

The Hurdle Events



Talent Demands for the Hurdles

- The abilities needed in hurdling similar to those needed in 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

- 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

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

Body Type



Talent Demands for the Hurdles

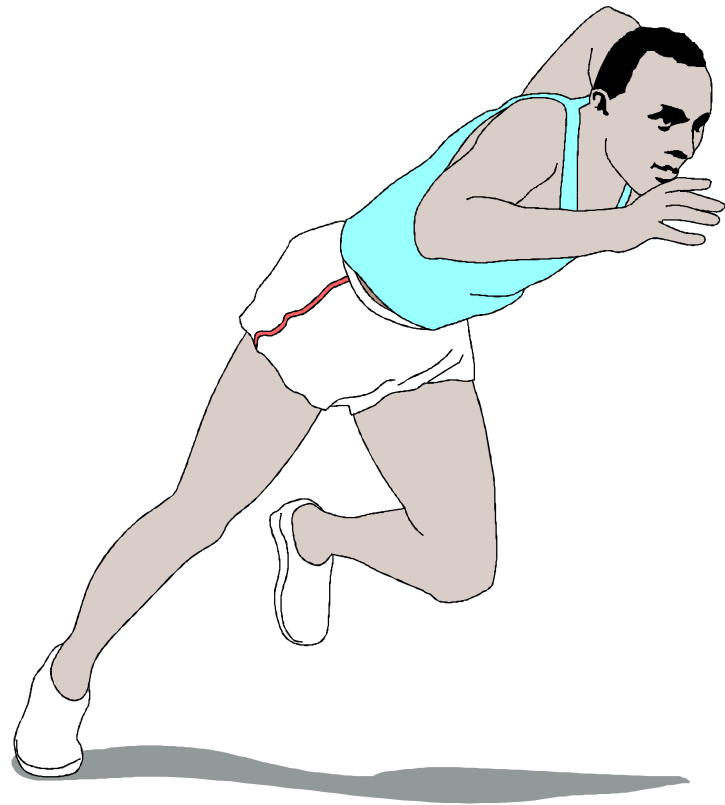
- Hurdlers should be chosen from athletes that are capable sprinters.
- The hurdles should not be considered a place for the inferior sprinter.



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?



Hurdling is Sprinting w/Rhythm

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

Speed



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.
 - Will vary according to a variety of factors including: What race is being run, the athletes ability, point in the training cycle, weather, etc.
- Much consideration and planning must be given to distribution plans for each event.



Modifying Sprint Mechanics

- The hurdler are proficient in all the skills of sprinting.
- The hurdle races are sprint races, with modifications of sprint mechanics used to negotiate the hurdles.



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?



Minimizing Airtime

How does reduced flight time improve performance?

When In the air, at the mercy of gravity, which falls at a constant rate. Impulsion can only take place on the ground. It's like coasting when in the air.



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?
- The approach will be discussed in much greater detail when we study the individual hurdle races.



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

Distance from the Hurdle

- 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 body's COG.
 - Shin angle at touchdown is near vertical, consistent with vertical push-offs present in steps prior to takeoff.
 - The hip extends forcefully, driving foot down and back to create takeoff.



The Hurdle Takeoff movie

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

- Hurdler's body 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).



The Hurdle Takeoff movie

- Lead leg action initiated by displacement of hips toward the hurdle.
- Extension of lead leg at takeoff should extend from the hip, then knee and finally 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.
- Any body lean achieved during the hurdle takeoff should not result in disturbed postural alignment.



Arm Action

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



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??

This exaggerates & twists the upper body.



Hurdle Clearance & Landing

- 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 lifted to side (upper leg parallel to hurdle), through the arm pit to position in front of chest (high knee position). Foot of trail leg remains below the knee throughout the motion for men.



Hurdle Clearance

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



Hurdle Clearance

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



Hurdle Clearance and Landing

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.



Hurdle Clearance and Landing



Hurdle Clearance and Landing

– Proper timing of trail leg recovery is dependant upon:

- displacement of body beyond the foot at takeoff
- relaxation and stretching of hip flexors of that leg.
 - This results in a quick, but late trail leg action.



Landing & Get-Away

- Lead leg toe touches down in pawing motion beyond hurdle.
- Trail leg is now in sprint position. The trail leg should be pulled through quickly



Landing & Get-Away

- 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



- **Upper body modifications**
 - reactions and countering in order to balance the modified lower body activity.
 - greater split of the arms at takeoff to match extended displacement at takeoff.
 - wider sweep of trail leg side arm to counter wider path of trail leg.

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?



Hurdle Clearance and Landing

Problems in the hurdle landing and the getaway step are directly related to problems...Where?

Take-Off



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 women hurdlers and men 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.
- The progression of body angles must occur more quickly.
- 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 100 and 110 meter hurdle races is a modification of maximal velocity mechanics.
- In advanced hurdlers, there is decreased stride length between the hurdles in order to fit the needed three steps between the hurdles.



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.
(especially in the men's race-shuffle)



The 100/110 Meter Hurdles

- Recovery heights between the hurdles are often lower than in normal sprinting, due to the decreased range of movement.
- Frequency is usually higher in the run between the hurdles.
- Cue: shuffle



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 relatively higher, requiring:
 - More forward lean
 - More vertical velocities at takeoff
 - Greater deviations from normal running mechanics



Owens (1st), Laing (2nd)



Teaching/Training Guidelines for the Hurdles

- Biomotor 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**
 - Development of speed by using the same principles as sprinters.
 - Acceleration and speed should be addressed and improved before speed endurance work is done.



Teaching/Training Guidelines for the 100/110 Meter Hurdles

- **CHEATED HURDLING**

- Hurdles kept low in early stages of learning and in practice situations for advanced hurdlers.
- Speed of movement, quick rhythms, and sprint mechanics emphasized.



Teaching/Training Guidelines for the 100/110 Meter Hurdles

- Timing segments of race provides great information to coach
 - diagnosis of problems
 - performance prediction.
- Touchdown times or Rhythmic Units.



Teaching/Training Guidelines for the 100/110 Meter Hurdles

- 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 (acceleration)
 - Maximal velocity (hurdle rhythm) runs over 4-6 hurdles
 - Runs over 7-12 hurdles. (hurdle rhythm endurance)



Teaching/Training Guidelines for the 100/110 Meter Hurdles

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



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

