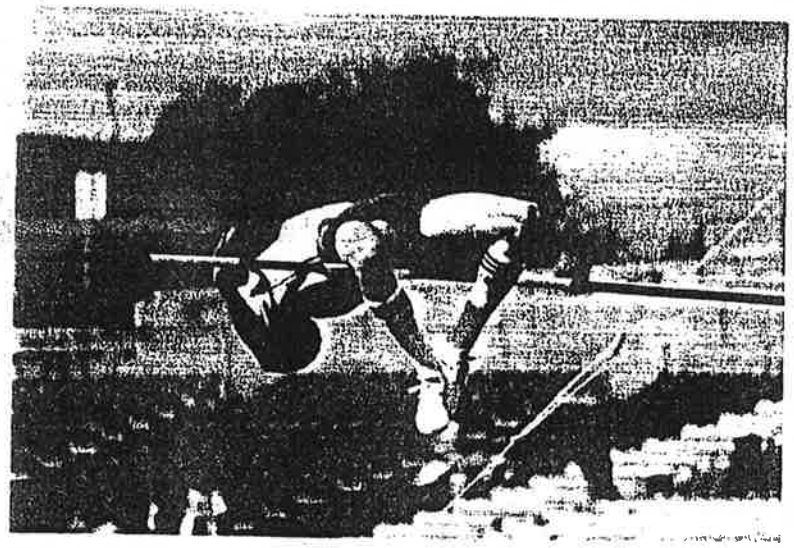
FOR SCHOOLS

The contents in this issue is made up from an Australian contribution by Gary Bourne, who presents a seven-step approach to the teaching of the flop high jump, followed by a short summary of guidelines on the development of young throwers from the Soviet Union.

TEACHING THE FLOP HIGH JUMP

By Gary Bourne



From the many recommended methods of teaching the flop high jump technique this text presents a seven-step approach that does not include drills or takeoffs from a short and slow run-ups, considered by the author to be detrimental to the correct learning of the fundamental actions of an efficient takeoff and safe landing.

The following series of skill teaching progressions may be used in both teaching the flop high jump to students and coaching community groups. The activities are also excellent for correcting major technique faults. The teaching area should consist of a set of appropriate high jump landing mats, set out with takeoff safety markers and marked curved run-ups. The area should comply with all the necessary safety guidelines. (See Fig. 1).

STEP 1: BENT LEG SCISSORS

With appropriate curves and run-ups marked on the ground and the takeoff safety markers in place the jumpers run in from a six-stride approach and jump up onto the mats (no bar at this stage), using a scissors technique which

is modified with the lead leg being bent to at least 90 degrees at the knee.

Coaching points:

Ask students to jump tall, like a "pencil", toward a point directly above their heads. It is important to eliminate the lean back and extended leg kick-up which may be carried over from any previous experiences the jumper may have had with the scissors technique. The lean-back and kick-out will limit the jumpers ability to rotate about their longitudinal axis, essential during later progressions in learning to turn the jumper "back on" to the bar at the clearance.

Ask the athletes to accelerate all the way into the takeoff from the start of the curve. Speed is a more vital ingredient of success in the flop technique than it is in the scissors or other techniques. An accelerated final four strides will go a long way to ensure the vital inward lean, and the generation of the desired amount of rotation about the jumper's vertical axis. Emphasize the upright takeoff posture, as opposed to leaning back, along with the lead leg being well bent (at least 90 degrees) at both the hip and the knee.

Evaluation:

If the exercise is being completed successfully, the jumpers will rotate a little about their vertical axis during the flight phase, landing with their leading hip turned back toward the far upright.

STEP 2 : LEAD KNEE AND ARM DRILL

Ask the jumpers to stand on a line (ie. lanes of a track) and, using a four-stride running approach with a fast tempo, execute a vertical takeoff straight down the line. In doing so they must drive the lead knee as quickly and forcefully as possible upwards, trying to attain maximum knee and hip flexion. In sequence with this drive comes the vertical drive with the arm, (on the same side of the body as the lead knee).

These actions will produce the eccentric torque required to generate the desired amount of rotation about the jumpers vertical axis which is essential to turn them back-on to the bar at the peak of their bar clearance. The movements are executed along the line from just a four-stride approach. The jumpers rotate about their vertical axis in flight, landing with their takepff foot directed across the line and their hips parallel with it. The athletes should be able to rotate at least 90 degrees about their vertical axis in this drill.

Coaching points:

To be executed successfully the movements must be completed at maximum speed, (run-in, takeoff and knee drive). If the drill is completed slowly it will not produce the desired result.

The drill may be related to jumping to palm the ball away, as in Australian Rules, or to a lay-up in basketball, except that the takeoff is executed much more quickly. Emphasize that the knee is not driven across the body to achieve rotation, but follows the natural inclination of the hips.

Evaluation

If done correctly the jumpers will find themselves landing with their takeoff foot at 90 degrees (or greater) to the line and their hips approximately parallel with it.

STEP 3 : VERTICAL TAKEOFF AND HOLD DRILL

In this drill the students are required to run in on the curved approach using six-strides. The takeoff and in-flight movements should be

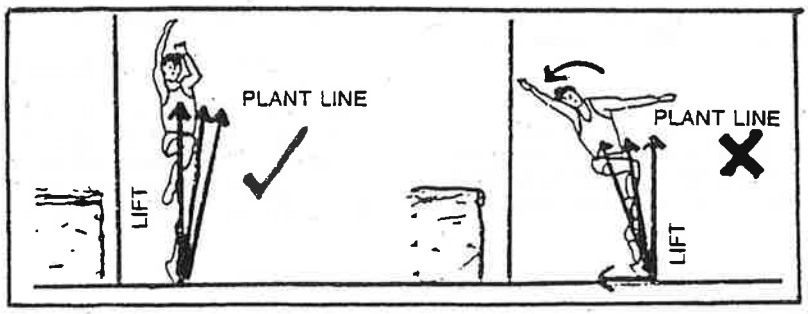


FIG. 1: An increase of an unwanted extra rotation can be derived from a poor takeoff.

identical to those just practised along a straight line, except that in this instance the jumpers takeoff from a curved approach, holding the takeoff position in flight and allowing themselves to rotate around their vertical axis to fall backwards onto the mats.

Coaching points:
To be executed successfully the movements must be carried out at maximum speed in all phases, (run-in, takeoff and knee drive). If the drill is completed slowly it will not produce the desired result.

Emphasize that the knee is not driven across the body to achieve rotation, but follows the natural inclination of the hips, (there is some partial rotation of the hips during the knee drive, but this should not be "coached"). The rotation is partly a result of the angular momentum about the vertical axis generated by the knee drive and partly attributable to the hips rotating in line with the direction of the foot plant.

Make sure that athletes jump vertically ("like a pencil") and do not lean back during the takeoff. This will be avoided if the lead knee and hip are kept well bent. The "vertical" position is crucial to the jumper attaining appropriate rotation about their vertical axis and therefore to their achieving a "back to bar" position during clearance.

Evaluation:
If the movements are completed at maximum speed from six-strides, the jumper will rotate about their vertical axis and land on their back on the mats with the hips facing toward the bar (parallel with it).

STEP 4 : THE LEAD ARM EXERCISE

Once the students have become proficient in the fast approach, the vertical takeoff and the rotational movements, they are ready for the next step. This involves the adding of an arm movement to what has been already learned. The jumpers will now move their lead arm at the completion of its vertical drive down and around the body during the flight phase to point at the far upright.

The object of this exercise is to prevent the head being thrown back at, or just after, the takeoff and to provide a focus point for the lead arm to prevent it being thrown out across the bar in the latter stages of the takeoff. The suggested focusing of the arm and the head takes the head through a plane of movement that allows the jumpers to observe best the position of their bodies in relation to the bar during the flight.

Coaching points:
To provide a point of focus place a witches hat or a brightly coloured T-shirt on top of each upright or at each end of a bar. Stand behind the far upright as jumpers complete the exercise to observe their focus.

Evaluation:
If the movements are completed correctly, the jumper should rotate about their vertical axis to land with their hips parallel to the line of the bar although no bar is used at this stage. The exercise relates more to the clearance action and jumpers will land more flat on their backs than in the previous drill.

STEP 5 : THE LEAD KNEE EXERCISE

In this progression jumpers are required to add the additional movement of trying to point at the far upright with their lead knee (while keeping it well bent) throughout the flight phase of the jump. The purpose of this exercise is to produce the necessary hip elevation during the clearance phase. In addition, the position facilitates an increase in the rate of rotation of the jumpers about their transverse horizontal axis through the hips during the clearance movements. It therefore decreases the time spent by the trunk and legs over the bar, minimizing the risk of dislodging the bar.

Coaching points:
A powerful and complete knee drive which is "held up" during the jumpers ascent will greatly assist them in achieving the desired position. Ask the jumpers to turn the foot of their lead leg toward the far upright, as this will assist them in "pointing" the knee toward the upright during the ascent and clearance.

To ensure the jumper "holds the vertical position" during their ascent and undergoes rotation about their vertical axis, they should try to "hold" the fully extended takeoff leg drive position during the ascent, aiming to gain a clear separation of the takeoff and lead leg during this phase.

A low flexible (elastic) bar may be introduced part the way through this drill to provide a focus for hip elevation. Care will need to be taken however, that the introduction of this focus does not lead to jumpers "anticipating their clearance" during the takeoff, therefore leaning in toward, or "doing a backward dive" at the bar. If this occurs, the bar should be re-

moved until further practice has "cemented" the motor program to ensure the automatic execution of the correct takeoff movements.

Evaluation:
If completed correctly the "holding" of the takeoff leg extension, the "pointing" of the lead knee and "turning out" of the lead foot will produce the position of hip elevation necessary for an efficient bar clearance. It should be noted that this position does not involve a pronounced hyper-extension of the back.

STEP 6 : THE BAR CLEARANCE MOVEMENTS

Once the students become proficient in the takeoff movements, the ascent and the peak height position, they can be introduced to the final movements of clearing the bar. This simply involves bringing the head toward the chest at the point of time when they observe their hips passing over the bar. The result of this action is for the hips to drop and the thighs, lower legs and feet to be elevated rapidly, taking them up and away from the bar. The arms remain by the side and drop below the bar level.

Coaching points:
Ask students to turn their head to their chest when they observe the bar (to the side) about to pass under their hips. Practice will help individuals to make adjustments for their own reaction (or anticipation) and movement times.

Evaluation:
The teacher should be able to observe the action and reaction of the head coming forward, the hips dropping and the lower leg being elevated just as the hips have passed over the bar.

STEP 7 : ESTABLISHMENT OF THE RUN-UP

To establish the length of each individual's run-up, have them stand with the toes of their takeoff foot on the takeoff point, facing toward the curve. From here they must run out along the curve and then up the straight line for a total of eight strides. In doing so it is important that they run at the same speed and with the same rhythm, or tempo, as they intend using on their approach to the jump. The teacher marks the position of their toes on the eighth stride. This then becomes the jumper's starting mark for the approach. Jumpers will need to "tow" this mark with their takeoff foot before commencing the run.

The approach in the high jump varies from 8 strides for the beginner, up to 12 or even 14 strides for a top level athlete. The last four of these strides are run on a curve which should be of a constant radius. Entry into the run-up can be from a standing or a moving start, the important consideration being that the jumper be able to reproduce the approach run repeatedly and consistently under the stress of competition.

A gradual and not too rapid acceleration is made from the start mark to the commencement of the curve. This is followed by a further much more purposeful acceleration throughout the curve leading into the takeoff point. The second to last stride should be a slightly longer one to permit the lowering of the centre of gravity in preparation for the takeoff. By the time the jumpers reach the final stride they should be accelerating forcefully and purposefully into the takeoff point. This acceleration or "driving in" is essential to ensure that the athlete is leaning away from the bar and that the body weight remains over the foot throughout the takeoff drive.

The angle of the line of the final stride in relation to the bar should be between 30-35 degrees. The takeoff to the bar should vary between 60-90cm, depending on the height of the bar, and the takeoff point should be between a point adjacent to the approach side upright. These angles and distances are critical to successful and safe completion and must be adhered to.

Coaching points:
Make sure the jumpers do not accelerate too rapidly before reaching the curve, because this can hinder their ability to accelerate throughout the curve and into the takeoff, ie. "at the business end of the jump". This acceleration on the curve provides the jumper with the necessary degree of "control" over their lean.

Primary school age students should be kept on an 8 stride run-up, but secondary school students may be graduated to 10 strides in grades 8, 9 and 10, and the boys in grades 11 and 12 may be moved up to 12 strides, if they are competent jumpers and need the extra distance to "settle into a rhythm" before coming onto the curve.

Evaluation:
The correct run-up curve for an individual is one in which he/she is consistently able to hit the starting mark of the curve and the takeoff mark. Jumpers will need to be moved to larg-

er radius curves as they become more competent and faster curve runners.

SUMMARY

The above described teaching method focuses on building the skills essential for the proper execution of the flop high jump technique. It is based around the provision of appropriate run-up guidelines and takeoff cues which, as I have attempted to explain, are essential to the efficient execution of the takeoff and to a safe landing. The method does not include the use of any "backward flop" drills or takeoffs from very short or slow approaches because, I would argue, these methods reinforce body movements which are detrimental to the jumper learning the fundamental actions necessary for an efficient takeoff and a safe landing.

HIGH JUMP

When doing a scissors high jump: -

- Use a straight run up of no more than 8 - 10 steps
- Drive your leg closest to the bar, up and over the bar first
- Lift both your legs forward in a scissors action over the bar
- Land on your feet on the mats (NOT on your back)

High Jump Photo Sequence

The photo sequence of Heike Henkel was taken during a competition at Crystal Palace.

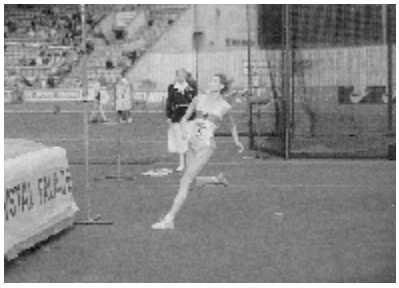
1 - Three strides from take off.
Leaning into the bend

2 - Bouncing run in

3 - Right foot placed out to the side to prevent the hips collapsing prior to take off

4

5 - Left foot heel strike approx one metre from the bar and upright



6 - Lean back
Right shoulder is high
Left foot is ahead of the body
Hips are forward
Hips are at 45° to the bar and the shoulders at 90°
Trunk is upright and leaning slightly back
Jumping foot is in alignment with the jumping leg

7 - flexion in the left leg to allow drive upwards

8 - Right knee and both arms beginning the upward drive
Tall and upright
Eyes focused above the bar

9 - Left extends
both arms are swung forwards and upwards with the right leg
Right hip driven upwards and towards the far upright

10 - Rotation of body due to right hip/knee and arm action
Left hip is still extended

11 - Left knee is brought up to join the right knee
Back rotates towards the bar

12 - Arms remain high
Heels behind the knees
Knees apart

13 - Arms driven down down to extend hips
heels pulled back towards the head (result in arched back)
arms in a crucifix position
Knees apart

14 - knees kept apart
Heels behind the knees
Arms in a crucifix position

15 - knees above the hips
Arms in a crucifix position
Heels coming in front of the knees to begin the pike position

16 - The arms are lifted vigorously in front of the trunk and then above the head to aid leg clearance
Piking of the thighs to the chest can be assisted by movement of the head onto the chest so that the eyes are looking forward
Finally the knees are straightened landing on the shoulders

HIGH JUMP

Each athlete is allowed 3 attempts in order that they may jump over a bar which has been set at a particular height onto landing mats or bags. If they are successful, they are given another 3 attempts at an increased height. The athletes continue until they have three consecutive failures. Their best jump is then recorded.

Safety

The take off and landing area should be dry.

The mats need to be placed so that all athletes can land safely. If a number of smaller bags or mats are used then they need to be bound together so that all gaps between them are closed. The landing area should be checked regularly during use to ensure that gaps do not appear.

Rules

- A foul will be recorded if :-
  - the athlete dislodges the bar.
  - the athlete jumps from two feet.
  - the athlete has two consecutive baulks or decides not to jump after one baulk.
  - the athlete touches the bag with hand or foot and gains an advantage.

- Athletes may pass at any height or jump, but they can not pass after a baulk.

- The bar can not be lowered.

- Athletes may not re-measure their run-ups once competition has started.

- If an athlete touches the bar when jumping and it is not dislodged immediately, it shall not be considered a failure unless the bar falls without some outside influence such as wind. The attempt is not passed until the bar becomes steady.

Skills

All training and competition sessions should be preceded by a Warm Up and Stretching. Some Drills specifically for High Jump are included later.

Take Off Foot

Determine the Take Off foot by watching the athlete do a few scissor kicks. Note which foot is left behind. This is the Take Off foot. It is the left foot then the athlete will run up from the right hand side and vice versa.

There are two main jumping styles. They are Scissors and the Fosbury Flop.

Scissors Jump

The Scissors is a simple style of jump which most athletes handle easily. This is the preferred style for young athletes and novices.

Young athletes should be encouraged to perform this form of jumping for as long as possible (even in regular competition) until they can confidently perform an effective take off. It can be converted to the Fosbury Flop.

The take off spot should be approximately 1/4 of the way along the bar to allow the body to pass over the low point of the bar (usually the middle). The athletes work out their run up by starting at their take off point and running back at 45 degrees for 5 paces where they place a marker.

When jumping, the first step should be with the take off foot to be correct for take off at the bag. The athletes should use the rhythm of 1 - 2, 1 - 2 - 3 speeding up on the last three.

The athlete should aim to lift the hips up and over the bar by driving up while kicking the inside leg. Once over the bar, the other leg follows suit (scissors cutting action).

Once the athlete has mastered this part, the run up can be lengthened to 7 or 9 strides.

The athlete needs to concentrate on running tall, especially on the last 3 strides, and on making sure that the body is not leaning towards the bar too early. This causes a loss of speed at take off.

Fosbury Flop

The Flop is a more advanced style of jump. Athletes jump from same side as in the scissors style but the run up is curved. It is often referred to as a J curve. While jumping, the athlete wraps his/her body around the bar and lands on the back on the mat. This style should be introduced progressively using the following sequence.

Bar Clearance (Flight) **and Landing**

This involves the athlete lifting their centre of gravity sufficiently above the ground so as to effectively clear the bar.

Set the bar at hip height.

- Get the athlete to stand with their back to the bar and feet shoulder width apart.
- Get the athlete to push off from both feet and clear the bar with the back arched and knees apart.
- Once the hips are over the bar, the athlete should tuck the chin in and flick the legs back over the bar. The athlete should land safely on their shoulders.

One Stride Flop

This combines the take off, bar clearance and proper landing.

- Get the athlete to stand with one foot parallel to the bar one stride away from it.
- The athlete then drives with a very fast and high knee action up to the bar. The leading shoulder is kept high and away from the bar to prevent any early lean.
- The body should rotate gently so that the clearance of the bar is with an arched back.

- The head should be looking along the bar.
- Again, once the hips are over the bar, the athlete should tuck the chin in and flick the legs back over the bar. The athlete should land safely on their shoulders.

Once the athlete has mastered the One Stride Flop, he/she is ready for a 5 stride jump. This involves the run up technique.

Run Up

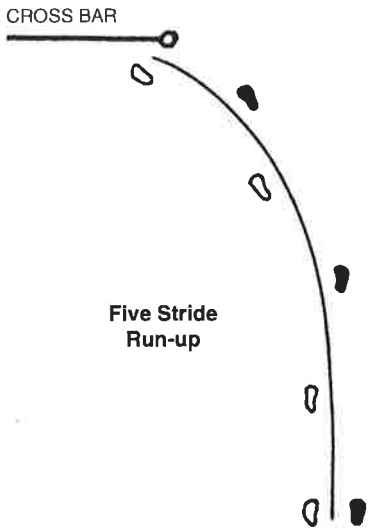
- In the Fosbury Flop, the approach is curved in a J shape with the last 3 strides performed in a curved path. A 5 stride run up is used.
- The run up starts with both feet together. The first step is always onto the take off foot first.
- The athlete needs to concentrate on running tall in a relaxed manner.
- The athlete should maintain a bouncy and high knee run up and accelerate over the last 3 strides.
- The last stride must be slightly longer to allow for the swing up of the lead leg and knee.

Once the athlete has gained sufficient confidence in performing a 5 stride run up, encourage him/her to lengthen it to either 7 or 9 strides.

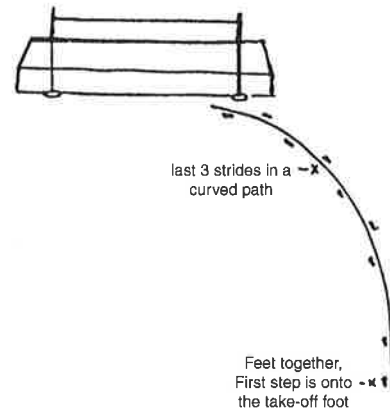
Drills

- Scissors Jumping.
- Hopping over low hurdles or obstacles.
- Bunch jumping (2 footed jumps). This is for older athletes only.

- Bend running with high knees (in the direction of their approach curve).
- High Knee Drives to a bar set at about shoulder high.
- Time Trial. Athletes are divided into 2 teams approximately 5m back from the bar. On "Go" the first team takes turns in jumping while the Coach times them with a stopwatch. The second team tries to beat their time. There is a penalty of 1 second every time that the bar is dislodged.
- Catching Bean Bag. The Coach throws up a bean bag as the athlete is taking off. He/she must catch it with their lead hand.
- Kicking Bean Bag. The Coach throws up a bean bag as the athlete is clearing the bar. He/she must kick it with the feet.



Five Stride Run-up



Nine Stride Run-up