

A COMPARATIVE STUDY OF PHYSICAL DIFFERENCES BETWEEN ATHLETES OF SELECTED EVENTS IN TRACK AND FIELD

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ABSTRACT

The purpose of the study was to find out the physical differences between athletes of selected events in track and field. The subjects for the study were selected by purposive sampling. A total of 30 subjects (10 from each event) were selected from LNUPE, Gwalior. The variables selected for this study were Speed, Agility, and Explosive power of legs. The selection of these variables was also based on the feasibility criteria and the equipment available as well as the scholar owns experience in conducting the test and measurement to these variables. To measure the speed 50 meters dash test (given in AAHPERD test) was used and for that an area was marked on a track, The time was measured in seconds nearest 100th of a second. The speed was calculated by dividing the distance (i.e. 50 meters) by the timing of the subjects. To measure the agility 4×10 meters shuttle run test (same as given in AAHPERD test) was used. The score was the elapsed time recorded in seconds. To measure the explosive power of legs, standing broad jump test (same as given in AAHPERD test) was employed. The maximum distance covered in standing broad jump by the subjects was measures in meters with the help of a steel tape. The data obtained was analyzed by applying One Way Analysis of Variance. The ANOVA table was found significant in all the variables at level of significance 0.05.

Keywords: Physical variables, sprinters, jumpers and long distance runners.

INTRODUCTION:

Most kids naturally love to run. And encouraging exercise is one of the best things a parent can do for their child's long-term health. Where we have to be careful is that our adult enthusiasm can easily turn what was once fun for our kids into work. Cross country training for younger children gets them in shape and makes them fit. Depending on which event you do determine what kind of shape and fitness. Distance running gets you leaner and increases your stamina.

Low levels of physical activity are consistently associated with adverse health outcomes, and a sedentary lifestyle characterized by inadequate levels of physical activity is endemic among U.S. adults, particularly among older adults (Atlanta, GA 1996). Moreover, older adults experience a disproportionate burden of illness associated with sedentary behavior and low cardio respiratory fitness (N, Boyle R, O'Connor P, 1998). In track and field, as in many other sports, theorist and practitioners reside in different camps with inadequate communications. The blame rests with all of us. Coaches are responsible for the effectiveness of their training methods. New techniques allowed remaining in the minds of scientists or on silent pages in trade journals do nothing for the leaders of track and field. The purpose of the present study was to compare the selected physical variables among the athletes of selected events in track and field i.e. sprinters, jumpers and long distance runners.

METHODS:

Selection of the subjects- A total of 30 subjects (10 from each event) were selected by purposive sampling from LNUPE, Gwalior. The subjects were sprinters, long distance runners and jumpers (10 from each group) who represented LNUPE, Gwalior at All-India Inter-University level.

Selection of variables- Through both the critical and allied literature pertaining to the problem under consideration the following physiological variables were selected-

1. Speed
2. Agility
3. Explosive power of legs

The selection of these variables was also based on the feasibility criteria and the equipment available as well as the scholar owns experience in conducting the test and measurement to these variables.

ADMINISTRATION OF THE TEST:

Speed-

To measure the speed 50 meters dash test (same as given in AAHPERD test) was used and for that an area was marked on a track. Two parallel lines of 10 meters length were drawn, considering one as starting line and other as finishing line. After proper warm-up the subjects were asked to run for the given distance. Only one trial was given to all the subjects. The time was measured in seconds nearest 100th of a second. The speed was calculated by dividing the distance (i.e. 50 meters) by the timing of the subjects.

Agility-

To measure the agility 4×10 meters shuttle run test (same as given in AAHPERD test) was used. Marking of two, parallel lines 3 meters in length were drawn 10 meters apart, considering one as starting point. The subjects stood at the starting line, with the two wooden blocks placed on the edge of the other line. On the signal 'start' given with the help of a clapper, the subject ran to the wooden block, and lifted one block and returned to the starting line and placed the block behind the line. He then returned to the second block, lifted it and then sprinted across the line on the way back. The score was the elapsed time recorded in seconds.

Explosive power of legs-

To measure the explosive power of legs, standing broad jump test (same as given in AAHPERD test) was employed. One meter take off line was marked on the edge of sandy pit. The subject stood behind the marked line with his feet slightly apart and parallel. The maximum distance covered in standing broad jump by the subjects was measured in meters with the help of a steel tape.

RESULT:

The data obtained was analyzed by applying One Way Analysis of Variance. The descriptive table for the data obtained is shown as below.

Table 1: The descriptives of the selected physical variables of sprinters, jumpers and Long distance runners.

		N	Mean	Std. Deviation	Std. Error
Speed	Sprinters	10	8.1312	.38921	.12308
	Jumpers	10	8.1010	.32961	.10423
	Long Distance Runners	10	6.8916	.18601	.05882
	Total	30	7.7079	.66054	.12060
SBJ	Sprinters	10	2.4360	.32001	.10120
	Jumpers	10	2.7420	.11660	.03687
	Long Distance Runners	10	2.1860	.13938	.04408
	Total	30	2.4547	.30904	.05642
Agility	Sprinters	10	8.8720	.12327	.03898
	Jumpers	10	8.9810	.04932	.01560
	Long Distance Runners	10	10.1640	.68066	.21524
	Total	30	9.3390	.70947	.12953

To compare the means of all the selected variables of sprinters, jumpers and long distance runners One Way Analysis of Variance was employed and the table for the same is shown below.

Table 2: Anova Table for the data on selected physiological variables of sprinters, jumpers and long distance runners

		Sum of Squares	df	Mean Square	F	Sig.
Speed	Between Groups	10.001	2	5.000	50.898*	.000
	Within Groups	2.653	27	.098		
	Total	12.653	29			
SBJ	Between Groups	1.551	2	.775	17.178*	.000
	Within Groups	1.219	27	.045		
	Total	2.770	29			
Agility	Between Groups	10.269	2	5.134	32.028*	.000
	Within Groups	4.328	27	.160		
	Total	14.597	29			

*Significant at 0.05 level of significance

The ANOVA table on selected physical variables shows that the F- ratio was significant in case of all the variables at level of significance 0.05. To find out the critical difference between the means of the selected variables Post Hoc Test (LSD) was employed and the table of that is shown below.

Table 3: Post Hoc Test (LSD) for the selected physical variables of sprinters, jumpers and long distance runners

Dependent Variable	(I) Sport	(J) Sport	Mean Difference	
			(I-J)	Sig.
Speed	Sprinters	Jumpers	.03019	.831
		Long Distance Runners	1.23960*	.000
	Jumpers	Sprinters	-.03019	.831
		Long Distance Runners	1.20940*	.000
	Long Distance Runners	Sprinters	-1.23960*	.000
		Jumpers	-1.20940*	.000
SBJ	Sprinters	Jumpers	-.30600*	.003
		Long Distance Runners	.25000*	.014
	Jumpers	Sprinters	.30600*	.003
		Long Distance Runners	.55600*	.000
	Long Distance Runners	Sprinters	-.25000*	.014
		Jumpers	-.55600*	.000
Agility	Sprinters	Jumpers	-.10900	.548
		Long Distance Runners	-1.29200*	.000
	Jumpers	Sprinters	.10900	.548
		Long Distance Runners	-1.18300*	.000
	Long Distance Runners	Sprinters	1.29200*	.000
		Jumpers	1.18300*	.000

*Significant at 0.05 level of significance

In case of speed, post hoc test for the critical difference between the means of the selected variables shows that there was a significant difference in speed of long distance runners as compared with sprinters and jumpers. But there was no significant difference found in speed of sprinters and jumpers.

In case of explosive power of legs (Standing Broad Jump) post hoc test shows that there was a significant difference in all the three groups.

In case of agility, post hoc test for the critical difference between the means of the selected variables shows that there was a significant difference in agility of long distance runners as compared with sprinters and jumpers. But there was no significant difference found in speed of sprinters and jumpers.

DISCUSSION OF FINDINGS:

This study was done to compare the selected physical variables among the sprinters, jumpers and long distance runners. The variables selected were speed, agility and explosive power of legs. The Anova table was found significant in all the variables at level of significance 0.05.

In case of speed, sprinters and jumpers were found to significantly better than the long distance runners. This is a sure phenomenon that the sprinters and jumpers are used to be better in speed as compared to the other event athletes.

In case of explosive power of legs, all the groups were found significantly different. The jumpers were found best (with mean performance 2.74 meters) followed by the sprinters (with mean performance 2.43 meters) and the long distance runners (with mean performance 2.18 meters). The explosive power of legs in case of jumpers is best because of their main event for which they used to practice i.e. jumping and it needs a lot of explosive strength. Sprinters also are having better explosive power in legs as because of its demand in their game. But in case of long distance run it is not of that much importance.

Likewise in case of agility also, sprinters and jumpers were found to significantly better than the long distance runners. This is also true that the sprinters and jumpers used to have a better agile body as compared to the other events.

CONCLUSION:

In this study, it may be concluded that the sprinters and jumpers used to be better in speed and agility as compared to the long distance runners. The jumpers are best in explosive power of legs followed by the sprinters.

RECOMMENDATIONS:

1. The same type of study can be done by taking others games and sports into consideration.
2. Similar studies can be done by taking a large sample and various age groups.

References

CHU, D.A. (1996) Explosive Power and Strength. Champaign: Human Kinetics. p. 171

Physical activity and health: a report of the surgeon general. G. A. Atlanta, U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion; 1996

Pronk N, Boyle R, O'Connor P. The association between physical fitness and diagnosed chronic disease in health maintenance organization members. Am J Health Promot 1998;12:300–6

Vinod bhalla, “comparative effect of half squat and bench press on the performance in shot put”, unpublished masters thesis, jiwaji university , 1982