

Person analysing: myself. This means that the analysis will be done from video evidence.

Activity: (track and field) the long jump

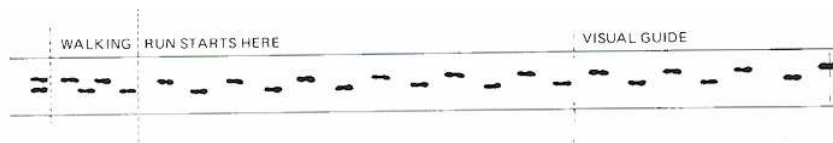
What will be analysed: The penultimate stride through to the landing (this will be done off a full competition run up).

The technique being analysed:

The air technique used by myself is called the stride or sail, which uses a skid through landing. The penultimate and final stride of the long jump before take off are also included.

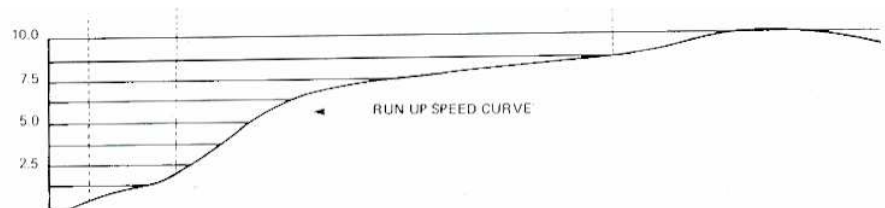
The penultimate stride of the long jump

The technique of the penultimate stride is as follows the hips are lowered slightly, and the legs are loaded (bent athletically, not straight or cocked) In the penultimate stride, the body's centre of mass must be lowered in order to attain the optimum position for the take-off. The initial slight sinking or lowering of the hips (pelvic area) is to raise the region (centre of gravity) a stride later at the actual take-off. This can result in the penultimate stride being slightly longer (up to 20cm longer than a normal running stride), but the final stride being up to 25 centimetres shorter than a normal running stride. The final stride of the take-off run typically shortens so that the athlete can create greater muscle tension in the take-off leg and create an increased vertical momentum for take-off. In many cases it happens as a natural response to take-off the athlete keeps a tall body position with no backward lean otherwise much of the hard work and speed generated on the runway is lost, which cause the last stride to be too long. Due to the lengthening of the penultimate stride it automatically reduces the velocity of the takeoff stride, but isn't very significant. The penultimate foot plant technique used before take off is a rolling contact of the foot similar to the one used at the takeoff foot plant. The penultimate foot placement is not too far in front of the hips, to minimise braking and deceleration.



This diagram shows differences in length of the final two strides before take off.

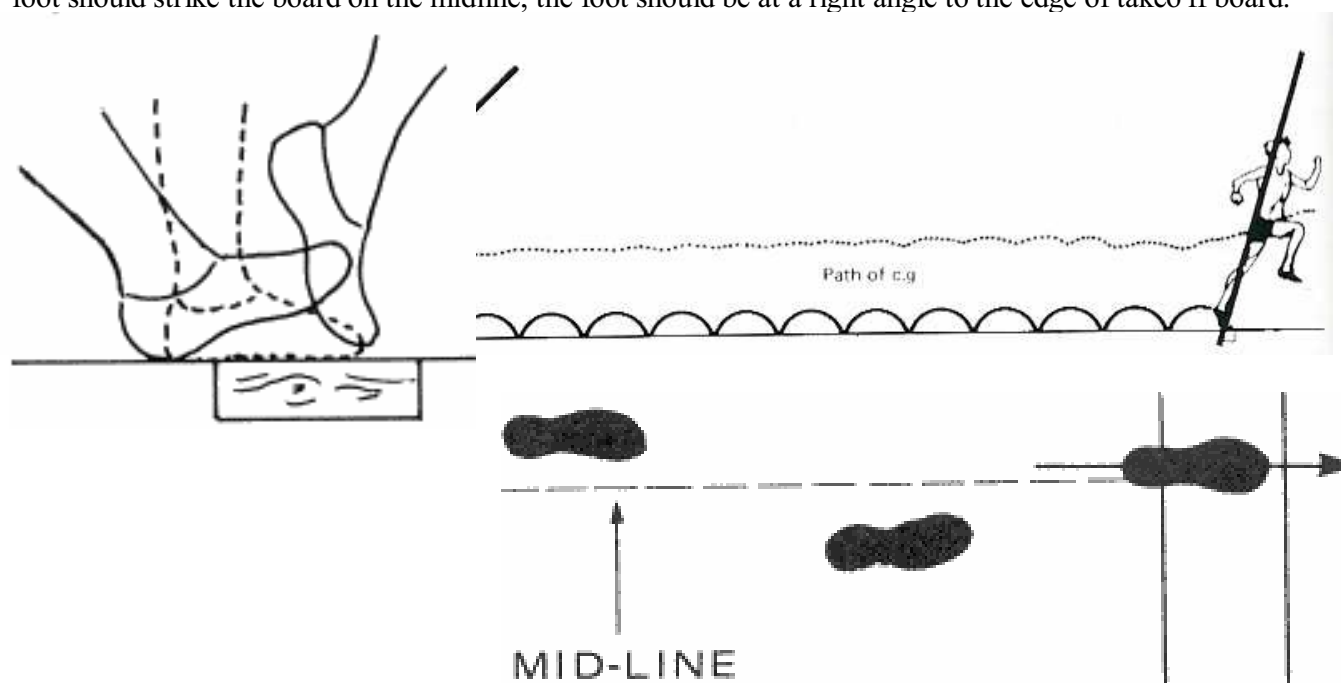
This diagram shows the run up speed curve of the velocity of the athlete throughout the final two strides



Teaching points of the final two strides

- OBSERVE PROPER POSTURE--HEAD AND PELVIS POSITION
- ELASTIC ENERGY CONSERVATION--CONTINUE HIP OSCILLATION
- PRETENSION-90 DEGREE ANKLE
- LOWER THE CENTER OF MASS ON THE FRONT SIDE (TO BOARD SIDE) OF THE PENULTIMATE STRIDE
- LOCATION--SLIGHTLY IN FRONT --LOAD STEP MEANS THAT THEY ARE STOPPING
- FULL BODY DISPLACE
- AT TOUCHDOWN THERE SHOULD BE A VERTICAL TIBIA
- HEEL KICK OF THE TAKEOFF LEG WILL BE VERY LOW ON THIS STRIDE

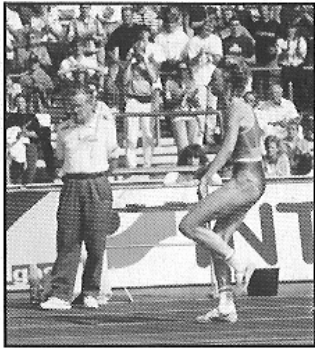
As the take-off foot contacts the board, the shoulder should be slightly behind the hips with the leg extended almost fully, about 170 degrees. The body posture should be so that the leg is flexed and in line with the torso and head. The contact of the foot is FULL-FOOTED (meaning the whole of the foot should be used in rolling action of foot, or the clawing of the foot on the board) to transfer horizontal velocity into vertical lift more efficiently. The heel of the take off foot should contact the take off board first. While the take off foot is in contact with the takeoff board, the take off limb should be slightly flexed (this is shown more clearly in the sequence of photos for the break down of this part of the skill following this). This is to produce vertical lift. While that is taking place the free leg and opposite arm driving forward and upward, fast and forcefully. The foot of the free leg should be pulled through above the knee of the support leg in order to preserve horizontal velocity throughout the jump. The jump or extension of the take-off leg should be as fast and explosive as possible. The drive leg and opposite arm block (stop abruptly) as the thigh comes parallel to the ground and the hand comes to eye level. The free limb is a major part of technique in balancing the tendency to over-rotate in a forward movement about the centre of gravity (the pelvic region). (This shown in the diagram below) The feel of the take-off should be both forward and up. The athlete's eyes should be focused on the rear of the pit. While this is happening the take off foot should be doing rolling action onto to the ball and then the toes of the foot to give maximum vertical lift. (the full foot placement is shown below of how it should look) The athletes takeoff foot should strike the board on the midline, the foot should be at a right angle to the edge of takeoff board.



The Takeoff (last) Step teaching points:

- Should exhibit a rolling contact of the foot.
- The foot placement should not occur too far in front of the body, so that braking is minimized.
- Should not be rushed, as in pecking or slapping at the board.
- The foot should be at 90 degrees to the leg
- A powerful drive of the free leg
- The athlete should only begin to rise/takeoff after the center of mass has passed the takeoff board.
- No noticeable decrease in velocity at take off
- The athlete's takeoff foot should be balanced on the takeoff board on the midline of the take off board.
- No backward lean, causing backward rotation in flight.

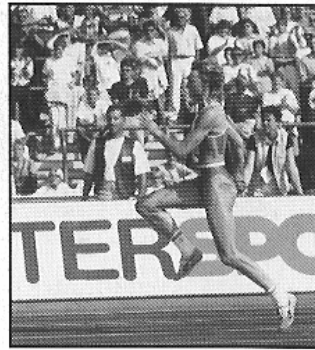
- The head should be carried in a normal position and the eye focus should be forward on the rear of the sand pit.
- The drive leg and opposite arm block (stop abruptly) as the thigh comes parallel to the ground and the hand comes to eye level.



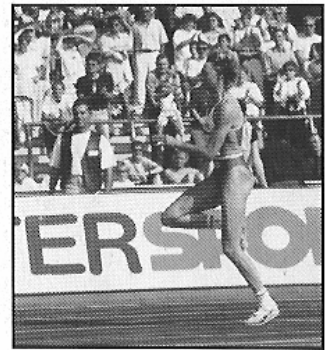
HD4



HD3



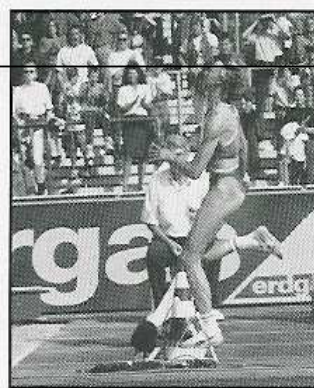
HD2



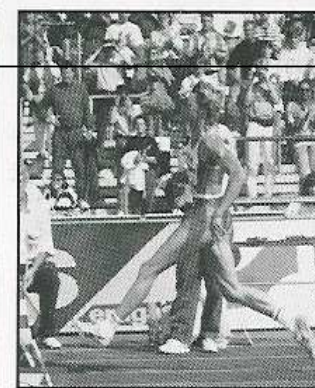
HD1



HD7



HD6



HD5

to create an explosive take-off (speed conversion).

A model of how the penultimate stride should look



HD4

A model of what the take off phase should like

The flight technique used are movements that can assist in correction of over-rotation - depending on the degree of the rotation -but these movements are not designed to affect the parabola of the centre of gravity which has

been established at take-off. By using the legs it is possible to reduce the amount lost to forward rotation, which will naturally bring the feet down early into the sand.

The rotation about the centre of gravity can be controlled and a type of backward displacement imposed on the body. The cyclic forward movement of legs and arms helps to absorb the forward rotation, and likewise helps to turn the trunk and hips backwards in the sagittal plane. The flight technique used by the athlete being analysed is the stride or sail technique.

In the stride technique the free leg is driven into a position parallel with the ground with the foot held up, and thus a stride position is achieved. It is essential that the good upright body position is held for as long as possible. The arms are in a sprint type position at take-off. The arm, which is back at drive off, is brought through high to join the forward arm above head height. They then come down together close to the side of the body, while both legs are held out in front of the body for as long as possible. The arms come through at point of impact to encourage the Centre of Gravity to go forward and over the landing feet. (The athlete can make or break a jump by poor leg extension at landing.) The feet then naturally drop under the body, and a standing position results. The technical aim of trying to get the heels as far ahead of the centre of gravity as possible does not always result in an extension of the distance of the final landing, because the athlete could well fall backwards. The high loss of forward speed at this stage of the jump has again to be optimised by the individual. If the athlete can arch the back as the heels touch and then collapse or skid through the knees, there is a greater possibility of the main part of the body passing through the same hole made by the feet.



The teaching points of stride technique and landing:

1. The free leg is driven into a position parallel with the ground with the foot held up, creating the stride position.
2. The good upright body position is held for as long as possible.
3. The arm which is back at drive off is brought through high to join the forward arm above head height.
4. The arms then come down together close to the side of the body, while both legs are held out in front of the body for as long as possible.
5. The arms come through at point of impact to encourage the Centre of Gravity to go forward and over the landing feet
6. The feet then naturally drop under the body, and a standing position results.
7. The back is arched as the heels touch the sand and then collapse or skid through the knees.

The circumstances: The practice, which has been setup to analysis the technique stated above, is an indoor competition. This will use all the compete ion rules of the long jump. What the practice consists of is running along a runway and then jumping into a sand pit at the end of it. 16 full jumps will be looked at to produce the overall analysis.