

PHYSICAL AND ANTHROPOMETRIC FITNESS OF SCHOOL LEVEL BADMINTON PLAYERS OF DERA ISMAIL KHAN (KP), PAKISTAN

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ABSTRACT

Purpose of this particular study was aimed to compare physical performance and anthropometric characteristics of school badminton players of High school level competitions. Fifty male participants were selected from various school badminton teams of Dera Ismail Khan City. Physical fitness and Anthropometric variables were measured in shape of stature, body mass, skinfolds, girths, lengths, breadths, 30 m sprint, set and reach, agility run, shuttle run standing broad jump, sit-ups and left and right-hand grip strength. T-test was used for comparison of

Physical fitness and Anthropometric fitness. Results depicts that school level badminton players were significant, heavier, taller, and longer in arm span, shoulder breadth, elbow, arm, leg lengths and knee breadths. Players performed well in 30 m sprints, in flexibility, left and right-hand grip, sit-ups and standing broad jump. Researchers concluded that school level badminton players of Dera Ismail Khan, were inferior in physical fitness as compared to anthropometric variable. National and international level badminton experts and selectors are suggested physical fitness and anthropometric fitness measures be kept in mind while preparing and selecting badminton players for Pakistan.

INTRODUCTION

Badminton is most popular racket game and highly specified skills game. It is fast paced sport and improves the reflexes of players. Body balance, agility, power, strength and accuracy of skill application are essential elements of the game. Fundamental movement skills, motor skills and motor competence are developed in the athletes. Anthropometric fitness indicates body size, proportions, physique and body composition of the player. Badminton improves rapid movement of the body, muscles are made leaner, flexibility and strategic management during game in the participants. Anthropometric fitness is observed in shape of good posture, stature, body mass, strengths, sprint and other powers associated with jumping and leaning during play (Roetert E P., 2009). Physical literacy among the participants is enhanced (Hyndman B et al., 2017). In most of the players fundamental movement skills are developed (Bryant Es, 2016). Anthropometric fitness quantifies relationship between bone mass and body structure of players (Chepko, S., & Holt, S. A. (2014)). Anthropometric data of athletes showed that it provides base for evaluating sport performance of the participants (Rahmavati N T, et al, 2017). Body composition of the players is polished due to which bone length and muscle size is improved (Reilly T et al, 1995). Explosive power is essential for players for accurate court movement and best positioning in the court (Roetred E P et al, 2009).

Study was aimed to compare physical and anthropometric fitness levels school level badminton players. It was hypothesized that school level badminton players are similar in their physical and anthropometric fitness.

METHODOLOGY

Random sampling method was adopted for cross-sectional study. Fifty participants were group selected 25 for each category from school badminton team players. Researchers selected data as per prescribed schedule from the players of Government High Schools badminton players of Dera Ismail Khan city. The prescribed tests were applied within 30 days. Anthropometric variables were measured in shape of height with a stadiometer according to UK model. Height was recorded from the surface of the stadiometer to the vertex of the head of players. Weight (Body Mass) was measured with digital weighing scales. Skinfolds was measured with the nearest reading of 0.2 mm. Skinfold for triceps, subscapular, biceps, iliac-crest, supra-spinal, abdomen, thigh, and calf were measured and recorded. Metallic tape was used for the measurements of arm girths, arm relax, arm flex, forearm, chest, waist, hips, thigh, and calf. Slid caliper was used for measuring arm length, leg lengths, shoulder breadth, pelvis breadth, transfers of chest breadths, elbow and knee breadths. Wooden box was used for measurements of sitting height. Standing broad jump was measured through standardized scale. Through dash running speed of players was assessed on 30 30-meter line. Shuttle run was performed by all the participants and scores were recorded. Agility test was determined according to specified criteria and score was measured

through stopwatch. Standing long jump was performed by players by taking crouch position in directed manner. Flexibility was assessed through sit and reach movement by using a flexibility testing device used for evaluation. Participants were directed to take part in the test as per prescribed manner. Participants' hand grip and back strengths were measured with dynamometers, strength was measured in kilogram.

Statistical Analysis

Collected data was analyzed through descriptive statistics. Mean and standard deviation were calculated for both the variables. Comparison of both the variables was carried out through t-test. Data was analyzed by using SPSS 2021 version. Level of probability was adjusted at .05 for statistical significance.

RESULTS

Table 01: Anthropometric Fitness of School Level Badminton Players

Variables	Mean	S.D	Sig.
Height(cm)	172.23	3.90	0.04
Weight(kg)	65.84	5.98	0.03
Triceps(mm)	12.31	3.71	0.67
Subscapular Skinfold(mm)	14.07	3.53	0.51
Biceps Skinfold(mm)	9.07	1.73	0.33
Iliac-crest Skinfold(mm)	16.38	3.03	0.60
Supra-spinal Skinfold(mm)	10.68	2.92	0.07
Abdomen Skinfold(mm)	17.77	3.73	0.92
Thigh Skinfold(mm)	17.31	5.76	0.08
Calf Skinfold(mm)	11.05	3.69	0.30
Arm Relax Girth(cm)	25.61	2.14	0.01
Arm Flex Girth(cm)	28.83	2.10	0.01
Forearm Girth(cm)	25.01	1.49	0.03
Chest Girth(cm)	85.90	6.75	0.09
Waist Girth(cm)	72.61	8.80	0.38
Hip Girth(cm)	89.10	4.55	0.32
Thigh Girth(cm)	51.38	5.71	0.00
Calf Girth(cm)	35.25	3.58	0.02
Sitting Height(cm)	88.23	3.09	0.04
Arm Span(cm)	178.26	4.75	0.04
Arm Length(cm)	77.81	3.46	0.00
Leg Length(cm)	90.19	3.73	0.02
Shoulder Breadth(cm)	41.32	1.72	0.00
Pelvis Breadth(cm)	28.57	1.21	0.00
Transvers Chest Breadth(cm)	27.81	2.00	0.00
Elbow Breadth(cm)	7.87	1.16	0.00
Knee Breadth(cm)	9.71	1.21	0.01

***Significant at 0.05 level**

Anthropometric fitness variables of school level badminton players are presented in above Table 01.

Table 02: Physical Fitness of School Level Badminton Players

Variables	Mean	S.D	Sig.
Sprint 30 Meters(m)	0.37	0.37	0.04
Sit and Reach(cm)	17.33	2.57	0.02
Standing Broad Jump(m)	2.52	0.24	0.02
Right Hand Grip Strength(kg)	45.12	4.05	0.05
Left Hand Grip Strength(kg)	42.68	2.56	0.03
Sit Ups(n/30s)	21.00	2.24	0.02
Agility run(s)	10.22	0.59	0.38
Shuttle Run(s)	15.92	0.54	0.39

***Significant at 0.05 level**

Physical fitness variables of school level badminton players are shown along with their results in Table 02.

DISCUSSION

Study was conducted to find out anthropometric fitness and physical characteristics of school level badminton players. Fifty school level badminton players were randomly selected for study from the Government High School of Dera Ismail Khan City. Both the category consisted of 25 players each for testing. Players feel confident and good after anthropological and physical fitness program. The participants level of feeling well is enhanced in badminton players ([Duncan M J., et al, 2018](#)). Fundamental motor skills and motor competence is developed in the players of badminton ([Hydman B et al, 2017](#)). Physical literacy of the players is enhanced ([Bryanat E S, 2016](#)). Physical Education and sports curriculum must have the anthropological and physical fitness aspects in the syllabus ([Duncan M J, et al, 2020](#)). Locomotor and object control skills along with over all motor development has been observed in the participants ([Malina R M, et al, 2004](#)). Physical and anthropological fitness improves cognitive approach of the athletes ([Duncan M J, et al, 2017](#)). Quality of movement and approach matters in badminton competitions ([Logan S W, et al, 2017](#)). Physical fitness improves running, jumping, catching, throwing, striking and smashing abilities of players after training (Ulrich D A, 2000). Training has paramount effects on the skill and fitness levels of badminton players ([Barnett L M, et al, 2014](#)). Badminton players use standing broad jump improvement as winning tool during competitions ([Petersen D, 2015](#)). Most vital determinant of success is motor performance ability and anthropological fitness ([Choen, 2014](#)). Anthropological fitness and training measures and quantifies relationship between bone mass, and body structure of athletes ([Tervo T., et al, 2010](#)). Base line is provided due to physical fitness and anthropological fitness variable for coaches and trainers ([Rahmavati N T, et al, 2017](#)). For executing attacking strategies height of badminton player matters and physical fitness variables may help a lot ([Poliszczuk, T & M Mosakowa, 2010](#)). Body composition is vital

aspect of fitness and for agile badminton player it is essential ([Reilly T et al, 1995](#)). Jump and reach and long armis advantageous in badminton. Player after reaching at possible height point may easily convert the chance to best smash ([Chin M K, 1995](#)). Aerobic explosive power and agility are key to success in badminton competitions ([Jeyaraman R E, et al, 2012](#)). Findings of study have reported that high level of flexibility is needed for badminton players to gain proper position during game ([Abian-Vican. J et al, 2012](#)). Players are facilitated by explosive power during badminton competitions ([Yasin A, et al, 2010](#)). Highest level of speed is needed for accuracy in badminton, are the findings of study ([Kibler W B, et al, 1998](#)). Muscular strength and trunk development plays pivotal role in agile movements during game of badminton ([Raman D et al, 2013](#)).

CONCLUSION

Null hypothesis was rejected and researchers both objectives were supported by the results of the study. Anthropometric and physical fitness variables have impact on the skill and fitness levels of school level badminton players of Government High Schools of Dera Ismail Khan City, KP, Pakistan.

FUTURE IMPLICATIONS

On basis of findings of this study badminton coaches should focus on improving strength, power, speed, trunk flexibility, hands grip, jump and reach ability, and body balancing abilities of badminton players. Regular sprint, physical and anthropometric fitness training will be beneficial for enhancing badminton playing capabilities of badminton players.

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