ABSTRACT

The poor performance of Indian basketball players at the international competition has been a cause of great concern, especially to the coaches, physical educationists and sports scientists. Efforts have been made to improve the standard of our sportsmen for long, but little success has been achieved, so far, in this respect.

In India, choice of sports is determined by the child's interest, facility available and popularity of the sports in the particular society. It is immaterial whether; his body structure is fulfilling the mechanical requirement of the game or not. If he chooses a wrong activity, for which his body structure is not suited, a limit is set beyond which, his performance cannot be improved, however hard he and his coach may try.

Sports performance is indeed an aspect of complex human performance, which has several dimensions. Hence, several disciplines of sports sciences are required to work in a coordinated manner to explore the nature of sports performance and the process of its improvements. In the last few decades, several disciplines of sports sciences have been established. They are kinanthropometry, sports physiology, sports medicine, sports training, sports psychology, sports pedagogy, biomechanics, etc. These sports sciences work as an integrated whole to given a superb sports performance.
Kinanthropometry has got a unique place among all these sports sciences. It is, in fact, the foundation on which lies the base of sports performance.

Body structure plays a very significant role in determining human movement. Structural variations in body segments affect its movements. A specific type of body structure predisposes human body to advantage in specific type of movement. The segmental length and breath determine the leverage, possessed by the body (position of fulcrum and various lengths of load and effort arms). Which, in turn effects the final outcome of force, created by muscles and its ultimate exploitation, for the purpose of motions.

There are numerous factors that are responsible for the performance of basketball players. Fundamental skills of basketball like dribbling, shooting, passing and rebounding, etc. requires a specific type of physique. The size, shape and form of the player are known to play a significant role in their performance. Along with these factors, performance in basketball is also determined by certain physiological variables such as vital capacity, heart rate and blood pressure, which are the determinants of athletes’ physical conditional abilities.

This study is an attempt to highlight the differences between high and low performance basketball players in relation to their physical and physiological variables. It aims to find out the natural and nurtured traits of basketball players, which makes them high or low performers.
The aim of this study was to compare the selected physical and physiological parameters of high and low performance basketball players.

For the purpose of this study two groups of 70 subjects each were formed. High performance basketball players were randomly selected from India camp, National tournaments, National camps, and All India University championship finalists teams. Low performance basketball players were randomly selected from zonal-inter-varsity tournaments, States, Districts and Inter-collegiate tournaments.

The study was delimited to the following physical and physiological parameters -

(A) Anthropometrical parameters - (1) Stature (2) Weight (3) Sitting height (4) Femur bi-epicondylar diameter (5) Humerus bi-epicondylar diameter (6) Hips width (7) Shoulder width (8) Upper arm length (9) Lower arm length (10) Thigh length (11) Lower leg length (12) Biceps muscles girth (13) Calf muscles girth (14) Sum of four skinfolds (triceps, subscapular, supraspinal and calf skin fold).

(B) Somatotype

(C) Body proportionality - (1) Sitting height-Stature index (2) Pondreal index (3) Thigh length-Lower leg length index (4) Upper arm length-Lower arm length index (5) Hips width-Stature index (6) Shoulder-Stature index.
(D) Physiological parameters - (1) Blood Pressure (2) Heart Rate
(3) Vital Capacity.

Z test at 0.05 level of significance was used to find out the significant differences between high and low performance basketball players.

The findings of the statistical analysis revealed that high performance basketball players had greater weight (30.12%), height (9.22%), sitting height (2.77%) femur bi-epicondylar diameter (9.55%), humerus bi-epicondylar diameter (7.04%), shoulder width (10.82%), hips width (15.7%), upper arm length (26.68%), thigh length (14.58%), lower leg length (12.39%), biceps muscles girth (21.84%), and calf muscles girth (16.27%) than low performance basketball players.

Somatotype wise high performance basketball players and low performance basketball players were mesomorph-ectomorphic, but if we analysis individual ratings high performers had greater mesomorphic rating (22.09%) and lesser endomorphic rating (62.96%) than low performance basketball players. Ectomorphic component was not significant between high and low performance groups.

High performance basketball players had lower sum of four skinfolds (26.24%) than low performance basketball players.

High performance basketball players had greater vital capacity (17.62%) and lower heart rate (11.96%) than low performance basketball players.
Body proportionality wise, high performance basketball players had better proportionality in relation to mechanical advantage. They had greater hips width-stature ratio (5.87%) and lower sitting height-stature ratio (13.42%) than low performance basketball players.

No significant differences was found between ectomorphic rating, systolic blood pressure, diastolic blood pressure, ponderal Index, thigh length-lower leg length index, upper arm length-lower arm length Index and shoulder width-stature index of high and low performance basketball players.