FOR SCHOOLS

Information from Canada and the Soviet Union make up the For Schools section in this issue. In the first article Gary Crossley presents a series of simple drills to develop the hurdling technique of young athletes. In the second article the authors from the U.S.S.R. suggest methods of how to find potential long jumpers.

THE ABC OF HURDLING

By Gary Crossley

There are several methods designed to develop the hurdling technique of young athletes. In this text, Gary Crossley, University of Waterloo, Canada, presents his recommended version, based on a series of drills that break down the total hurdling skill into simple, single components.

The objective of this article is to outline a very simple and progressive approach which can be used to develop proficient hurdling skills in young developing hurdlers. All too often these athletes develop inappropriate techniques and through repetition become very comfortable with an inefficient hurdling style. Much time can be lost in later years trying to correct these errors which have become habit.

Although many coaches advocate teaching hurdles where all drills are done over the centre of the hurdle, this author believes that the isolation of the specific skills associated with hurdling is far more productive to obtain long term objectives. Performing a drill over the hurdle before all the required skills have been mastered places the athlete in an "information overload" situation and the results of this scenario are inevitable. Too much information would only serve to confuse the developing central nervous system patterns and actually interfere with the main objective, the development of an efficient hurdling technique.

Instruction of hurdling, where the total skill is broken down into its simplest components and then these pieces of the puzzle are slowly put together to create a total picture of the skill, seems to be a far more logical approach. For this reason many hurdling skills are developed without the use of hurdles, with low hurdles and running over the sides of hurdles. Only

THE ABC DRILLS

when the components of hurdling are sound, should clearances over the centre be permitted. This in fact could represent a "reward" to the athlete for correctly learning the basic skills associated with the event.

Frank Dick divides skill development into two categories, known as derivative exercises. First derivative exercises are specific to the skill to be learned and in hurdling emphasise speed, rhythm and selected hurdling skills. Second derivative exercises are for single elements of skills and must be rehearsed thousands of times to ensure a strong foundation for the development of specific technique. What follows is a

series of second and first derivative drills for developing young hurdlers.

SECOND DERIVATIVE EXERCISES

1. *The A's* (fig.1): The purpose of this drill is to establish a tall running action. Emphasis is based on a short arm punch and a full extension of the driving leg. The exercise is commonly performed in marching, skipping and sprinting form.

   The most common faults include an exaggerated arm action, crossing the arms in front of the midline of the body, a failure to move the hands in a line between the shoulder and the hip and an incomplete extension of the driving leg.

2. *The B's* (fig.2): The objective of the B's is to develop a "pawing" action of the lead leg. The emphasis is the same as in the previous drill with the addition of an extension and pawing action of the lower leg, as it drops from the high position in the A's. The drill is performed in marching and skipping forms on the sides of the hurdles.

   Common faults are the same as described in the A's.

3. *The C's* (fig.3): The purpose is to simulate the trail leg action over the hurdle. Once again a tall position is emphasised. As the trail leg is brought over the hurdle, the heel is brought close to the butt to decrease the moment of inertia. After crossing the hurdle the trail leg is lifted high in front of the body. To absorb the rotation created by the trail leg the lead arm moves over the trail knee in a circular motion, running counter to the trail leg.

   Common faults include a failure to keep the trail leg's heel close to the butt as it crosses the hurdle, a poor use of the lead arm to absorb the trail leg rotation, a failure to maintain a tall running position and the lack of height of the trail leg in front of the body.
   NOTE: The lead leg must be beside, or slightly in front, of the hurdle in this drill to avoid excessive hip rotation.

4. *The D's* (fig.4); This drill is intended to assist athletes who have difficulties finishing off the trail leg action. It is performed by placing the lead leg on the ground in front of the hurdle, while the trail leg rests on top of the hurdle rail. The athlete raises the hips as tall as possible and pulls the trail leg off the hurdle into a high position in front of the body. Once the athlete has mastered the drill, several sprint strides off the hurdle can be added.

   Faults include the inability to achieve a high leg position in front of the body, the breaking away of the trail leg from the butt as it comes off the hurdle and an incorrect use of the lead arm to absorb the rotation created by the trail leg.

5. *Wall Drills:* Lead leg (fig.5): The athlete stands about 1.50m from the wall. The lead leg's knee is driven up before the lead foot and the hand are driven at the wall. The hips are kept high and forward during the exercise.

   Common faults include a failure to keep the hips up and the athlete standing too close to the wall to execute the drill.

   Trail leg (fig.6): The athlete leans against the wall, keeping the hips tall. The trail leg is brought through in a circular motion roughly parallel to the ground. The foot is kept close

FIG. 1. THE A's

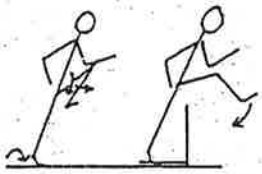

FIG. 2. THE B's

FIG. 3. THE C's

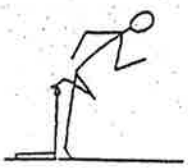

FIG. 4. THE D's

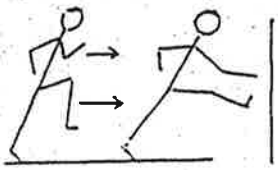

FIG. 5. WALL DRILL

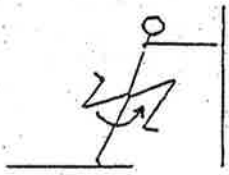

FIG. 6. WALL DRILL

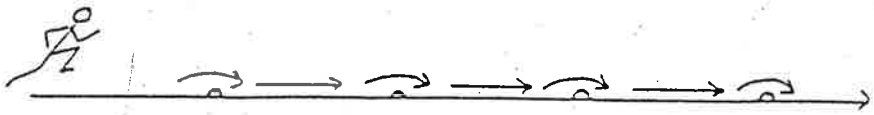

FIG. 7. THE STICKS DRILL
A drill to give the athlete a feel of the hurdles rhythm

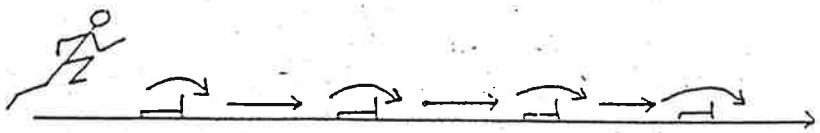

FIG. 8. THE LOW HURDLES DRILL
A progression from the sticks drill

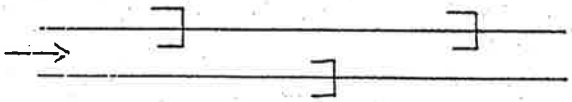

FIG. 9. THE LEAD-TRAIL LEG DRILL
A drill combining the lead and trail leg techniques

to the butt as the leg finishes in a high position in front of the body.

6. *Knee Slaps:* A simple drill to give the athlete a feel for the hurdle rhythm. The athlete runs slowly with an exaggerated knee lift, hands held palms down at chest height. The lead knee, followed by the trail knee, is driven up to the hands every few strides.

   The most common error is to drop the hands to meet the knees.

FIRST DERIVATIVE EXERCISES

1. *Stick Drill* (fig.7): This is normally an introduction drill to establish a "feel" for the hurdle rhythm. The athlete uses a falling start with an 8-stride approach to the first obstacle. The sticks are placed far enough apart to allow for a comfortable 3-stride (or 5-stride) pattern. Emphasis is on a smooth and relaxed rhythm over 8 to 12 sticks.

   Faults include a failure to maintain a smooth running pattern and a breakdown in the rhythm.

2. *Low Hurdles* (fig.8): A progression from the stick drill with the emphasis on the hurdle rhythm. The hurdles are a minimum of 7cm lower than the racing height and placed 20 to 50cm closer together to facilitate a 3-stride pattern. For a 5-stride pattern the spacings are 10.5m for women and 12.0m for men.

   The faults include a failure to maintain a smooth running action, dropping of the hips between the hurdles, inability to maintain a correct 3 or 5-stride rhythm and technical errors associated with the hurdle clearance.

   Note that this drill can also be adapted to crossing the hurdle with only the lead or the trail leg.

3. *Lead-Trail Drill* (fig.9): The aim of this drill is to improve the technique of the lead and trail leg actions on the hurdle. The heights and spacings of the hurdles, set alternately for a lead and trail leg clearance, are reduced from the race specifications. The aim of the athlete is to have a high knee position of the lead leg when attacking the hurdle, a good drive with a full extension of the driving leg and an appropriate arm position for an effective clearance. The athlete must finish the clearance with the trail leg ending in a high knee position in front of the hurdle.

   Common faults of the lead leg performance include a poor arm placement and the failure to finish off the trail leg action. The most common fault with the trail leg is a weak attack into the hurdle, which leaves the hips low, thus failing to stretch the driving leg. This means that the leg will have to be "muscled" over the hurdle.

CONCLUSIONS

If these drills and other drills, which are associated with them, are implemented in a logical and systematic order, the objectives of establishing successful hurdling skills in developing hurdlers will be realised. Hurdling is a difficult and complex task and therefor skill development cannot and should not be rushed. Competent hurdlers are never made overnight.

References:

1. McFarlane, Brent. Unpublished notes, 1984-5.
2. Special thanks to Joyce Crone, Waterloo County Board of Education.

THE HURDLES

Hurdling is sprinting over obstacles. To be most efficient, the athlete's centre of gravity should rise as little as possible when passing over the hurdles. To accomplish this, the athlete must be in the correct position for "take off " before the hurdle and again, when landing on the far side of the hurdle, to be in a position to immediately commence sprinting to the next hurdle.

The sprint hurdler requires the same type of speed as a sprinter, except that the sprint hurdler's stride is dictated by the distance to the first hurdle and the distance between the hurdles. Therefore, the sprint hurdler is unable to increase speed simply by increasing stride length. Generally, all athletes take eight strides to the first hurdle and three steps in between hurdles. This means that sprint hurdling is a rhythm event and, as all athletes in the race take the same number of strides from start to finish, the athlete with the fastest average leg speed wins the race.

The athlete always loses velocity over a hurdle. This means that the athlete has to try and accelerate between hurdles. However, unless the sprint hurdler has good technique, there will be greater "flight time" and loss of velocity over the hurdle, resulting in reduced performance.

The 200m, 300m and 400m hurdle races do not require the same degree of technical ability as the sprint hurdles, as the hurdles are lower for these events. However unless the hurdle is taken correctly, there will be an excessive amount of energy wasted in taking off and landing and this will lead to a reduced performance. The number of steps taken to the first hurdle and between the hurdle, will vary for each athlete and therefore it is necessary to teach, especially to the young athlete, to have "spatial awareness" when approaching the hurdle and be able to lead over the hurdle with either leg.

Training for the 400m hurdles is similar to that of a 400m runner except that a proportion of the training is carried out over the hurdles.

Teaching Sequence

Teaching all beginners to hurdle;

- spend time on teaching correct sprinting technique
- running over low obstacles such as batons spaced so that a three stride rhythm can easily be achieved with either lead leg
- gradually increase height and distance between obstacles as competency and confidence improves
- place emphasis on stepping over the obstacle with a quick pick up of the lead foot and a delayed action with the take off foot and with little upward movement of the centre of gravity

For older athletes, move to a wall where a hurdle has been placed approx 40 to 60 cm. from wall;

- the athlete stands beside the hurdle with "lead" foot between the hurdle and the wall and both hands pressed against the wall. The trail leg is brought up and forward under the arm with the foot turned out and always remaining below the knee. This exercise should be repeated in sets of ten and carried out for both legs.
- the hurdle is moved to the wall and the athlete practices a lead leg drill by standing one and a half paces back from the hurdle and, as the athlete steps towards the hurdle, the lead leg is lifted with the foot directly below the knee and driven forward so that the foot passes over the hurdle batten and is driven flat against the wall.

For older athletes, move to track or level grassed area and set 6 to 10 hurdles below hurdle racing height and at spacing that allows the athlete to walk over hurdles alternating legs - repeat three times;

- adjust hurdle spacing to carry out walking and skipping over the hurdles. [400m hurdlers to carry out drills with both lead legs].

For all athletes, move to track and set hurdles at slightly less than race distance [not for first hurdle which should be on correct mark];

- practice starts to first hurdle ensuring that the correct number of steps are taken and that the last step is slightly shorter than the penultimate step
- practice running over 1 & 2 hurdles slightly lower and closer than racing requirements and, as competency and confidence improves, increase number of hurdles so that three or four repetitions can be achieved over 5 to 8 hurdles
- practice running over 1 to 3 hurdles at correct height and distance.

For 200m, 300m & 400m hurdles;

- hurdle technique and drills as for sprint hurdlers
- set 4 to 6 hurdles at random distance [10 to 20m apart] athlete runs over hurdles several times taking hurdle with either foot
- practice above until a smooth action is maintained over all hurdles
- adjust hurdle spacing and repeat above
- practice hurdling 1 to 5 hurdles at racing speed
- for 400m hurdlers, practice stride rhythm when fatigued by running last 5 hurdles after running first 200m on flat.

Hurdles

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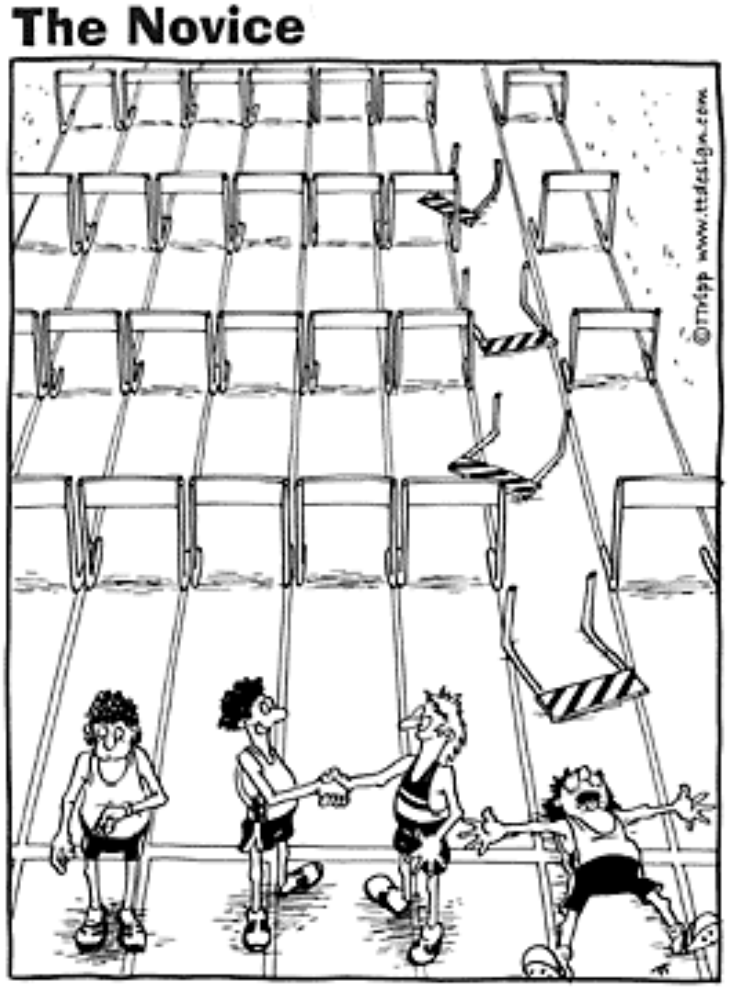
Hurdles

- Theory Session Objectives
  - Discuss & define stride pattern and rhythm
  - Discuss stride length & cadence and identify importance
  - Analyse and identify key actions at various stages of a hurdle race
  - Analyse required actions for lead & trail leg and arms
  - Identify common hurdling faults

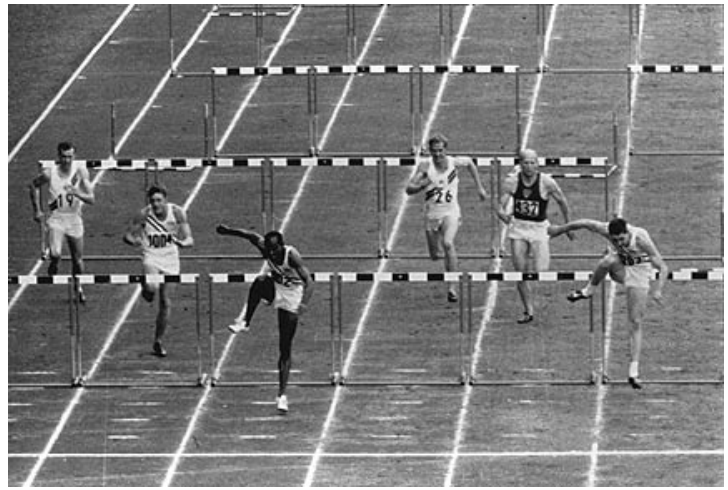
Hurdles

Introduction

- Hurdling is, because of its technical and energy demands, an exciting and challenging event. The technical component of hurdling is clearly much greater than in sprinting, yet the concept of the hurdles race must be one of a sprint, with adjustment for each hurdle. The stride pattern for sprint hurdling is a 8 stride pattern to the first hurdle followed by a 3 stride pattern between the hurdles



Hurdles



- The essence of hurdling events is to generate as much speed as possible over the race distance, while clearing a prescribed number of equally spaced barriers of a specific height. As a result the number of strides taken during a race is largely predetermined, as is their length.
- The athletes COG is kept as close as possible to it's normal sprinting path while crossing the hurdles in order to minimize the length of time in the air
- The concept of **rhythm** (a regular pattern of movement rehearsed to be as efficient as possible throughout the race) becomes of utmost importance in a hurdlers preparation

Hurdles

- Nearly all athletes in a hurdle race will take the same number of strides.
- e.g. 80mh = 12m run in, 7m spacings, 12m run out, 9 flights
  - 8 strides to the first hurdle
  - 3 strides between flights (3 x 8) = 24
  - 7 strides to finish
- 39 strides
- If we can improve the athlete by just 0.1sec per hurdle the athlete will save nearly a second off their time

Hurdles

- Since stride length is predetermined, the development of stride frequency (cadence) is the most important factor in a hurdlers preparation

Hurdles

Hurdle Technique

- Stages
  - Start & Approach
  - Hurdle clearance
  - Between hurdles

Hurdles

The Start and Approach

- In sprint hurdling the first hurdle is only some eight strides away so the athlete must come upright at the 3rd or 4th stride, much earlier than the sprinter.
- To enable this to happen the block spacings may have to be slightly altered. When using an eight stride approach the take-off foot is placed in the front block.
- 8 strides means the lead leg is in the back block

Hurdles

Hurdle Clearance

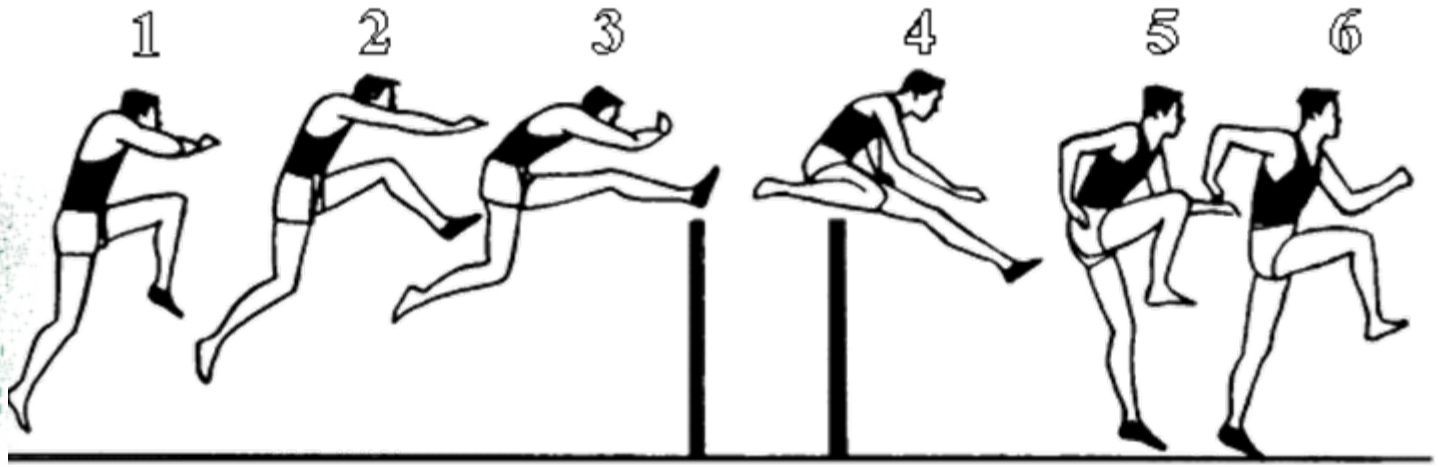
- The athlete must attack the hurdle and aim to clear it, by approx. 17-18 cm, as quickly and efficiently as possible, raising their centre of gravity only a little more than in a normal sprint action.
- 2/3's of the stride over the hurdle takes place before the hurdle, 1/3 after the hurdle.

Hurdles

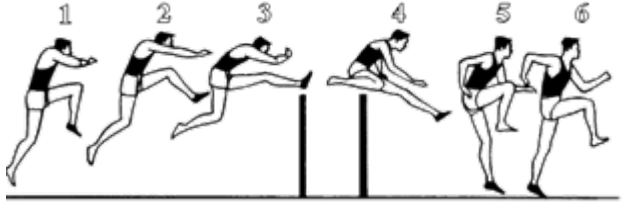
Running Between Hurdles

- Three strides are used to cover the ground between the hurdles. To achieve this the athlete has to modify his sprinting technique to make it fit the gap. A fast leg cadence and a shorter stride length is needed. The athlete may have to use a lower knee lift than in normal sprinting with an emphasis on leg speed.
- Of the 3 strides between the hurdles, the second is the longest, The first is the second longest and the third the shortest.

Hurdles



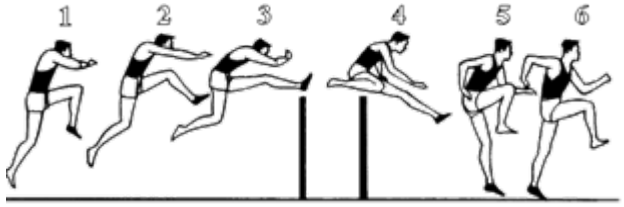
Hurdles



Action of the leading leg:

- The knee must be picked up fast [1]
- The knee is driven at the hurdle [1] & [2]
- The lower part of the leg is left low and extends once the knee reaches the height of the barrier [1] & [2]
- The knee must be picked up in line with the vertical centre line of the body.
- There should be no tendency for the knee to be pulled across the body or for the lower leg to go out and round.
- As the heel of the lead leg passes the barrier it must be pulled down and back to land under the body [3] & [4].
- There is no necessity for the lead leg to be straight over the top of the hurdle [3].
- The leg straightens as it descends towards the ground [4].

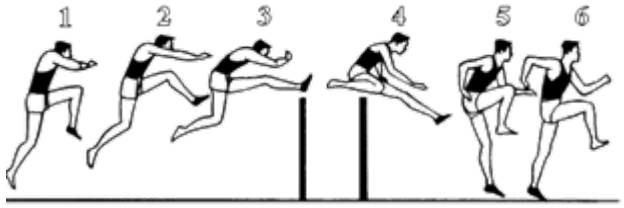
Hurdles



Action of the trailing leg:

- The trailing leg drives the body at the hurdle as the lead leg rises [1].
- The recovery of the trail leg must begin from well behind the body if the drive is to be completed.
- The athlete should feel the trailing knee sweeping wide and flat over the hurdle [4].
- As the leg crosses the hurdle the foot must be cocked at the ankle so that the foot does not hit the barrier [4].
- After crossing the barrier the knee continues to rise and comes round in front of the body [5].
- Many young athletes have a tendency to drop the trail leg off to the side after it has crossed the barrier. This has the effect of making the first stride very short and pulling the athlete off balance. The trail leg must be pulled through high and fast so that the first stride is fast [5] & [6].

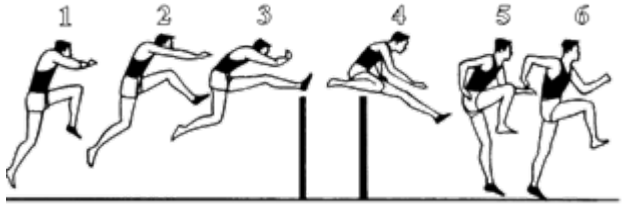
Hurdles



Leg Action

- The last stride of the approach to the hurdle is shortened (sometimes called a ‘cut step’) in order to allow the take-off leg to move rapidly under the hips. This ensures that a fast effective drive can be made across the hurdle. [1].

Hurdles



Arm Action

- As in sprinting, the arms act to balance the body and counter the rotations produced by the legs. The arm opposite to the lead leg actually leads the action into the hurdle and pushes/dives forwards as the lead leg rises [1]. The other arm should be taken back in a normal sprinting action. As the trail leg comes round the leading arm swings back and wide to counter the rotation of the trail leg [4].

Hurdles

Safety

- Hurdling is dangerous on wet grass or any other slippery surface.
- It is also dangerous for children to run over hurdles in the opposite way to the correct running direction (i.e. with the feet of the hurdles on the far side).

Hurdles

Coaching beginners

- Try to establish a **regular rhythm** with the ultimate aim of 8,3,3,3 (Smaller/younger athletes may start 9,4,4,4.. Or even 10,5,5,5..)
- To move an athlete progressively from 10,5,5,5 to 8,3,3,3 - start with low hurdles set in from normal spacing. Extend hurdle distance and height until competition settings are achieved
- Emphasise the need to get back on the ground as quickly as possible. ‘Active’ take off and landing.
- Focus on stable COG. Use athletes head as a que

Hurdles

Common faults

- ‘Jump’ hurdles
- Lead with foot
- Lead Leg out to side
- Trail foot overtakes knee
- Irregular stride pattern
- Arms uncoordinated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HURDLES

When hurdling: -

- You should try to clear the hurdles without slowing down
- Use smooth, fast running between the hurdles
- Lead leg (the first leg over the hurdle) -
- Lift your knee straight up towards the hurdle; stretch your leg straight out over the hurdle; land with your foot in a straight line on the other side of the hurdle
- Trail leg (follows the lead leg) -
- Lift your leg up to the side, your heel close to your bottom, with your toes pulled up; pull your knee through to your chest; land with your foot in a straight line on the other side of the hurdle

HURDLING

Hurdling is basically a Sprint race over obstacles with steps in rhythm. It is **not a jumping event.** Athletes need to be flexible and should try to use both legs as a lead leg.

Safety
Athletes should not hurdle against the normal falling direction of the hurdles.

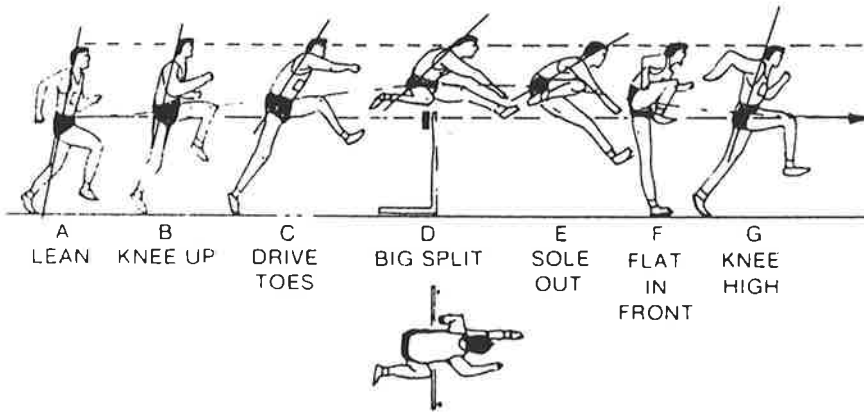
Warm-Up
This is basically the same as that used for sprints.

Rules

- In all sprint races, competitors must stay in their own lanes.
- Athletes who trail their foot or leg alongside any hurdle or over a hurdle in an adjoining lane will be disqualified.
- Athletes who deliberately knock down a hurdle by hand or foot will be disqualified.
- The hurdles are placed in lanes such that they are not touching. The top bar is set at various heights appropriate to their age. See the Officials Handbook for these heights.
- All the rules for sprinting also apply.

Technique

- Athletes should learn to step over hurdles at walking pace with the hurdles 2 metres apart.
- The lead knee is lifted first (not the foot) with the toe pointed forward. It is then extended.
- As the lead knee comes up, the opposite arm moves forward while the same side arm is driven back.
- The trailing leg is brought over the hurdle with the knee and foot at the same level. The sole of the foot points outwards.
- The trailing knee leg is then pulled through high before landing.



The pace can be increased to a jog and the hurdles can be placed further apart when the athletes have developed the correct technique using low hurdles.

The main teaching sections are:- The Start.
The Lead Leg Action.
The Trailing Leg Action.
The Finish.

Drills

- **Trailing Leg Drill.** Jog past the hurdle so that the lead leg lands past the hurdle. This allows the trailing leg to be pulled through over the hurdle.

- **Lead Leg Drill.** Jog past the hurdles on the opposite side with the lead leg only going over the hurdle using the correct action.

It is vitally important that when using these drills, both legs are used for both Leading and Trailing.

It is also very important to spend a lot of time developing the right habit of running across hurdles and not jumping them. To do this, keep the "hurdles" as low as possible for as long as possible. Gradually extend the distance between the obstacles until they are the correct competition distance apart. Then gradually raise the height of the "hurdles".

Beginning hurdles can be ropes/sticks lying down, then double ropes/sticks, milk cartons on their side or standing up. It doesn't really matter as long as the athletes feel confident running across the obstacles and they are developing a rhythm.