



ISSN: 2456-0057
IJPNPE 2021; 6(1): 302-306
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www.journalofsports.com
Received: 12-04-2020
Accepted: 16-05-2020

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An analysis on selected physical fitness variables of UAS Raichur sports persons

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Abstract

The present study aims to find out the differences in the anthropometric measurements among sports persons of UAS, Raichur. To achieve the purpose of the study total 300 sports persons were selected in the various disciplines of sports from different colleges of UAS, Raichur. The selected physical fitness parameters like strength, speed, flexibility and agility were chosen. The data is collected with the help of vertical jump test, 30 meter dash test, SEMO test and sit and reach test. The results of the study shown significant differences in the selected physical fitness parameters among the sports persons of UAS, Raichur.

Keywords: Physical fitness, Speed, Strength, Agility, Flexibility

Introduction

Sports has emerged as a discipline not merely to discuss performance, techniques or records but also to study it as a means by which greater societal forces may be analyzed and through which various problems may be remedied.

Sports in the present day have become extremely competitive, previous records are being broken whenever there is competition. It is not mere participation or few days' practice that brings an individual victory, but the continuous hard work of training right from childhood and a strong anthropometry variables may influenced. Today's sports person faces some unique challenges, the standards are higher, and the competition is tougher the stakes are greater attention in these days.

The preparation of an athlete today for achievement is a complex dynamic matter, characterized by a high level of physical and physiological efficiency and the degree of perfection of necessary skill and knowledge and proper teaching and tactics. An athlete arrives at this state only as a result of corresponding training sports activity in this respect is an activity directed at steadily enhancing the preparation of an athlete and grooming him for a higher level achievement. Many other factors are also brought into action in his preparation such as special nutrition; organization of a general region in accordance with conditions of sports activity rehabilitation after injury etc., thus athletes training today is a multisided process of expedient use of aggregate factors so as to influence the development of an athlete (Matveyer, 1981). Physical fitness, psychological and physiological parameters are very essential in the sports and games where the players have to perform with endurance and strength endurance for a longer period with breathing mechanism along with lot of concentration, attention and mental toughness. The players need to have greater physical fitness and mental toughness for effective performance. Anthropometrical, physical fitness, psychological and physiological characteristics play an important role in deciding the performance level and also they have their importance in the field of sports and games.

Keeping in view of the above facts the present investigation is taken into consideration to find out the better means and methods of training for the UAS, Raichur sports persons to uplift their performance level at the national level sports and games competitions.

Statement of the Problem

The present research investigation entitled "An analysis on selected physical fitness variables of UAS Raichur sports persons".

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Objectives of the study

- To find out the selected physical fitness variables of UAS Raichur sports persons.
- To compare the differences in selected physical fitness variables of sports persons from different colleges of UAS Raichur.
- To suggest and recommend better means and methods of sports training to enhance their present level of performance.

Materials and Methods

The methodological aspects related to the present investigation have been described. The procedure and methods applied in selection of subjects, selection of variables, selection of tests, instrument reliability of data, orientation of the subjects, collection of data, test administration, experimental design and statistical technique are presented below.

Selection of subjects

The total 300 samples i.e., 60 players each from 4 U.G colleges and 1 P.G studies of UAS, Raichur were selected by random sampling method.

Table 1: Sample Design

College/PGS	No. of Subjects
PGS	60
ACR	60
CAE	60
ACB	60
ACK	60
Total	300

Selection of variables

The researcher had gone through the available literature and had discussions with various experts before selecting variables. The availability of technique for the purpose of analysis, feasibility, reliability of the procedure and the outcome were extensively taken care before finalizing the variables. After analysing the various factors associated with the present study physical fitness variables like strength, speed, agility and flexibility were selected.

Criterion variables

Each sport demands specific requirement of anthropometric measurements, physical, psychological and physiological capacities for successful performance, the importance of these parameters lays in the fact that in majority of the sports; it scores as the basis for good performance. The following physical fitness parameters were selected.

Physical Fitness parameters:

- Strength
- Speed
- Agility
- Flexibility

Selection of tests

The selected a physical parameters and their respective tests were administered are presented in Table 1.

Table 2: list of variables and their respective test

S. N.	Variables	Test
Physical Fitness parameters		
1.	Strength	Vertical jump test
2.	Speed	30 meter test
3.	Agility	SEMO test
4.	Flexibility	Sit and Reach test

Instrument reliability

In the present study standard equipments such as digital spirometer, measurement tape, stopwatch, cones etc were used.

Reliability of the data

Test and retest method was followed in order to establish reliability of data by using 50 subjects at random. These 50 subjects were tested twice by the same person under similar conditions. Johnson and Nelson's intra-class co-efficient of correlation was used to find out the reliability of the data as suggested.

Orientation of the subjects

The investigator explained the purpose of the study and the importance of the tests to the subjects in order to get their co-operation as well as to secure reliable data.

Collection of data

The investigator was collected the data pertaining to the present research project from 300 samples i.e., 60 players each from 4 U.G colleges and 1 P.G studies of UAS, Raichur on the selected physical fitness variables like strength, speed, agility and flexibility.

Test administration

The investigator administered the respective tests prior and post event duration during UAS Raichur Inter-Collegiate Tournaments. The investigator was collected of data related to present study in the following methods,

1. Physical fitness test parameters

1. Vertical jump test

This procedure describes the method used for directly measuring the vertical jump height jumped. There are also timing systems that measure the time of the jump and from that calculate the vertical jump height.

Purpose: to measure the leg muscle power

Equipment required: measuring tape or marked wall, chalk for marking wall (or Vertec or Jump mat).

Procedure: The athlete stands side on to a wall and reaches up with the hand closest to the wall. Keeping the feet flat on the ground, the point of the fingertips is marked or recorded. This is called the standing reach height. The athlete then stands away from the wall, and leaps vertically as high as possible using both arms and legs to assist in projecting the body upwards. The jumping technique can or cannot use a countermovement. Attempt to touch the wall at the highest point of the jump. The difference in distance between the standing reach height and the jump height is the score. The best of three attempts is recorded.

Scoring: The jump height is usually recorded as a distance score.

2. 30 Meter Dash

Sprint or speed tests can be performed over varying distances, depending on the factors being tested and the relevance to the sport.

Purpose: The aim of this test is to determine acceleration and speed.

Equipment required: Measuring Tape or marked track, stopwatch or timing gates, cone markers, flat and clear surface of at least 50 meters.

Procedure: The test involves running a single maximum sprint over 30 meters, with the time recorded. A thorough warm up should be given, including some practice starts and accelerations. Start from a stationary position, with one foot in front of the other. The front foot must be on or behind the starting line.



3. Agility test

SEMO test used to assess the agility. To accomplish this test need to flat land in 12X19 ft or free throwing zone of basketball and 4 cones. Cones are located in every angle of determined zone. Start line is out of the throwing zone in A part. With start mark, subject run distance between A to B by side running, B to D by back running, D to A by forward running, A to C by back running and B to A (finish line) by side running.

4. Sit and reach test

The sit and reach test is a common measure of flexibility, and specifically measures the flexibility of the lower back and hamstring muscles. This test is important as because tightness in this area is implicated in lumbar lordosis, forward pelvic tilt and lower back pain. This test was first described by Wells and Dillon (1952) and is now widely used as a general test of flexibility.

Equipment required: Sit and reach box.

Procedure: This test involves sitting on the floor with legs stretched out straight ahead. Shoes should be removed. The soles of the feet are placed flat against the box. Both knees should be locked and pressed flat to the floor - the tester may assist by holding them down. With the palms facing downwards, and the hands on top of each other or side by

side, the subject reaches forward along the measuring line as far as possible. Ensure that the hands remain at the same level, not one reaching further forward than the other. After some practice reaches, the subject reaches out and holds that position for at one-two seconds while the distance is recorded. Make sure there are no jerky movements.

Scoring: The score is recorded to the nearest centimeter or half inch as the distance reached by the hand. Some test versions use the level of the feet as the zero mark, while others have the zero mark 9 inches before the feet. There is also the modified sit and reach test which adjusts the zero mark depending on the arm and leg length of the subject.

Results and Discussions

The analysis of data and interpretation is done based on the statistical results and findings. Further the results are discussed as per the following steps,

1. Analysis of differences on selected physical fitness parameters among ACR, CAE, ACB, ACK and PGS players:

a) The comparisons (paired t-test) on vertical jump test among ACR, CAE, ACB, ACK and PGS players:

Table 3: Paired t-test on vertical jump test among ACR, CAE, ACB, ACK and PGS players

Paired Samples Statistics (Vertical jump)						
Pairs	College	Mean (in cms)	N	Std. Deviation	t-value	p-value
Pair 1	ACR	7.72	60	1.54	4.23*	.000
	CAE	6.92	60	0.94		
Pair 2	ACR	7.72	60	1.54	5.14*	.001
	ACB	6.45	60	0.80		
Pair 3	ACR	7.72	60	1.54	4.85*	.002
	ACK	6.84	60	0.87		
Pair 4	ACR	7.72	60	1.54	5.34*	.000
	PGS	6.24	60	0.76		
Pair 5	CAE	6.92	60	0.94	2.16*	.003
	ACB	6.45	60	0.80		
Pair 6	CAE	6.92	60	0.94	2.02*	.004
	ACK	6.84	60	0.87		
Pair 7	CAE	6.92	60	0.94	2.56*	.003
	PGS	6.24	60	0.76		
Pair 8	ACB	6.45	60	0.80	3.12*	.000
	ACK	6.84	60	0.87		
Pair 9	ACB	6.45	60	0.80	2.34*	.003
	PGS	6.24	60	0.76		
Pair 10	ACK	6.84	60	0.87	3.54*	.002
	PGS	6.24	60	0.76		

*Significant at 0.05 level

Table No. 5 shows the mean, standard deviation and t-value scores of vertical jump among ACR, CAE, ACB, ACK and PGS players.

According to the table it is observed that the mean scores of ACR (7.72), CAE (6.92), ACB (6.45), ACK (6.84) and PGS (6.24) players are not similar. The t-values (4.23, 5.14, 4.85, 5.34, 2.16, 2.02, 2.56, 3.12, 2.34 and 3.54) are significant as p-values (.000, .001, .002, .000, .003, .004, .003, .000, .003 and .002) are less than 0.05 level. In other words there is a significant difference in the vertical jump test among ACR, CAE, ACB, ACK and PGS players.

b) The comparisons (paired t-test) on speed test among ACR, CAE, ACB, ACK and PGS players:**Table 4:** Paired t-test on speed test among ACR, CAE, ACB, ACK and PGS players

Paired Samples Statistics (Speed)						
Pairs	College	Mean (in secs)	N	Std. Deviation	t-value	p-value
Pair 1	ACR	5.02	60	0.52	2.16*	.004
	CAE	4.65	60	0.48		
Pair 2	ACR	5.02	60	0.52	2.03*	.051
	ACB	5.30	60	0.83		
Pair 3	ACR	5.02	60	0.52	0.92	.362
	ACK	4.79	60	0.36		
Pair 4	ACR	5.02	60	0.52	2.36*	.008
	PGS	5.24	60	0.42		
Pair 5	CAE	4.65	60	0.48	2.97*	.003
	ACB	5.30	60	0.83		
Pair 6	CAE	4.65	60	0.48	0.82	.453
	ACK	4.79	60	0.36		
Pair 7	CAE	4.65	60	0.48	2.52*	.138
	PGS	5.24	60	0.42		
Pair 8	ACB	5.30	60	0.83	4.95*	.000
	ACK	4.79	60	0.36		
Pair 9	ACB	5.30	60	0.83	0.32	.751
	PGS	5.24	60	0.42		
Pair 10	ACK	4.79	60	0.36	2.96*	.006
	PGS	5.24	60	0.42		

*Significant at 0.05 level

Table No. 6 shows the mean, standard deviation and t-value scores of speed among ACR, CAE, ACB, ACK and PGS players. According to the table it is observed that the mean scores of ACR (5.02), CAE (4.65), ACB (5.30), ACK (4.79) and PGS (5.24) players are not similar.

The t-values (2.16, 2.03, 2.36, 2.97, 2.52, 4.95 and 2.96) are significant as p-values (.004, .051, .008, .003, .138, .000 and .006) are less than 0.05 level.

In other words there is a significant difference in speed among

ACR & CAE, ACR & ACB, ACR & PGS, CAE & ACB, CAE & PGS, ACB & ACK and ACK & PGS players.

Similarly, it is also observed that the mean scores of ACR (5.02) & ACK (4.79), CAE (4.65) & ACK (4.79), ACB (5.30) & PGS (5.24) players are similar.

The t-values (0.92, 0.82 and 0.32) are not significant as p-values (.051, 0.453 and .751) are more than 0.05 level. In other words there is no significant difference in speed among ACR & ACK, CAE & ACK, and ACB & PGS players.

C. The comparisons (paired t-test) on agility test among ACR, CAE, ACB, ACK and PGS players:**Table 5:** Paired t-test on agility test among ACR, CAE, ACB, ACK and PGS players

Paired Samples Statistics (Agility)						
Pairs	College	Mean (in secs)	N	Std. Deviation	t-value	p-value
Pair 1	ACR	12.58	60	2.54	4.62*	.000
	CAE	11.94	60	1.96		
Pair 2	ACR	12.58	60	2.54	5.32*	.000
	ACB	13.06	60	2.86		
Pair 3	ACR	12.58	60	2.54	2.45*	.004
	ACK	12.72	60	2.63		
Pair 4	ACR	12.58	60	2.54	5.06*	.000
	PGS	14.12	60	3.02		
Pair 5	CAE	11.94	60	1.96	5.23*	.000
	ACB	13.06	60	2.86		
Pair 6	CAE	11.94	60	1.96	4.15*	.000
	ACK	12.72	60	2.63		
Pair 7	CAE	11.94	60	1.96	5.64*	.000
	PGS	14.12	60	3.02		
Pair 8	ACB	13.06	60	2.86	3.96*	.001
Pair 9	ACK	12.72	60	2.63	5.42*	.000
	ACB	13.06	60	2.86		
	PGS	14.12	60	3.02		
Pair 10	ACK	12.72	60	2.63	4.87*	.000
	PGS	14.12	60	3.02		

*Significant at 0.05 level

Table No. 7 shows the mean, standard deviation and t-value scores of agility among ACR, CAE, ACB, ACK and PGS players.

According to the table it is observed that the mean scores of ACR (12.58), CAE (11.94), ACB (13.06), ACK (12.72) and PGS (14.12) players are not similar. The t-values (4.62, 5.32,

2.45, 5.06, 5.23, 4.15, 5.64, 3.96, 5.42 and 4.87) are significant as p-values (.000, .000, .004, .000, .000, .000, .000, .001, .000 and .000) are less than 0.05 level. In other words there is a significant difference in agility among ACR, CAE, ACB, ACK and PGS players.

d. The comparisons (paired t-test) on flexibility test among ACR, CAE, ACB, ACK and PGS players:

Table 6: Paired t-test on flexibility test among ACR, CAE, ACB, ACK and PGS players

Paired Samples Statistics (Flexibility)						
Pairs	College	Mean (In cms)	N	Std. Deviation	t-value	p-value
Pair 1	ACR	7.54	60	3.28	6.14*	.000
	CAE	5.60	60	2.56		
Pair 2	ACR	7.54	60	3.28	5.66*	.000
	ACB	6.22	60	2.71		
Pair 3	ACR	7.54	60	3.28	4.92*	.000
	ACK	6.58	60	2.98		
Pair 4	ACR	7.54	60	3.28	6.52*	.000
	PGS	4.98	60	2.24		
Pair 5	CAE	5.60	60	2.56	4.72*	.000
	ACB	6.22	60	2.71		
Pair 6	CAE	5.60	60	2.56	5.02*	.000
	ACK	6.58	60	2.98		
Pair 7	CAE	5.60	60	2.56	3.45*	.000
	PGS	4.98	60	2.24		
Pair 8	ACB	6.22	60	2.71	2.78*	.001
	ACK	6.58	60	2.98		
Pair 9	ACB	6.22	60	2.71	4.98*	.000
	PGS	4.98	60	2.24		
Pair 10	ACK	6.58	60	2.98	6.23*	.000
	PGS	4.98	60	2.24		

*Significant at 0.05 level

Table No. 8 shows the mean, standard deviation and t-value scores of flexibility among ACR, CAE, ACB, ACK and PGS players.

According to the table it is observed that the mean scores of ACR (7.54), CAE (5.60), ACB (6.22), ACK (6.58) and PGS (4.98) players are not similar.

The t-values (6.14, 5.66, 4.92, 6.52, 4.72, 5.02, 3.45, 2.78, 4.98 and 6.23) are significant as p-values (.000, .000, .000, .000, .000, .000, .000, .001, .000 and .000) are less than 0.05 level. In other words there is a significant difference in flexibility among ACR, CAE, ACB, ACK and PGS players.

Conclusions and recommendations

Conclusions

- It is found that there is a significant difference in the vertical jump test among ACR, CAE, ACB, ACK and PGS players.
- There is a significant difference in speed among ACR & CAE, ACR & ACB, ACR & PGS, CAE & ACB, CAE & PGS, ACB & ACK and ACK & PGS players.
- Results of the study found that there is no significant difference in speed among ACR & ACK, CAE & ACK, and ACB & PGS players.
- There is a significant difference in agility among ACR, CAE, ACB, ACK and PGS players.
- There is a significant difference in flexibility among ACR, CAE, ACB, ACK and PGS players.

Recommendations

- Based on the findings it is recommended that core muscle

strengthening exercises, Plyometric exercises, circuit training and interval training are to be performed by the all the campus players of UAS, Raichur regularly for 45-60 days prior to the inter-collegiate matches to prepare and develop their body fitness level adequately which is pre-requisite.

- It is recommended to keep the record of anthropometrical, physical fitness and physiological parameters measurement data of each and every player of UAS, Raichur and it is pre-requisite and it helps scientifically in selecting the player to particular sports and game based on their body type.
- It is also recommended that the duration of tainting and coaching period for practice of UAS, Raichur Sports Contingent should be minimum of 30-40 days for adequate and optimum preparation to perform and achieve excellence in sports and games competitions at all India level.

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