

Long Jump

The long jump is a speed event which comprises of four phases:

- approach run
- take off
- flight through the air
- landing.

To achieve maximum distance in the long jump the athlete will have to balance three components - speed, technique and strength.

The approach run

The objective of the approach run is for the athlete to achieve the ideal speed. Rhythm in the approach run is important to ensure the ideal speed is achieved at take off and also accuracy in hitting the take off board. It is important the athlete develops a good running rhythm before accuracy is addressed. The length of the run will depend on the athlete's age and speed. When first determining the number of strides in the approach run start by matching the number of stride with the athlete's age;

Age	Strides
Under 11	11
Under 13	13
Under 15	15

The start of the approach run should be marked and the athlete should commence the start from a standing start. Some athletes use a 'walk on start' or 'run on start' which will provide more initial speed but if not consistent will impact the accuracy of the approach run onto the take off board. The athlete begins the run with a marked forward lean to develop speed but before they reach the take off board they should be upright. The athlete should be on the balls of the feet as in sprinting with a natural head position, the eyes focused beyond the pit and not at the take off board.

Accuracy of the approach run onto the take off board is established by:

- Determine the take off foot
- Stand with your back to the jumping pit and the heel of your non take off foot on the take off board scratch line
- Run up the runway the required number of strides, say 13, and place a marker where the 13th stride falls.
- Place the non take off foot on the marker and run back towards the board and take off.

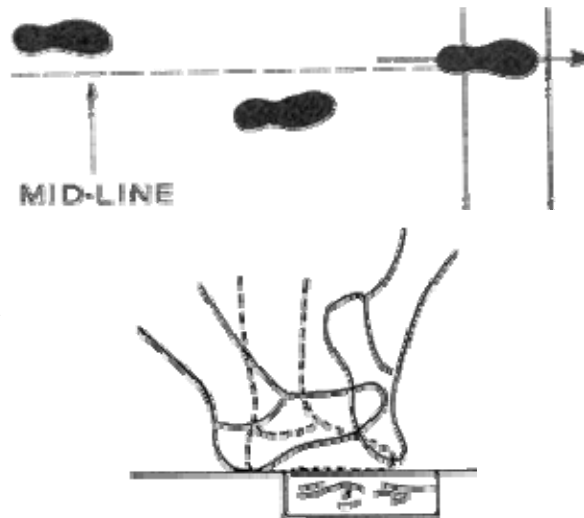
- Repeat the run up and marker adjustment 4 or 5 times to establish a consistent approach run onto the take off board
- Once achieved measure the distance accurately and record it for future use
- It is important to bear in mind that a head or tail wind will effect the run up. A head wind may mean moving the marker slightly forward

The take off

The preparation for the long jump take-off begins in the later phases of the approach run. The long jumper prepares for take off by sinking the hips and then raising the hips into the take off phase. This usually results in the next to last stride being longer than normal and the final stride being up to 25 centimetres shorter than a normal running stride. It must be emphasised that the hip sink and stride adjustment all happen in response to the athlete's postural adjustments in preparation for the take off. At take off ensure the hips are forward.

When the take off foot is placed on the board, it is well ahead of the body's centre of gravity and should strike the board on the mid line.

The heel of the take off foot will strike first allowing a rolling action onto to the ball and then the toes of the foot to give maximum vertical lift. This vertical impulse is further assisted by the upward acceleration of the "free" limbs, the arms and the non take off leg, against the braced take- off leg.

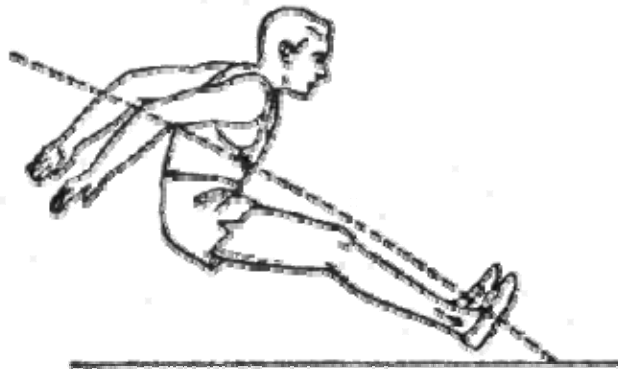


The flight through the air

Speed and lift generated on the runway and through take off can result in a good distance. After a take off the athlete tends to have forward rotation which, if not corrected, will result in the feet hitting the sand early and a loss of distance in the jump. The cyclic forward movement of the legs and arms, as seen in the hitch-kick for example, will correct this forward rotation.

The landing

During the landing the athlete is aiming to get the heels as far away from the take off board as is possible. The ideal landing position is shown in the diagram opposite where the dotted line represents the projected flight path of the body's centre of gravity. The heels will need to land just before the projected flight path to ensure the athlete does not fall back into the sand.



Optimum take off angle

The take off speed of a male elite long jumper is about 10.5 metres/second in a "run through" (take off angle of zero degrees) and 3.5 metres/second for a vertical jump (take off angle of 90 degrees). This decrease in speed means that the optimum angle of take off is well below 45 degrees. For the elite long jumper the optimum take off angle is between 18 and 25 degrees (Linthorne et al, 2001)

Long Jump Styles

The Stride Jump

In the stride jump style the athlete maintains the take off position for as long as possible and only as the athlete comes into land does the take off leg join the free leg for a good landing position.



The Hang Style

On take off the athlete drops the free leg to the vertical which is then joined by the take off leg. The arms go overhead to slow down the rotation about the athlete's centre of gravity. The legs are then lifted upwards and forwards whilst lower the trunk. The arms swing past the legs during the landing phase to ensure a good leg shoot.



The Hitch-Kick

Following take off the free leg is straightened and swung back and down as the take off leg folds up beneath the hips and comes forward bent. The take off leg then continues forward, straightening for landing. The free leg completes its backward swing behind the hip and then folds up and comes forwards bent, to join the take off leg ready for landing.

