05) = 2.01

In table 7, the results of Independent "t" - test analysis of significant mean difference on arm length among the two groups namely basketball and handball were presented. It was observed that the mean and standard deviation values on arm length were 108.46 and 113.11 & 1.93 and 1.92 respectively. The calculated t - value of 8.51 among the two groups was greater than the table value of 2.01 indicating that it was significant (P < 0.05) for the degrees of freedom (2, 48) at 0.05 level of confidence. Since the t - value was significant, there was a significant mean difference exists on arm length parameter among basketball and handball inter-collegiate players.

TABLE 8
ANALYSES OF "T" – VALUE AMONG THE BASKETBALL AND HANDBALL INTER-COLLEGIATE PLAYERS ON LEG LENGTH

Group	Mean	Standard Deviation	Mean Difference	Standard Error Difference	"t" - Vaule
Basketball	116.16	2.18	1.16	0.56	2.05*
Handball	117.32	1.79			

***** P < 0.05 Table t, df (2, 48) (0.05) = 2.01

In table 8, the results of Independent "t" - test analysis of significant mean difference on leg length among the two groups namely basketball and handball were presented. It was observed that the mean and standard deviation values on leg length were 116.16 and 117.32 & 2.18 and 1.79 respectively. The calculated t - value of 2.05 among the two groups was greater than the table value of 2.01 indicating that it was significant (P < 0.05) for the degrees of freedom (2, 48) at 0.05 level of confidence. Since the t - value was significant, there was a significant mean difference exists on leg length parameter among basketball and handball inter-collegiate players.

CONCLUSIONS

1. The result reveals that there was significant mean difference among Physical, Physiological and Anthropometric characteristics of basketball and handball inter-collegiate players on all the criterion variables except the speed of physical parameter.
2. It was found that mean values of Physical, Physiological and Anthropometric characteristics of basketball and handball inter-collegiate players were compared, the basketball players have maximum values in all the parameters than the handball players.

REFERENCES

1. Abdelkrim, NB, El Fazaa, S, and El Ati, J. (2007). Time motion analysis and physiological data of elite under 19 year old basketball players during competition. Br J Sports Med 41: 69–75.
2. Aggarwal, J.C: Educational Research – An Introduction. New Delhi: Awashon Book Depot, P.108 (1978).
3. American College of Sports Medicine. (2006). ACSM"s: Guidelines for exercise testing and prescription. Baltimore, MD: Lippincott Williams & Wilkins.

4. Ańgyán L, Téczely T, Zalay Z, & Karsai I, “Relationship of anthropometrical, physiological and motor attributes to sport-specific skills”. Acta Physiol. Hung. 90(3), P.225-231 (2003), http://dx.dio.org/10.1556/Aphysiol.90.
5. Anthony A. Annario: Development conditioning for physical Education and Athletics. Saint Louis: The C.V Mosby Company, P.32 (1972).
6. Apostolidis N, Nassis GP, Bolatoglou T, Geladas ND., “Physiological and technical characteristics of elite young basketball players”. The Journal of Strength and Conditioning Research: Vol. 22, No. 8, pp. 951–968. (2004).
7. Astrand, P. 0. (1956). "Human Physical fitness with special reference to sex and age." Physiol. Rev. 36: 308.
8. Baechle, T. R. & Earle, R. W. (2000). Essentials of Strength Training and Conditioning/ National Strength and Conditioning Association. Champaign, IL: Human Kinetics.
9. Baker LB, Dougherty KA, Chow M & Kenney WL.,“Progressive dehydration causes a progressive decline in basketball skill performance.” Noll Laboratory, Department of Kinesiology, Pennsylvania State University, University Park, PA 16802-6900, USA. lbb134@psu.edu (2007).
10. Barrett, M. R., Butterwick, K. J. & Smith, D. J. (2007). Bull riding: analysis and application of a specific strength and conditioning program. Strength and Conditioning Journal, 28(3), 10-19.
11. Barry L. Johnson & Jack K. Nelson, Practical Measurement for evaluation in Physical Education. Burgess Publishing Company, Minneapolis (1971).
12. Barry L. Johnson and Jack K. Nelson: Practical Measurement for Evaluation in Physical Education. Delhi: Surjeth Publication, P. 215 (1982).