Dr. Ashok Kumar Malik
Assistant Professor,
Deptt. of Phy. Edu, CDLU, Sirsa

Lakha Singh
Assistant Professor,
D.A.V. College, Abohar

Selected anthropometric and Physical Fitness Measures as predictors of performance in 100 meters track event

Ashok Kumar Malik, Lakha Singh

Abstract
The present study was conduct to determine the selected anthropometric and physical fitness measures as predictors of performance in 100 meters track event. Anthropometry is the application of measurements to the study of human size, shape, proportion, composition, maturation and gross functions. Physical fitness as some aspects of desired life has a closer relationship to physical health, but it has a concept more comprehensive than physical aspects so that, without health, one cannot at all gain full physical fitness. The present study was carried out on fifty male athletes, who were participated in All India Inter-university. Selected anthropometric parameters were measured by standard equipment. Linear measurement, researcher used Anthropometric rod, girth of the subject's flexible steel tape was used, skin fold measurement of the subject's skin fold calliper was used and diameters were measures with the help of Sliding Calliper. Collect the data for physical fitness of male athletes, AAPHER youth fitness test (1976) was used. The selected anthropometric variables were taken for the study (Height, leg length, shoulder circumference, hip circumference, shoulder diameter, elbow diameter, thigh skin fold, biceps skin fold). To find out the relationship, Pearson`s Product Moment Correlation was applied. For testing hypothesis, level of significance was set at .05 levels. Combined Contribution of selected Anthropometric and Physical fitness Variables to the 100 meter event Performance. It is evident from the combined contribution of the height, Leg length, Shoulder circumference, Hip circumference, Shoulder diameter, Elbow diameter, thigh skin fold & Biceps skin fold and physical fitness variables (50 yards dash, 600 yards run and Shuttle Run 10x4m, Arms pull-ups) are significantly related to the performance in 100 meter sprint. Therefore athlete who got highest performance in 100 meter sprint test has significant relationship between the selected anthropometric and physical fitness variables. It is proved that these anthropometric and physical fitness variables help to increase 100 meter sprint performance.

Keywords: Anthropometric and Physical fitness

Introduction
The twenty first century is a revolt against the traditional practices prevalent in the past. To keep pace with the fast and vast changes that are ranking place in the various disciplines, there is a tremendous demand and responsibility cast on the training system to meet the challenges of preparing men and women to achieve tasks with success and excellence.

Physical activity improves overall health and fitness and it prevents many adverse health outcomes. The benefits of physical activity occur generally in healthy people, in people at risk of developing chronic diseases, and in people with current chronic conditions or disabilities. This chapter gives an overview of research findings on physical activity and health.

The knowledge of anthropometry equips us with the techniques of various body measurements like height, body weight, diameters and the skin hold thickness, which ultimately deal with the development of simple produces for the evaluation of physique and physical fitness rural, not only help in their general wellbeing but are also expected to from the baseline criterion for screening school boy for appropriate games/sports. Numerous research studies conducted by many scientists, i.e. Sodhi (2002), Rajani (2000), Chouhan (2003, 2005) and Sparling *et al*. (1998) have given the characteristics of various sportsmen for specific sports and game ,to assist in the talent selection of sportsmen. Correlation between the anthropometric variable and performance, have led to more systematic examination of physical requirements, essential to gain excellent performance in competition.

In recent years, the selection and development of talent in sport have been gaining greater emphasis; of course, it involves integral approach of different sport science specialists. However, the role of anthropometry as a sports science is perhaps one of the most crucial

Correspondence:
Dr. Ashok Kumar Malik
Assistant Professor,
Deptt. of Phy. Edu, CDLU, Sirsa

aspects in this regard. It is essential because the physique, body composition, physical growth and one's motor development are of fundamental importance in developing the criteria of talent selection and development in sports (Sodhi, 1991)

Hence, the present investigator has made an attempt to find out the correlations between anthropometric variable and physical fitness components in selected 100 meters track event.

Methodology

The present study was carried out on fifty male athletes, who were participated in All India Inter-university. Selected anthropometric parameters were measured by standard equipment. Linear measurement, researcher used Anthropometric rod, girth of the subject's flexible steel tape was used, skin fold measurement of the subject's skin fold calliper was used and diameters were measures with the help of Sliding Calliper. Collect the data for physical fitness of male athletes, AAPHER youth fitness test (1976) was used.

The selected anthropometric variables were taken for the study (Height, leg length, shoulder circumference, hip circumference, shoulder diameter, elbow diameter, thigh skin fold, biceps skin fold). To find out the relationship, Pearson`s Product Moment Correlation was applied. For testing hypothesis, level of significance was set at .05 levels.

Result and statistical findings

The scores of each selected anthropometric and physical fitness components are presented in the following table:

Table 1: Descriptive Statistics and relationship of selected Anthropometric variables to performance in 100m track event (N-50)

S.No	Variables	Mean	Std. Deviation	Co-efficient of correlation	P-Valve
1	Performance	11.44	.907	-.623**	0.000
	Height	168.61	4.350		
2	Performance	11.44	.907	-.551**	0.000
	Leg lenght.	95.660	3.061		
3	Performance	11.44	.907	-.585**	0.000
	Shoulder circumference	99.160	2.333		
4	Performance	11.44	.907	-.474**	0.000
	Hip circumference	94.680	5.445		
5	Performance	11.44	.907	-.510**	0.000
	Shoulder diameter	1.99	.1468		
6	Performance	11.44	.907	-.349*	.013
	Elbow diameter	1.91	.5704		
7	Performance	11.44	.907	-.603**	0.000
	Thigh skin fold	57.60	3.010		
8	Performance	11.44	.907	-.601**	0.000
	Biceps skin fold	87.32	2.444		

*. Correlation is significant at the 0.01 level (2-tailed).p0.01 (-.623) =.000

Table 1 reveals that the statistical findings of height can be clearly interpreted as that the height increases, leads to deducts the timing or improve the performance of 100mt runners due to the negative significant coefficient correlation (-.623**), the Statistical findings of leg can be clearly interpreted as that the leg length increases, leads to deducts the timing or improve the performance of 100mt runners due to the negative significant correlation coefficient (-.551**), the statistical findings of shoulder can be clearly interpreted as that the shoulder circumference increases, leads to deducts the timing or improve the performance of 100mt runners due to the negative significant correlation coefficient (-.585**), the statistical findings of hip can be clearly interpreted as that the Hip diameter increases, leads to deducts the timing or improve the performance of 100mt runners due to the negative significant correlation coefficient (-.474**), the statistical findings of shoulder diameter statistical findings can be clearly interpreted as that the Shoulder diameter increases, leads to deducts the timing or improve the performance of 100mt runners due to the negative significant correlation coefficient (-.510**), the statistical findings of elbow diameter can be clearly interpreted as that the Elbow diameter increases, leads to deducts the timing or improve the performance of 100mt runners due to the negative significant correlation coefficient (-.349*), the statistical findings of thigh skin fold can be clearly interpreted as that the Thigh skin fold increases, leads to deducts the timing or improve the performance of 100mt runners due to the negative significant correlation coefficient (-.603**), and the statistical findings of Biceps skin can be clearly interpreted as that the Biceps skin fold increases, leads to deducts the timing or improve the performance of 100mt runners due to the negative significant correlation coefficient (-.601**).

Table 2: Descriptive Statistics of 100 meters runners with physical fitness components

	Mean	Std. Deviation	N
Performance	11.4462	.9073	50
Endurance	1.445	.10742	50
Strength	20.800	4.3518	50
Agility	8.4180	.86134	50
Speed	6.3820	.6681	50

Table 2 reveals that the mean ± Std. Deviation of 100 meters runners with physical fitness components. Endurance 1.445±.10742, Strength 20.800±.4.3518, Agility 8.4180±.86134and speed 6.3820±.6681.

Table 3 reveals that Correlation Matrix for each of the correlation coefficient at the 0.01 level has been shown. The correlation coefficient with asterisk mark (*) indicates that it is significant at 1% level. The table also evident the correlation matrix of the different Physical fitness variables for 100 meters runners.

Table 3: C0- efficient Correlations of 100 meters runners with physical fitness components

		Performance	Endurance	Pull-ups	Shuttle-run	50 yard dash
Pearson` Product moment Correlation	Performance	1.000	.809**	-.636	.856**	.924**
	Endurance		1.000	-.525	.635*	.718
	Strength			1.000	-.511	-.558
	Agility				1.000	.756**
	Speed					1.000

**Correlation is significant at the 0.01 level (2-tailed)

Discussion of results

The findings obtained from the present study are discussed taking into consideration their correlations, and regression equations of the related categories 100 meter athletes.

Linear measurement

From the analysis of the results it is clear that co-efficient of correlation of standing height, Leg length have significant and positive correlation with performance in 100 meter sprint significant at .01 level and so, these significantly correlated variables contribute to the performance in 100 meter sprint. All the variables are directly proportional to the 100 meter sprint performance. If height or leg length will increases, the stride length will also increase.

Circumference

Among the circumference measurements it is suggested that co-efficient of correlation of Hip circumference, shoulder circumference have significant and positive correlation with performance in 100 meter sprint significant at the .01 level and so, these significantly correlated variables contribute to the performance in 100 meter sprint.

It is proved that hip circumference and shoulder circumference also help to increase 100 meter sprint performance.

Diameter

Among the diameter measurements, it is suggested that co-efficient of correlation of Shoulder diameter, Elbow diameter have significant and positive correlation with performance in 100 meter sprint significant at the level of .01 and so, these significantly correlated variables contribute to the performance in 100 meter sprint. It is proved that Shoulder diameter, Elbow diameter help to increase 100 meter sprint performance.

Skin Fold measurements

The co-efficient of performance in 100 meter sprint shows that Biceps skin fold and Thigh skin fold has negative and significant correlation with 100 meter sprint performance at the .01 level. Therefore athlete who got highest score on the performance of 100 meter sprint has significant relationship between the selected anthropometric variables Biceps skin fold and Thigh skin fold also help to increase 100 meter sprint performance.

Physical Fitness components: (Endurance, strength, agility and speed)

Among the physical fitness variables co-efficient of correlation of performance in 100 meter sprint shows that 50 yards dash, 600 yards run, Arms Pull-up and Shuttle run 10x4m have significant correlation with performance in 100 meter sprint at the 0.1 level. Athlete who got highest performance in 100 meter test has significant relationship between the selected physical fitness variables (50 yards dash, 600 yards run and Shuttle Run 10x4m, arms pull-ups). It is proved that 50 yards dash, 600 yards run and, Arms Pull-up test, Shuttle Run 10x4m also help to increase 100 meter sprint performance.

Conclusion

Combined Contribution of selected Anthropometric and Physical fitness Variables to the 100 meters event performance. It is evident from the combined contribution of the height, Leg length, Shoulder circumference, Hip circumference, Shoulder diameter, Elbow diameter, thigh skin fold &Biceps skin fold and physical fitness variables (50 yards

dash, 600 yards run and Shuttle Run 10x4m, Arms pull-ups) are significantly related to the performance in 100 meter sprint. Therefore athlete who got highest performance in 100 meter sprint test has significant relationship between the selected anthropometric and physical fitness variables. It is proved that these anthropometric and physical fitness variables help to increase 100 meter sprint performance.

References
1. Chauhan MS. Correlation between selected anthropometric variables and middle distance running performance. Sports Authority of India, NSNIS Patiala, 2003; 2:10-14.
2. Chauhan, M.S. Chauhan, D.S. (April, 2005). The relationship between anthropometric variables and explosive arm strength of volleyball players. Sports Authority of India NSNIS Patiala.
3. Kaur R, Kaur G, Deepak Singh J, Singh S. Anthropometric and Fitness profiles of Asain Gold Medallist male Kabaddi Players. Journal of Sports and Sports Sciences, 2001; 2(24):27-37.
4. Singh parminder. Anthropometric, motor fitness and motor skill determinants of performance in inter-college level handball players. Unpublished Ph.D. Thesis, Punjab University, Chandigarh. 2002.
5. Shergill H. Some motor fitness components are predictor of hockey performance. Indian Journal of Sports and Physical Fitness, 1992; 4:61-67.
6. Utah N. Anthropometric comparison of world-class sprinters and normal populations. Journal of Sports Science and Medicine, 2005; 3:608-616.