

A COMPARATIVE STUDY OF MORPHOLOGICAL AND SELECTED FITNESS VARIABLES OF JUNIOR AND SENIOR CRICKET PLAYERS



Thakur Rahul*

*Head, Department of Physical Education, SAC College, Visarwadi, Navapur, Nandurbar (M.S)-INDIA.
E. Mail:goldythakur@rediffmail.com

Abstract:

The main objective of the present study was to compare the morphological and selected fitness variables of Junior and senior cricketers, who were actively participating state and senior state tournaments. 100 cricketers were selected for the present study. For the study 16 Anthropometric (stature adjusted and absolute) variables and the 04 Motor fitness variables were used in the discriminate analysis to discriminate under-19 Junior and above under-19 senior cricket players. The study found that there was difference in morphological characteristics among junior and senior cricketers. Agility, Muscular endurance, body mass index, stature adjusted hip width were four variables which effectively discriminated the senior cricketers from those of junior cricketers.

Keywords: Morphology, Selected Motor Fitness & Cricket Players.

Introduction:

Morphology is a branch of biology dealing with the study of the form and structure of organisms and their specific structural features. This includes aspects of the outward appearance (shape, structure, color, pattern, size), i.e. external morphology as well as the form and structure of the internal parts like bones and organs, i.e. internal morphology (or anatomy). This is in contrast to physiology, which deals primarily with function. Morphology is a branch of life science dealing with the study of gross structure of an organism or taxon and its component parts. Morphology is a branch of biology dealing with the study of the form and structure of organisms and their specific structural features. This includes aspects of the outward appearance (shape, structure, color, pattern, size), i.e. external morphology (or eidonomy), as well as the form and structure of the internal parts like bones and organs, i.e. internal morphology (or anatomy). This is in contrast to physiology, which deals primarily with function. Morphology is a branch of life science dealing with the study of gross structure of an organism or taxon and its component parts. Fitness is defined as the quality or state of being fit. Around 1950, perhaps consistent with the Industrial Revolution and the treatise of World War II, the term "fitness" increased in western vernacular by a factor of ten. Modern definition of fitness describes either a person or machine's ability to perform a specific function or a holistic definition of human adaptability to cope with various situations. This has led to an interrelation of human fitness and attractiveness which has mobilized global fitness and fitness equipment industries.

Regarding specific function, fitness is attributed to people who possess significant aerobic or anaerobic ability, i.e. strength or endurance. A well rounded fitness program will improve a person in all aspects of fitness, rather than one, such as only cardio/respiratory endurance or only weight training. A comprehensive fitness program tailored to an individual typically focuses on one or more specific skills, and on age- or health-related needs such as bone health. Many sources also cite mental, social and emotional health as an important part of overall fitness. This is often presented in textbooks as a triangle made up of three points, which represent physical, emotional, and mental fitness. Physical fitness can also prevent or treat many chronic health conditions brought on by unhealthy lifestyle or aging. Working out can also help some people sleep better and possibly alleviate some mood disorders in certain individuals. Developing research has demonstrated that many of the benefits of exercise are mediated through the role of skeletal muscle as an endocrine organ.

Objective of the Study:

The main objective of the present study was to compare the morphological and selected fitness variables of Junior and Senior cricket players.

Methodology:

In order to accomplish the purpose Anthropometric measurement and Motor Fitness test were administered, the selection of subject and procedure followed in the collection of data. A total of 100 cricketers were examined, all the cricket players had competed at the state and national level, for the purpose of the study 100 subjects were divided in to Two groups Junior below 19 years (n=50) and seniors above 19 below 25 years of age (n=50). The measurements were all recorded in Metric system; Necessary permission was taken from Cricket

Association. Standard procedures were followed for taking 18 Anthropometric Measurements and 4 Fitness measures from each Subject.

Statistical Analysis:

For the study 16 Anthropometric (stature adjusted and absolute) variables and the 4 Motor fitness variables were used in the discriminate analysis to discriminate under-19 Junior and above under-19 senior cricket players. The SPSS American software was used for the statistical computation.

Table No-I

Means, Standard Deviation and Univariate F-ratio of Motor Fitness Variable (4) Morphological Variables (5) and Stature Adjusted Body Dimensions of Junior Cricketers Under-19 (n=50) and Senior Cricketers above 19 years but below 25 Years of Age (n=50)

Sr. No	Variables	Junior Below 19 Years N=50	Senior Above 19 Years N=50	F-Ratio
1.	Hand Span	21.41±1.78	22.59±1.44	13.265*
2.	Agility 3 Run	10.43±0.73	9.70±0.47	34.572*
3.	Agility 2 Run	7.29±0.65	7.07±0.66	2.763
4.	Muscular Endurance	33.92±12.23	55.18±17.78	48.494*
5.	Flexibility	34.26±6.62	30.48±10.35	4.723*
6.	Body Mass Index (BMI)	20.28±2.65	23.25±2.79	29.787*
7.	Endomorphy	4.16±1.83	5.24±1.35	11.342*
8.	Mesomorphy	2.44±1.23	3.65±1.32	12.786*
9.	Ectomorphy	3.24±1.29	2.37±1.20	11.831*
10.	Body Density	1.05±2.39	1.03±2.17	20.012*
11.	Stature Adjusted Leg Length	1.15±0.76	0.80±0.75	5.396*
12.	Stature Adjusted Shoulder Width	-0.89±1.12	0.13±0.90	25.213*
13.	Stature Adjusted Hip Width	-2.73±0.84	-1.95±1.33	12.333*
14.	Stature Adjusted Forearm Girth	0.38±1.86	1.70±1.66	14.082*
15.	Stature Adjusted Sitting Height	-1.21±0.68	-0.89±0.67	5.396*
16.	Stature Adjusted Arm Span	0.53±0.60	0.44±0.68	0.515

Except for agility 2 run and stature adjusted arm span all the variables under consideration were significantly different for the two groups under study. The result of discriminated analysis is summarized in table-II.

Table No-II
Discriminate Analysis of Junior (<19 years) and senior (>19 years) Cricket Players

Variable in the Analysis	Discriminate Loadings	Canonical Correlation	Wilks Lambada	Chi Square
Agility 3 Run	-0.415	0.696	0.515	63.704*
Muscular Endurance (Abdominal Crunches)	0.579			
Body Mass Index	0.359			
Stature Adjusted Hip Width	0.335			

* $p < 0.05$

Two motor variables namely Agility 3-run and Muscular Endurance, Body Mass Index (BMI) and Stature adjusted hip width were accepted in to the discriminate function in stepwise progressions. The size of the discriminate loadings indicated that agility 3 run and Muscular Endurance made highest contribution to the function. While stature adjusted hip width made the list contribution. It should be noted here that the loading of agility 3 run, a timed event, loaded negatively (lesser the time better the ability). The discriminate function with two motor variables and two morphological variables was significant as indicated by Chi-squared by 63.70%, well beyond 0.05 probability level.

Table No-III
Classification of Result of Junior (<19 years) and senior (>19) years Cricket Players

Actual Group Membership	Number of Cases	Predicted Group Membership*	
		Junior Players	Senior Players
Junior Players	50	40 (80%)	10 (20%)
Senior Players	50	6 (12%)	44 (88%)

Grouped cases correctly classified: 84%. 84% of the cases were correctly classified, since the sample size of junior and senior cricketers were equal correct classification by chance would be 50% the function therefore represented on independent of 34% over chance.

The classification of cases is graphically illustrated in figure 1 and 2. Since the canonical correlation and Wilks lambda were significant beyond 0.05 level of confidence and grouped cases correctly classified was well beyond 62.5%. Therefore the hypothesis was not rejected.

Conclusion:

After statistical analysis the following conclusions were drawn:-

Although 16 variables were entered into discriminate analysis only four variables namely two motor fitness variable and two morphological variables were selected in the step-wise discriminate analysis. Agility 3-run, Muscular endurance, body mass index, stature adjusted hip width were four variables which effectively discriminated the senior cricketers from those of junior cricketers.

- The senior cricketers were significantly faster in agility 3 run and had significantly higher muscle endurance as measured by abdominal crunches, had higher body mass index and were significantly narrower hip. Significance better motor abilities were attributed to their training duration and level of participation.
- Higher body mass index of senior cricketer's was attributed to growth and maturation. The junior cricketers were all in their linear growth phase; hence their body mass index was significantly lower. As the youth mature in to adults, the linear growth gradually reduces and the weight gain increases.

- Thus the adults end-up having higher body mass index. In so far as hip width is concerned sportsmen of all discipline have narrower hip relative to non-sportsman. Here it was observed that the junior cricketers had very narrow hip.

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