The Hurdle Events

Introduction

- Brief discussion of rules, safety practices, and talent demands for the hurdles.
- Examine technical and training considerations for the hurdle events.
- 100 Meter Hurdles for women, the 110 Meter Hurdles for men, and the 400 Meter Hurdles for men and women.
- Analyze these events in general, and examine skills that comprise them.
- Examine each event individually with regards to technique and demands.
- Develop guidelines and teaching progressions for teaching and training these events.

Rules of Hurdling

- The hurdle races are run in lanes, and rules governing the start are the same as in sprint events.
- The hurdler must make an attempt to leap each barrier, knocking the hurdle down intentionally is illegal.
- Hurdler‘s entire body must pass over the hurdle. A common foul in the 400 hurdles is allowing the trail leg to pass outside the hurdle.

Rules of Hurdling

Race	Distance to First Hurdle	Distance Between Hurdles	Run-In Distance	Hurdle Height
W100H	13m	8.5m	10.5m	33”
M110H	15 yds	10 yds	46 ft	42”
W 400H	45m	35m	40m	30”
M 400 H	45m	35m	40m	36”

Safety in Hurdling

- Good safety practices should be used when teaching hurdling.
- Equipment and surfaces should be kept in good order. Proper footwear should be used.
- Traffic control around the hurdling area should be adequate in order to prevent an inadvertent collision.

Safety in Hurdling

- The coach should use modified hurdling with beginners to create a manageable practice atmosphere.

- Padding and alternatively constructed hurdles make hurdle practice safer and learning occur faster.-Why?

Talent Demands for the Hurdles

- The abilities needed in hurdling are very similar to those needed in the sprint events, and should be developed the same way.

- Flexibility and mobility seem to assist greatly in the event as well.

Talent Demands for the Hurdles-Factors to Develop

- Speed
- Rhythm
- Technique
- Flexibility includes range of motion
- Strength
- Stamina to maintain proper technique
- Poise
- Body Type

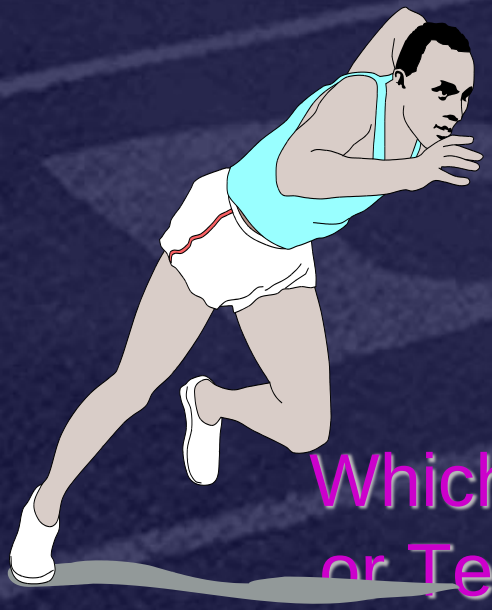
Which of these is the only factor we cannot enhance??

Talent Demands for the Hurdles

- Hurdlers should be chosen from athletes that are capable sprinters.
- The hurdles should not be considered a place for the inferior sprinter.-Why?

Hurdling is Sprinting w/Rhythm

Our focus, first, last and always must be establishing and maintaining SPEED between and over the hurdles!



Which is more important to focus on, Speed or Technique?

Phases of Hurdle Races

- The Drive Phase.
  - Pure acceleration to build momentum so that maximal velocity can be achieved and to enable a stronger finish.

Phases of Hurdle Races

- The Maximal Velocity Phase
  - Top speed is reached.
  - In the 400 hurdles, this maximal velocity phase may refer to maximal desired velocity, not maximal attainable velocity.

Phases of Hurdle Races

- The Deceleration Phase. (Hurdle Rhythm Maintenance)
  - when the ability to hold maximal velocity fails.
  - Resist deceleration by executing proper sprint and hurdle mechanics as the body loses coordination and fatigues.

Distribution

- The relative lengths of these phases in any particular race.

- Much consideration and planning must be given to distribution plans for each event.

Minimizing Airtime

- Acceleration can occur only when the hurdler is on the ground.

- Flight time over the hurdle should be minimized to maximize performance.-How does reduced flight time improve performance?

The Approach to the First Hurdle

- The acceleration process constitutes the approach run to the first hurdle.
- Consists of a specific number of steps and be developed for consistency- How many are recommended?
- Charge the hurdle: Be aggressive.
- Hurdlers must reach normal running action (Hips tall) after 4-5 strides from blocks.
- Head stays down until 4th stride. Make any necessary adjustments @ strides 5-6.

Between-Hurdles Running

- The run between the hurdles in should resemble maximal velocity mechanics.

- Typically involves 3 step rhythm

  Boom-Ta-Ta-Ta

The Hurdle Takeoff

7-8 ft. for men

6-7 ft. for women

The taller the athlete, the closer they can take-off

Taller athletes don't have to raise their COG as much.

The Hurdle Takeoff

The hurdle takeoff is a modification of maximal velocity mechanics.

- The takeoff step lands under the body's center of mass.
- Shin angle at touchdown should be near vertical, consistent with the vertical push-offs present in the steps prior to takeoff.
- The hip should extend forcefully, driving the foot down and back to create the takeoff.

The Hurdle Takeoff

At takeoff, significant displacement of the body should occur during support.

- Hurdler's body is significantly beyond the takeoff foot before flight is achieved.
- Displacement initiated in the core of the body (the trunk and hips), as opposed to the limbs (particularly the lead leg).
- This displacement should continue until the hip flexors are relaxed and stretched.

The Hurdle Takeoff

- The lead leg action should be initiated by the displacement of the hips toward the hurdle.
- The extension of the lead leg at takeoff should extend from the hip, then the knee and finally the ankle in that order. Looks like sprinting up 3 ft. flight of stairs

The Hurdle Takeoff

- Body lean may be needed to aid clearance, especially with shorter men, but any body lean achieved during the hurdle takeoff should not result in disturbed postural alignment.

- Deviate from sprinting as little as possible.

Arm Action

- Lead arm (opposite of lead leg) is driven forward. Bent elbow. Wrist even with midline of the body. Do not thrust forward violently-Why??
- Synchronization of arm action w/leg action helps to keep the shoulders square, assists balance & timing, & counteracts the lateral rotations of the trunk.

Arm Action

Cue reaching for lead knee, but not the lead foot. –Why??

Trail arm is bent & hand is just in front of or beside hip. (Tip: curl fingers out to keep hand from curling behind the back.)

Hurdle Clearance and Landing

Hurdle Clearance-Trail Leg

- Take-off leg becomes trail leg as toe leaves ground.
- Greater split of the arms at takeoff to match the extended displacement at takeoff
- Trail knee is lifted to side (upper leg parallel to hurdle), through the arm pit to position in front of chest (high knee position). The foot of the trail leg remains below the knee throughout the motion for men.

Hurdle Clearance

- At take-off, the heel of the trail leg closes to the buttocks during hurdle clearance, then follows through to front high knee position.
- Lead arm, slightly raised to side to allow trail leg through, drives backward as a balance to trail leg's forward movement.

Hurdle Clearance

- The **elbow** should initiate the backward push of the lead arm & remain behind the hand throughout the motion.
- Arm should remain partially bent at elbow during this movement and the **thumb should point up during the back swing.-**Why??
- Trail arm comes forward as trail leg drives through.
- Shoulders remain level.

Hurdle Clearance and Landing

- While most of the recovery is a reflexive, natural action, the athlete must abduct (open) the hip and evert the foot to allow trail leg clearance.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Hurdle Clearance and Landing

- Proper timing of the trail leg recovery is dependant upon displacement of the body beyond the foot at takeoff. This results in a quick, but late trail leg action.

Landing Off The Hurdle

- Lead leg toe touches down in pawing motion beyond hurdle-How is this helpful?
- Trail leg is now in sprint position. The trail leg should be pulled through quickly,
- Center of gravity quickly passes over lead leg toe as touchdown occurs. Hips are forward.
- Body is nearly erect.
- Arms are back into slightly exaggerated sprint position.

Hurdle Clearance and Landing

- The hurdle landing should occur as close as possible to the hurdle (Men 3’6”-4’0” & Women 2’0”-3’4”).
- Sprinting should resume immediately.
- Problems in the hurdle landing and the getaway step are directly related to problems…Where?

The 100/110 Meter Hurdles

- Elite and developmental hurdlers take the same number of steps in the race
  - 8 to H1, 3 steps between 9 hurdles (27 steps), 10 hurdle clearance strides 5 steps to the finish = 50 total steps.
  - Increasing stride frequency and developing faster rhythms are important goals.

The 100/110 Meter Hurdles

- Advanced hurdlers usually need to modify the sprint acceleration process.
  - Stride length is decreased in order to fit eight steps into the approach.
  - Range of motion at the hips decrease

The 100/110 Meter Hurdles

- Recovery heights are lower (knee lift, etc.)
- The progression of body angles must occur more quickly at the start. (Must get tall sooner).
- Frequency is higher in the approach to the first hurdle.

The 100/110 Meter Hurdles

- The drive phase in the sprint hurdle races should extend until the 3rd hurdle.
- Between-Hurdles running in the 100 and 110 meter hurdle races is a modification of maximal velocity mechanics.
- In advanced women hurdlers and many men, there is decreased stride length between the hurdles- Why?

The 100/110 Meter Hurdles

- Push-off angles in between-hurdles running are primarily vertical, as in maximal velocity mechanics.

- The range of motion in the hips found in the run between the hurdles is usually decreased.

The 100/110 Meter Hurdles

- Athletes often fail to achieve proper displacement because they are too close or too far to the hurdle?

The 100/110 Meter Hurdles

- There are slight differences in the men's 110 and women's 100 hurdle events.

- The men's barriers are much higher, requiring more forward lean and greater deviations from normal running mechanics-especially in shorter men.-Why is more forward lean required for higher hurdles?

The 400 Meter Hurdles

- The 400 hurdler should employ a drive phase at the start of the race.

- This insures proper momentum development, assisting in the achievement of good running and hurdling mechanics.

The 400 Meter Hurdles

- Establish some type of stride pattern as part of the race plan for the 400 hurdles.
- Typically 20-22 steps are taken to the first hurdle
- 13-17 steps taken between the hurdles.
  - Stronger athletes may take fewer steps
  - All normally take more steps between the hurdles later in the race-Why?
  - Plan suited for individual athlete (flexible)

The 400 Meter Hurdles

- The first part of the race should be run aggressively. What other race would have a similar race plan?
- The coach should develop a series of splits for the athlete to hit based on reasonable goals and training performances.
- Know touchdown times-goal times.

The 400 Meter Hurdles

- The 400 hurdler should be able to hurdle using either leg as a lead or takeoff leg.-Why?

- Left leg lead while hurdling on the curve is easier with less risk of disqualification for failing to bring the trail leg over the hurdle.

The 400 Meter Hurdles

- The 400 hurdler must have a good sense of pace and understand the race plan and stride pattern.

- The staggered start may make it difficult for the runner to gauge position, and race pressures and sense of panic can disrupt the planned stride pattern.

Teaching/Training Guidelines for the Hurdles

- Bio-motor quality development is essential to improving hurdle performance.
  - speed related qualities
  - strength, power,
  - flexibility, and mobility

Teaching/Training Guidelines for the 100/110 Meter Hurdles

- Speed is critical to hurdle success
  - Develop of speed by using the same principles as with sprinters.
  - Acceleration and speed should be addressed and improved before speed endurance work is done.-Why?

Teaching/Training Guidelines for the 100/110 Meter Hurdles

- CHEATED HURDLING
  - Hurdles should be kept low in the early stages of learning, and even in practice situations for advanced hurdlers.-Why?
  - Speed of movement, quick rhythms, and sprint mechanics are emphasized.

Teaching/Training Guidelines for the Hurdles

- Timing segments of the race can provide great information to the coach, assisting in the diagnosis of problems and in performance prediction.

- Touchdown times or Rhythmic Units

Teaching/Training Guidelines for the 100/110 Meter Hurdles

- This rhythm should resemble the rhythms of the athlete's goal pace.
  - 13.0 = 1.0
  - 14.0 = 1.1
  - 15.0 = 1.2

Teaching/Training Guidelines for the 100/110 Meter Hurdles

- Organized into acceleration, hurdle rhythm, rhythm endurance
  - Acceleration-runs over 1-3 hurdles
  - Maximal velocity (hurdle rhythm) runs over 4-6 hurdles
  - Hurdle Rhythm endurance runs over 7 hurdles or more(12).

Teaching/Training Guidelines for the 100/110 Meter Hurdles

- Stride length and stride frequency are inversely proportional-What does that mean?
- Increasing one decreases the other
  - Problem: too close to the hurdles
  - Reason: steps are too long
  - Solution: increasing frequency will decrease stride length

Teaching/Training Guidelines for the 400 Meter Hurdles

- The 400 hurdles pose unique demands.
  - Training will resemble 100 or 110 program
  - Training will resemble 400 or 800 meter program.

- Endurance abilities are important, BUT
- Do not ignore the development of acceleration ability, absolute speed, and power.

Teaching/Training Guidelines for the 400 Meter Hurdles

- Split the race at each hurdle.
  - Touchdown times.
  - Diagnosis of problems and in performance prediction.

Teaching/Training Guidelines for the 400 Meter Hurdles

- Some training should be done over barriers, so that certain segments of the race are rehearsed.

- Additional hurdle work should be done to improve hurdle technique. BOTH LEGS

Progressions for the Approach to the First Hurdle

- Approaches from the Crouch Start
- Cheated Approaches
- Stick Drill Approaches
- Approaches from Blocks

Progressions for Between-Hurdles Running

- Cheated Hurdling
- 5 Step Hurdling
- Alternate Lead Leg Hurdling

Progressions for the Hurdle Takeoff

- The Wall Drill
- Cheated Hurdling
- Alternate Lead Leg Hurdling

Progressions for the Hurdle Clearance

- Hurdle Walkovers
- Hurdle Skip-overs
- Cheated Hurdling
- 5 Step Hurdling
- Alternate Lead Leg (4 Step) Hurdling

Sample 100m/110m Hurdle Workouts

- Week 1
  - 3 step rhythm
- Week 2
  - 5 step rhythm
- Week 3
  - 3-5-3 step rhythm
- Week 4
  - 3 step rhythm (lower volume/recovery)

Sample 400m Hurdle Workouts

- 1st 200 on the flat-last 200 Over Hurdles
- 1st 200 Over Hurdles, Last 200 on the Flat
- 1st Three Hurdles-Run the flat-Last Three Hurdles
- 300m hurdles, 2’ recovery + 200m flat
- The Unforgiving Minute-Run for 60 seconds as far around the track as possible w/low hurdles.
- 300m & then run over 5-8 hurdles w/ a 3 to 4 stride