The Relationship of Selected Physiological and Anthropometric Variable with the Performance of Bowling Skill in Cricket

AJAY KRISHNA VAKA[1],Research Scholar, Department Of Physical Education and Sports Sciences, Andhra University, Visakhapatnam.

Dr.N.VIJAYMOHAN[2], Professor, Department Of Physical Education and Sports Sciences, Andhra University,Visakhapatnam

Abstract:

    The aim of this study was to investigate the relationship of selected anthropometric and physiological variable with the performance of bowling skill in cricket. 30 subjects were selected from inter collegiate cricket players. Individual information forms were completed. The mean age, height and body mass index of subjects were 18.84±3.67 years, 168.56±6.92 cm and 20.12±2.45 kg/m^2 respectively. All subjects were assessed for height, weight, lengths, girths, body mass index, waist-to-hip ratio and skin-fold thickness. Percentage of body fat was calculated from the sum of 3 site measurements of skin-fold thickness. Aerobic and anaerobic power were also calculated using by cooper and Sargent vertical jump tests respectively and then by placing into the standard recommended equations. Speed, agility, muscular endurance and flexibility were assessed using by 36m sprint, 4×9m shuttle run, push-ups and sit-and- reach tests respectively. From all of anthropometric and physiological variable, anaerobic and aerobic power, body mass index and fat percentage, speed and agility were significantly related to success and had more importance for bowlers in cricket. The playing ability which was taken as the performance factor was subjectively assessed by three qualified Cricket coaches. The inter-relationship among the selected anthropometric and physical variables with bowling skill ability were computed by using Pearson product-moment correlation coefficients. Based on the analysis the study showed that all the selected physical variables did not show any significant relationship with the bowling performance of cover drive in cricket and all the selected anthropometric variables also did not show any significant relationship with the bowling performance of pace bowling in cricket.

Keywords: Bowlers, Cricket, anthropometry, Physiological variables.

INTRODUCTION:

Cricket is popularized and started since the British period. Cricket is a bat-and-ball game played between two teams of eleven players each on a cricket field, at the centre of which is a rectangular 22-yard-long pitch with a target called the wicket (a set of three wooden stumps topped by two bails) at each end. Each phase of play is called an innings during which one team bats, attempting to score as many runs as possible, whilst their opponents field. Depending on the type of match, the teams have one or two innings apiece and, when the first innings ends, the teams swap roles for the next innings. Except in matches which result in a draw, the winning team is the one that scores the most runs, including any extras gained. The purpose of the study was to analysis the relationship of selected anthropometric and physical performance variables to the technique in pace bowling skill in cricket.

Independent from player type, having physical abilities such as anthropometric and physiological variables is a prerequisite to success against any competition or tournament. Knowing the mentioned variables is one of the determinant factors affecting playerss' performance. Being aware of these variables is an important issue for comparing an players's results to his previous achievements as well as other playerss, finding the weak points and correct them and finally, basic and accurate training planning in order to gain maximal results and to achieve determined goals.

There are numerous factors which are responsible for the performance of a sportsman. With the innumerable variety of human physique, it has become a generalized consideration that some sport events are more suitable to individuals with specific physique than others. It has been well established that specific physical fitness indicates whether the player would be suitable for the competition at the highest level in a specific sport.

From recent years, attention has been focused on the identification of various anthropometry and physical variables that distinguish between elite playerss from different sports. The results of these researches suggest that each sport is characterized by playerss with particular physical and physical attributes favoring performance in their given sport.

Physical fitness leads to better athletic performance and persistent training will usually develop physical fitness. Detailed analyses of the anatomic and physiological variables of famous playerss show that it is possible to make fairly reliable predictions of athletic performance. The physical preparation of team sport, playerss should reflect the degree to which each component of fitness is relied upon in competition.

METHODOLOGY:

The present study is descriptive and ex post facto design. 30 subjects were selected from inter collegiate cricket players. the time inviting for study were involved in bowling practice. After securing institutional bowling skill cricket approval, the subjects were informed about test procedures and then were asked to provide written consent.

Subjects:

The goal of the study was to find inter- relationship factors in assessing pace bowling talents among cricketers using specified anthropometric and physical variables. Thirteen male inter collegiate level cricket players, ranging in age from 18 to 26 years, were purposefully picked as subjects from affiliate college students the ANDHRA UNIVESITY,VISAKHAPATNAM. Cricket players who have played for the institute teams were selected as subjects. The participants had at least three years of cricket playing experience and free from acute injuries.

Procedure: For the purpose of the present study, the subjects (Batsman) were assembled and the instructions was delivered by the researcher regarding procedure and administration of test. To identified the physical fitness of the subjects, the selected parameters i.e. speed assessed by 50 meters dash (in seconds), muscular endurance assessed by modified sit ups (in counts), maximum strength assessed by 1 RM test (in kg), flexibility assessed by sit and reach test (in cm.) and agility assessed by 10x4 meters shuttle run (in seconds) test were selected as a variables for the present study. To identify the anthropometric measurement of the subjects, the selected parameters i.e. height was measured by stadiometer (in cm), weight was measured by electronic weighing machine (in kg), arm length was

measured by anthropometric rod (in cm), leg length was measured by anthropometric rod (in cm), biceps and triceps was measured by skinfold calliper (in mm). Proper warming up was given to the subjects to procure them from the injury. Testers were assigned for each test station with required equipment. The total two trials were given to the subjects for the tests and best trial was considered as final performance for the present study. Motivation factor was considered while administer the test to create interest among the subject.

At the end of the administration of test, the proper explanation of the nature and the objective of the study was given to the cricketers who had a curiosity to know for their acknowledgement and invited to ask questions if they wished.

Statistical technique: Mean and Standard deviations were calculated for each of the selected variables. The inter- relationship among the selected anthropometric, physical variables and Cricket Pace bowling ability, were computed by using Pearson' product moment correlation coefficients.

RESULTS:

Table 1: Relationship of anthropometric variables with the pace bowling performance.

S No.	Variables	Correlation	Sig.
1	Body weight	-0.096	0.874
2	Height	0.25	0.499
3	Arm length	0.435	0.275
4	Leg length	0.293	0.467
5	Biceps	0.002	0.897
6	Triceps	0.05	0.857

*. Correlation is significant at the 0.05 level.

The findings of table 6 also showed insignificant relationship of all the variables with the performance of cover drive in cricket. Because the value of coefficient correlation (r) in case of all the variables, the p value was more than 0.05 level of significance in case of all selected variables. So the null hypothesis is failed to reject in case of all selected anthropometrical variables.

Table 2: Relationship of selected physical variables with the batting performance.

S No.	Variables	correlation	Sig.
1	Speed	0.172	0.453
2	Agility	0.244	0.364
3	Flexibility	0.292	0.265
4	Strength	-0.197	0.56
5	Endurance	0.493	0.08

*. Correlation is significant at the 0.05 level.

The findings of table 5 also showed insignificant relationship of all the variables with the performance of cover drive in cricket. Because the value of coefficient correlation (r) in case of all the variables, the p value was more than 0.05 level of significance in case of all selected variables. So the null hypothesis is failed to reject in case of all selected physical variables.

DISCUSSION OF FINDINGS:

concerning these results it should be noted that success in cricket depends on various factors and regularly, successful cricket players have remarkable physiological variable performing of techniques, high levels of agility for changing the directions quickly. good reaction time for abrupt reaction against opponent's attacks, top levels of anaerobic power in order to fast, explosive and repetitive pace and shot pitch and Yorker , proper aerobic power for quick recovery between training sessions, competition rounds and between the matches are performed in a day, all are the important variables affecting cricket players performance which can have determinant role in success of these players.

Considering the results of the present study, among anthropometric variables a significant relationship was found alone body fat percentage with success which among factors affected these results, we can allude to limited age range and close status of players' physical fitness. Another factor can be effective in this area is possible errors of judgment. Sport competitions and their results can also be under effect of judging errors and the players is more trained and has a better physical fitness, upon these errors may be remained failure to achieve medal and the results of study can suffer from this issue, because, in the present study achieving medal was alone considered as the criterion for assessing the success of cricket players.

Altogether, it can be stated that from all of the anthropometric, physiological and physical variables were assessed in this study, anaerobic and aerobic power, and fat percentage, speed and agility have more importance in success of cricket players. Based on the results of this study, considering physiological variables should be addressed by cricket coaches in their planning and designing training, wherefore these variables have a major effect on cricket specially, in championship goals.

The finding showed, the physical and anthropometric variables showed insignificant relationship in case of all the variables with batting performance of cricketer. The similar types of studies were undertaken by other research scholars also and mostly the relationships of selected physical variables and anthropometric variables with the dependent variables were showed insignificant in their area of specialization. The main reason of insignificant results in their sports was that the performance of any games and sports depending upon the multidimensional factors such as physical factors, physiological factors, psychological factors and so many other factors. Only due the slight association in the selected physical and anthropometric variables, the performance of the players cannot vary directly. However, the contradicted results were also been reported by some other others researchers in their studies where they showed the significant relationship of selected anthropometric with the bowling performance.

Small sample size, level of performance of cricketer and unavailability of sophisticated equipment may also be one of the reasons of indicating insignificant relationship of selected physical and anthropometric variables with performance in cricket.

CONCLUSIONS:

Based on the analysis and within the limitation of present study following conclusion were drawn:
1. All the selected physical variables did not show any significant relationship with the bowling performance of pace in cricket.
2. All the selected anthropometric variables also did not show any significant relationship with the bowling performance of pace in cricket.

REFERENCES:

1. Birrer RB. Trauma epidemiology in the Martial Arts: The result of an eighteen-year international survey. The American Journal of Sports Medicine, 1996; 24: S-72-79.

2. Bharathiraja S, Umamaheshwari M,Palanisamy A. Prediction of batting abilities from the selected kinanthropometric, physical and physiological variables among Cricketers, International Journal of Recent Research and Applied Studies. 2015;7(5):18-21.

3. Newton RU, Kraemer WJ, Hakkinen K. Effects of ballistic training on preseason preparation of elite volleyball players. Medicine and Science in Sports and Exercise, 1999; 31(2): 323-30.

4. Bourgois J, Claessens AL, Janssens M, Renterghem BV, Loos R, Thomis M, Pilippaerts R, Lefevre J, Verijens J. Anthropometric characteristics of elite male junior rowers, British Journal of Sports Medicine. 2001; 34: 213-211.

5. Tyson, Frank. The Cricket Coaching Manual (2nd ed). New Delhi: Ruba & Co., Uppal A.K. and G.P. Gautam, "Physical Education and Health", Friend's Publication, India, Delhi. 1987-2000, 161.

6. Kazemi M, Waalen j, Morgan C. Profile of Olympic Taekwondo Competitors. Journal of Sports Science and Medicine, 2006; CSSI 14(3): 114-121.

7. Pradhan B, Banerjee K, Bhowmick S. Relation of selected anthropometric parameters with performance of off drive-in cricket. International Journal of Yogic, Human Movement and Sports Sciences. 2018;3(2):143- 147.

8. Bagchi A. Relationship of Selected Anthropometric and Biomechanical Variables to the Technique of Front Foot on – Drive in Cricket. International Journal of Science and Research. 2012;3(10):352-354.

9. Gao B. Research on the somatotype features of Chinese elite male taekwondo athletes. Sport Science, 2001; 21: 58-61.

10. George B. Dintiman (1964), "Effects of various training programme on running speed." The Research Quarterly, Vol.35, p. 456.

11. Edward L. Fox and Donald K. Mathews "Interval Training " (Philadelphia: W.B. Sounder's, company), P.278.