

# EFFECT OF BODY COMPOSITION ON AGILITY, SPEED AND EXPLOSIVE POWER IN CRICKET PLAYERS.

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## What is the problem and what is known about it so far?

Body composition, anthropometric dimensions, and morphological characteristics play a vital role in determining the success of an athlete. For example in cricket, the ability of a fast bowler to attain greater ball release speeds has been suggested to be related to a bowler's anthropometric measurements.

Excellent performance is also influenced by body composition and physical parameters such as strength, speed, aerobic power, anaerobic power and agility. It appears that in tasks that involve a body being moved through space, estimated body fat percentage has been thought to negatively affect performance as fat is not considered as a contractile tissue, and it also represents extra weight that the athlete needs to carry while performing a movement. Therefore athletes with a low estimated fat percentage will perform better in tasks that require one to move a body through space. An increased muscle mass has been confirmed to improve vertical jump performance. Further to this we may assume that if an increase in muscle mass improves vertical jumping performance, then this may also influence improved acceleration in a sprint due to the relationships that these two components have on each other. Limited research has investigated this relationship between muscle mass and acceleration; however it has been shown that single leg power was related to 10m sprint (acceleration) performance, which may signify the importance of the leg musculature and muscle mass from anthropometry.

There is limited research which has attempted to correlate body composition aspects and change of direction speed performance. If the agility is linear and change of direction does not have a large emphasis on decision making there are strong positive relationships with increased body fat and time taken to make a turn, however minimal relationships when the agility task is more complex.

## Why did the researchers do this particular study?

If we can determine the relationships that these anthropometric measures have on other physical parameters we can help coaches and trainers with talent identification and program development, as well as assist athletes with the knowledge of how their lifestyle choices can affect their performances in their sport. The main aim was to examine the relationships that components of body composition have on vertical jumping performance, time taken to complete sprinting over 10m and 40m linear distance, and the cricket specific run a three test, and determine if stronger relationships exist dependent on skill level.

## Who was studied?

Eighty two male cricketers from Junior, senior and elite level (Age 15 -29 years) participated in this study.

## How was the study done?

Junior, senior and elite cricketers were all tested at the same time in their preseason, and the relationships among all the test variables were explored. All tests were carried out by a qualified sports scientist at the same time of day, and repeated in the order listed below.

- › Anthropometric Measurements
- › Lower Limb explosive power
- › Cricket Specific Agility
- › Acceleration and Speed over 10meters and 40meters speed

The relationships between the above variables in the whole group as well as between the different age groups and skill level was examined.

## What did the researchers find?

This study has shown that an increased sum of seven and/or body fat percentage can cause a decrement in performance in the vertical jump, speed over 10 and 40 meters, and agility including two 180° turns over a longer distance; with an increased muscle mass percentage improving vertical jump ability in cricketers.

Further to this, when separated for skill level, the junior and senior level cricketer showed stronger, more associated relationships between their physical parameters. Therefore having a good all round physical fitness may be more advantageous to the less experienced cricketer on performance measures; with other factors like skill, technique and physique, coming into play within the elite cricketers' performance.

## What are the implications of the study?

Coaches and strength and conditioning specialists should try and promote good body composition results with all cricketers, especially in the younger less experienced player, to improve their results in various physical tests which may be reflected on the field of play. By improving a players body composition, coaches can enhance a players physical performance, which in turn could improve their abilities on the field.



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