

I. INTRODUCTION

The hurdle events have evolved from the older concept of jumping the barriers to sprinting over the hurdles. This change has come about via the physical development of the modern day athlete and the increased speed and strength which has accompanied that development. Also, vast improvements in equipment and track surfaces have worked along with better training to contribute to this change. This basic concept of sprinting over the hurdles must always be kept in mind as you proceed through this presentation.

II. HURDLE EVENTS AT THE INTERNATIONAL LEVEL

On the international level, any event in which the athlete must negotiate a barrier while running on the track has been classified as a Hurdle Event. The events are further differentiated by the total distance of the event. The categories are: sprint hurdles, long hurdles, and - the endurance event - the steeplechase. Moreover, each hurdle category has a corresponding specification for men and women.

A. Sprint Hurdling

1. Men's 110 meter hurdles.

- a. Men's 110 meter hurdles have a height of 42 inches (1.067m).
- b. The distance from the starting line to the first hurdle is 15 yards (13.72m).
- c. The event consists of 10 hurdles spaced 10 yards (9.14m) apart with the distance of the last hurdle to the finish being 14.02 meters.
- d. The men's 110 meter event has a long-standing tradition. Since its inception, very few modifications have been made. It should be noted that the spacings are in even imperial units. The height of a men's high hurdle is significantly higher than the male's center of mass. The greater the difference between hurdle height and the athlete's center of mass, the greater the hurdler must deviate from sprinting in order to efficiently and effectively negotiate the barrier.

2. Women's 100 meter hurdles.

- a. Women's 100 meter hurdles have a height of 33 inches (0.84m).
- b. The distance from the starting line to the first hurdle is 13.0 meters.
- c. The women's event also consists of 10 barriers spaced 8.5 meters apart with the distance from the last hurdle to the finish being 10.5 meters.
- d. The women's hurdle event has not established as long of a tradition as the men's race. The 100 meter hurdles has only been contested since 1969. Prior to that, the 80 meter hurdles (30 inches, 12 meters to the first hurdle, 8.0 meters in between) were run. The height of the barrier is such that the women's event is more of a sprint event than the men's 110 meter hurdles.

B. Long Hurdling

1. Men's and women's 400 meter hurdles.

- a. The 400 meter hurdles is an event that has identical barrier-spacing requirements for both men and women. 45.0 meters is the distance from the starting line to the first hurdle. The race consists of ten hurdles spaced 35.0 meters apart with a final 40.0 meter sprint to the finish. The difference comes in the height of the hurdles which is 36 inches (0.914m) for men and 30 inches (0.762m) for women.
- b. The 400 meter hurdles pose varied problems and challenges for the male and female athlete. This is due to the fact that all of the qualities needed for success in the sprint hurdles must be combined with the metabolic capacity and endurance of the 400 meter race.
- c. Modifications that have become popular are the 200 meter and 300 meter barrier events using the same spacing as the intermediate hurdle race. An interesting modification in the 200 meter hurdles finds 16 meters to the first hurdle with 19.0 meters between ten hurdles.

C. Endurance Hurdling

1. Steeplechase.

- a. The steeplechase at the international level for men is 3000 meters in length and usually considered more of an endurance event than a hurdling discipline. In the past, the 36 inch (0.914m) solid, wood barriers were negotiated by simply stepping on the 4x4 top rail. However, in today's version of the event, hurdling of the barriers occurs with regularity. A peculiarity of this event is the water jump/barrier which is usually cleared by stepping on and pushing off the top rail, although some athletes are now hurdling this barrier as well. While an accepted junior event has been established
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with 36 inch barriers over a 2000 meter course, a standard race distance or barrier height for women on the international level has yet to be fully accepted.

III. IMPLICATIONS OF HURDLE EVENTS FOR THE YOUNG AND DEVELOPING ATHLETE

The level of physical maturity of the young athlete must be considered when selecting the variables of hurdle height, distance from the start to the first hurdle, distance between hurdles, and overall distance of the race. The ultimate demands of the international event must be evaluated and modified so that the young athlete may accomplish comparable tasks with respect to the "Principle of Individual Response" and experience success. Young athletes who have not mastered the skill should be encouraged to continue training and perfecting the event while competing in sprinting, jumping, and throwing events.

A. Hurdle Event Variables

1. Distance of the contest.
 - a. Time dependent with respect to international event or the capacity of the young athlete.
 - b. Dependent on physical maturity of individual, i.e. basic strength/power and conditioning parameters. Because the energy demands of the ultimate task require 13 to 15 seconds for the sprint hurdles, distances of 50 meters, 80 meters, and 100 meters need to be considered depending on the age and maturity of the athlete.
2. Height of the hurdle.
 - a. The ratio between hurdle height and center of mass or leg length needs to be considered in selecting hurdle requirements for youth athlete competitions. During the learning phase and in training, it is desirable to use hurdles of reduced height. With both young, developing hurdlers, never use hurdle heights greater than the height of the hurdles in the competitive event. No hurdle height is too low when training the young, developing hurdler. Set the stage for successful accomplishment of the desired tasks. Also, the inability to execute proper take-off and clearance technique is often the result of inadequate levels of strength and power in the athlete.
3. Spacing between the hurdles.
 - a. Reduce height during the learning phase to facilitate the three-stride rhythm.
 - b. Reduce height during the training phase to ensure high stride frequency and rhythm. By reducing the hurdle spacing, the young athlete need not worry about negotiating the distance to the next barrier. This allows the developing athlete to sprint confidently and rhythmically between the hurdles, rather than reaching or bounding to ensure clearance of the next barrier.
4. Construction of the hurdle for teaching and training.
 - a. The "fear factor" is one of the greatest inhibitors not only with young, developing hurdlers, but also with hurdlers on the international level. There is no evidence to support the axiom: "No Pain, No Gain".
 - b. The potential for injury is decreased when using tear-away hurdle straps, padded hurdles and light sticks laid across uprights to make "user friendly" barriers.

IV. RULES FOR COMPETITION

A. Starting Procedure

1. The procedure follows exactly the same rules as the sprint start. Likewise, all commands are the same.

B. Construction and Placement of the Hurdles

1. The hurdle must be made from material which is not easily broken. This rule only applies to official races. For training or practice competitions, less threatening materials may be substituted and are even encouraged.
2. Hurdle heights and spacing distances between barriers for sprint hurdling are summarized below:

Distance of Race	Height of Hurdle	Distance to First Hurdle	Distance Between	Last Hurdle to Finish
110 m	1.067m	13.72m	9.14m	14.02m
Men	42 in.	15 yds.	10 yds.	46 ft.
100 m	.84 m	13 m	8.5 m	10.5 m
Women	33 in.	42 ft. 8 in.	27 ft. 11 in.	34 ft. 6 in.

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400 m	.914 m	45 m	35 m	40 m
Men	36 in.	147 ft. 9 in.	114 ft. 9 in.	131 ft. 3 in.
400 m	.762 m	45 m	35 m	40 m
Women	30 in.	147 ft. 9 in.	114 ft. 9 in.	131 ft. 3 in.

C. *Intentionally Knocking the Hurdle Over With Hand or Foot Results in Disqualification*

D. *Trailing the Leg or the Foot Alongside the Hurdle Results in Disqualification*

V. SAFETY IN HURDLING

Especially when working with young athletes and boys 15 to 18 years, hurdles need not be used. Substitution using medicine balls, traffic cones or pieces of rubber sponge are very desirable from a safety standpoint. This tactic will also produce and develop confidence in the beginner. Above all, the coach should strive to cause no harm.

A. *Hurdle Construction*

1. With both young, developing athletes and beginning hurdlers, barriers with a tear-away hurdle bar and padded posts should be used.
 - a. Reduce injuries which result from hitting the barrier.
 - b. Reduce the threat of injury so that the athlete is more confident sprinting past the barrier.

B. *Hurdle Placement*

1. Athletes should always hurdle in the direction which the manufacturer intended.
2. The distance between barriers and the height of the barrier need to be checked to ensure correct placement and adjustment.
3. Using alternately constructed hurdles, as described above, allows dual-direction hurdling.

C. *Selection of Training Surface*

1. Using a level surface without holes minimizes the chance of injury when hurdling.

D. *Full and Complete Warm-up Prior to Hurdling*

1. The complete preparation of the body will not only enhance performance, but will also prevent injuries to muscles, tendons, and ligaments which can result from the ballistic demands of hurdling.
 - a. Easy running or jogging.
 - b. General, active exercises and some static relaxation.
 - c. Running with gradually increasing tempo and intensity.
 - d. Dynamic flexibility exercises.
 - e. More running at an even greater tempo and intensity.
 - f. Specific hurdle preparation exercises.

VI. TRAINING FOR THE HURDLE EVENTS

A. *Philosophical Considerations*

1. Sprinting ability is a prerequisite for a great hurdler. Encourage all sprinters to hurdle. The sprinters who don't have the capabilities to become great hurdlers can remain sprinters.
2. By nature, hurdle training is very specific.
 - a. To improve as a hurdler, you must hurdle.
 - b. Training sessions must be geared toward the specific rhythm necessary for hurdling.
 - c. Special hurdle endurance is of primary emphasis in hurdle training for advanced hurdlers.

B. *Training Goals and Year-long Plan*

1. Divide the season into four segments, each possessing a major and minor emphasis.
 - a. Basic and general conditioning.
 - b. Specific preparation.
 - c. Competition.
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- d. Active rest.
2. Be specific and outline training goals for each training segment.
3. Identify technical faults in hurdling or specific weakness in conditioning and emphasize work in those areas during the first phase.

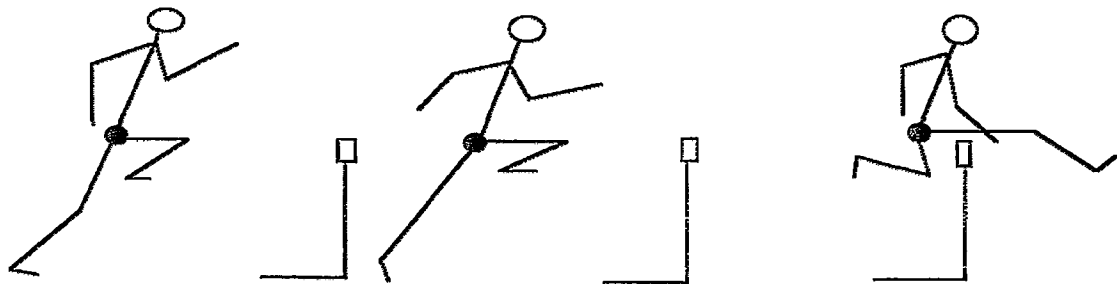
C. The Use of Hurdle Drills in Training

1. The purpose of using drills.
 - a. Correcting an inefficient part of the athlete's hurdle mechanics.
 - b. Ingraining or learning certain techniques of hurdling.
 - c. Promoting local muscle endurance or special hurdle endurance.
2. Drills must be specific to the whole action of hurdling.
3. Avoid drilling just for the sake of drill by differentiating style from technique. If it isn't broke, don't fix it.

VII. DESCRIPTION OF SPRINT HURDLE TECHNIQUE

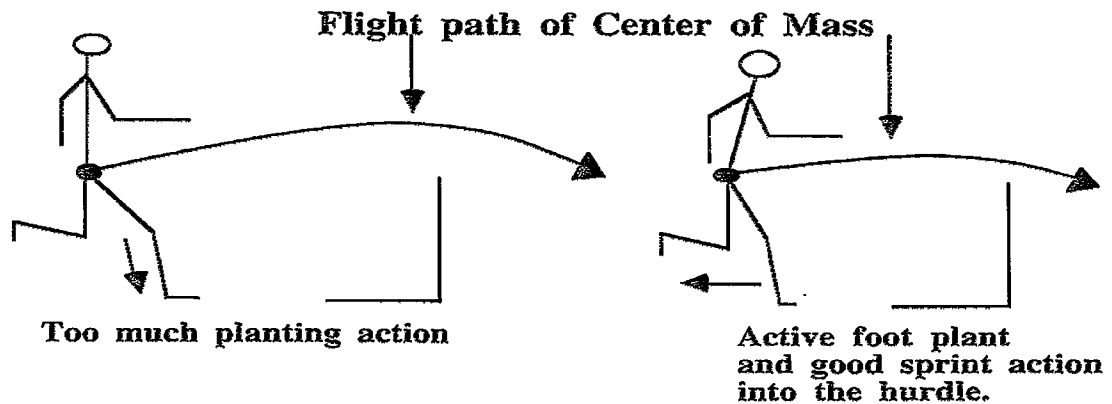
A. Attack into the Take-off

1. Hurdling begins from the drive phase of the lead leg - during ground support - before the hurdle.
2. The hurdler concentrates on driving the hips over the hurdle rail.
3. Projection of center of mass in the direction of the hurdle establishes a tall and forward hips position while attacking into the take-off.

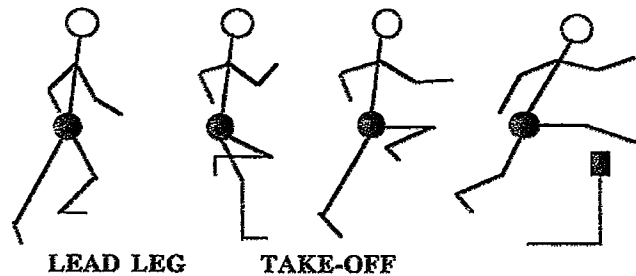


Sprinting through the Hurdle

4. Preparation for take-off.
 - a. During this drive phase the opposite leg (take-off leg) is recovered in a manner slightly different from optimal sprint-recovery mechanics.
 - b. The ankle of the recovering take-off leg (which after take-off will become the trail leg) passes below the knee of the driving lead leg.
 - c. The take-off leg is blocked (rapidly decelerated), then re-accelerated in a negative direction (backward and downward causing negative foot speed) in preparation for ground contact and force application. The above results in a quick step.
 - d. The foot remains dorsi-flexed (toe-up).
 - e. The hips are tall and, therefore, similar to the attack in the straight-leg bound drill. The hips remain tall through the take-off phase.
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HURDLING BEGINS FROM THE DRIVE PHASE OF THE LEAD LEG



B. Takeoff

1. The most important aspect of hurdling.
2. Take-off about 2 meters from the hurdle.
3. Ground contact is made with an active foot and almost under the center of mass.
4. The body remains tall at the hips.
5. Continued extension at the hip joint strives to project the hips over, through, and past the hurdle rail.

C. Lead-Leg Action

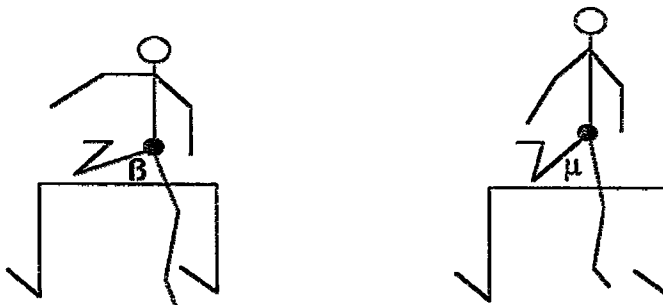
1. As the lead leg leaves the ground after its drive phase, it is recovered with proper mechanics (toe-up, heel to butt, step over the knee, thigh up).
2. The thigh lift is halted at an attack angle which has the knee pointing over the hurdle rail.
3. As the thigh is abruptly decelerated, the lower leg swings open.
4. The ankle remains in a dorsi-flexed position (toe-up).
5. As the lead leg reaches a straight-knee position, the lead leg is accelerated down and back, so as to run off the hurdle.
6. Lead-leg landing should be in the "hips tall" position and well under the center of mass.
7. Landing is approximately 1 meter past the hurdle.

D. Trail-Leg Action

1. At the instant the take-off leg loses contact with the ground, it becomes the trail leg.
2. The trail leg is recovered using basic sprint recovery mechanics, foot dorsi-flexed, heel to the butt, and knee pulled tightly to the body.
3. The knee is pulled through so that it deviates as little as possible from the mid-line of the body.
4. The foot is turned outward by rotating the lower leg outward at the knee joint.

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5. The foot is everted (sole of the foot turned outward).
6. As the lead leg touches down, the trail-leg thigh lift ceases in the sprint recovery and accelerates downward to the track in an attempt to reaccelerate the body.



The angle of the trail leg with the hurdle rail will depend on the height of the hurdler.

E. Arm Action

1. Lead Arm: the arm that opposes the lead leg (Example: left lead leg, right lead arm).
 - a. The action is such that the arm flexes forward at the shoulder in a slightly exaggerated manner.
 - b. The arm is stopped at shoulder level.
 - c. The arm is often rotated internally.
 - d. As the hurdle is passed, the lead arm extends forcefully backward and downward from the shoulder to balance the recovery of the trail leg.
2. Free Arm: the arm on the same side as the lead leg.
 - a. The action of this arm deviates little from sprinting. The elbow remains bent and drives backward on attack to the hurdle.
 - b. The arm is recovered elastically forward as the body passes the hurdle.

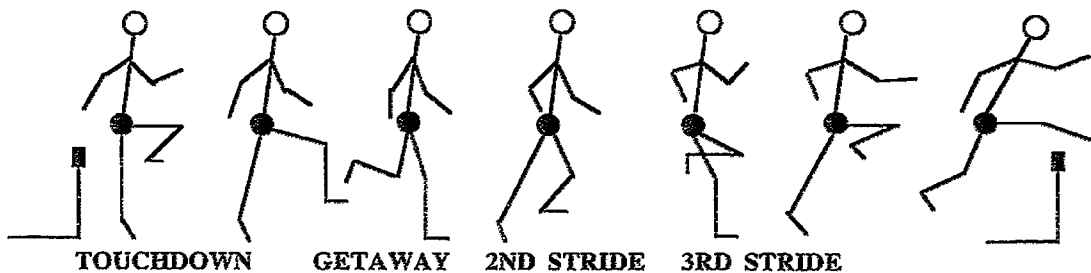
F. Trunk and Head Position

1. The trunk is in a tall and slightly forward position.
2. The eyes are focused up and to the front.

G. Key Positions

1. At first contact for take-off, the shoulders are slightly ahead of the hips and the foot of the trail leg is under the body.
2. At take-off, a line can be drawn from the take-off toe through the lead knee and to the lead elbow.
3. At lead-leg landing, shoulders are slightly ahead of the hips and the trail-leg foot is under or behind the center of mass.

H. The Landing and Strides Between the Hurdles



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1. Lead-leg contact.
 - a. The lead leg is actively extended from the hip so that the contact point is virtually under the center of mass.
2. Trail leg.
 - a. At lead-leg contact, the trail-leg knee is level and has already been pulled through as much as possible in preparation for the next step.
3. Getaway stride.
 - a. The trail leg extends forcefully from the hip so that the foot lands under the center of mass.
 - b. The leg does not extend appreciably at the knee to reach forward.
 - c. Because of the inefficient position of the lead leg in applying force off the hurdle stride, the getaway stride is the shortest stride.
4. Second stride.
 - a. Because of the extension of the trail leg, this stride should be the longest stride in the pattern.
 - b. The hips must remain in a tall position in order to set up the third and most crucial stride in hurdle clearance.
5. Third stride.
 - a. This stride is set up by the forceful drive off the lead leg before the hurdle.
 - b. The step onto the trail leg is slightly shorter, but very active and high on the ball of the foot. This facilitates forward rotation at take-off.
6. Key cues for sprinting between the hurdles.
 - a. Keep hips tall!
 - b. Avoid over-striding or a bounding-sprint!

I. Run-in From the Last Hurdle

1. This is a very neglected portion of the race.
2. Practice during training sessions.
 - a. Know the number of strides from the last hurdle to the finish, so that a lean at the tape can be made.
 - b. Practice accelerating and driving off the last hurdle.

VIII. A FUNDAMENTAL TEACHING PROGRESSION FOR THE HURDLES

A. Principles of Constructing Teaching Progressions and Learning Routines

1. Skills should be presented in a progression from simple to more difficult, familiar to new, and similar to different.
2. The "whole" method rather than the "parts" method is preferred for novice and beginning hurdlers whenever possible.
3. Progressions should be used that gradually modify correct sprint mechanics and already learned routines in order to effect efficient hurdle clearance.
4. As the basics of a learning routine are mastered, it is important that learning is refined so the task demands are executed at a speed similar to the actual event.
5. During the learning routine, the use of task-appropriated cues should elicit proper modification of motor responses and behavior.
6. Teaching progressions, learning routine, and drills used to effect the Basic Technical Model must adhere to the specific requirements of the Advanced Technical Model.

B. A Systematic Approach to Teaching Hurdling

The following system is an example of one which can be used with athletes of all age groups. The strength of this system is that it enforces the use of proper posture and force-application techniques, using the specific muscles in the same order used in accomplished hurdling. It is not the only system by any means. As with all systems, it can and should be modified to meet the specific needs and requirements of individuals in their environments.

1. Divide the athletes into three groups based on the heights of the individuals.
 - a. This will be advantageous when establishing the spacing of barriers, since height and stride length are especially related in young athletes.
 2. Straight-leg bounding.
 - a. Review and rehearse the task goals of straight-leg bounding as outlined in the sprint handout.
 - b. Ensure that the individuals have mastered this skill before progressing further.
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3. Fast-leg routine.
 - a. Review and rehearse the task goals of the fast-leg routine as outlined in the sprint handout.
 - b. Ensure that the individuals have mastered this skill before progressing further.
 4. Fast-leg routines while executing straight-leg bounding.
 - a. This routine is executed by the athlete beginning to straight leg bound. The fast-leg routine with a single-side leg pattern is initiated and repeated using a straight-leg bound and fast-leg pattern in a three-step hurdle rhythm. For example, 1-2-3-fast leg...1-2-3-fast leg...1-2-3-fast leg.
 5. Introduce a system of barriers.
 - a. The height of the barrier should be very low. No height is too low. In fact, the barriers can even be sticks or hurdle rails on the ground.
- C. Half-hurdling Over Barriers: Lead Leg*
1. The athlete is positioned so that the leg executing the fast leg will pass over the hurdle. For example, the left lead-leg athlete will stand on the right side of the barrier.
 2. The athlete approaches the barrier using straight-leg bounding.
 3. The take-off foot is placed so as to be 1 to 2 meters in front of the barrier.
 4. The athlete executes a fast-leg action over the barrier and resumes straight-leg bounding.
 5. When the athlete becomes proficient at one barrier, more barriers are added so that the take-off foot for the next barrier is 1 to 2 meters before it. The barriers are not raised until the athlete can make 5 successful clearances with perfect execution.
 6. Barriers should be raised and the space between the barriers increased as the level of proficiency increases.
 7. Young hurdlers should work to perfect both legs as lead and take-off legs.
- D. Half-hurdling Over Barriers: Trail Leg*
1. As the athlete begins to master half-hurdling with the lead leg, the athlete is placed on the opposite side of the lane. This means that the leg that functioned as the take-off leg must be recovered over the hurdle.
 2. The athlete approaches the barrier in the same straight-leg manner as previously described. The take-off action is performed. The fast leg is executed over a hurdle rail imaginarily extended beside the barrier.
 3. The take-off leg (now in the recovery phase) becomes the trail leg and must be pulled through and over the barrier and placed back onto the ground.
 4. As the athlete becomes more proficient, barrier height is raised gradually in 15 centimeter increments.
- E. Straight Leg/Fast Leg Over the Entire Barrier*
1. As the level of proficiency increases, the athlete is positioned so that both the lead leg and the recovery of the take-off leg (trail leg) must be executed over the barrier as in regular hurdling.
- F. Rhythm Task Specific Goals*
1. As proficiency, speed, and speed of movement increase during the teaching progression, a distinct rhythm must be sought. Musically, the rhythm would be represented as 2 pairs of eighth notes. The sound corresponds to the contact against the ground. If the hurdle is placed between notes 2 and 3, the cue phrases might be "Drive-Quick" and "Lead-Trail". If the coach listens for the rhythm when the hurdle is before note 1 and after note 4, the cue phrases would then be "Lead-Trail" and "Drive-Quick". This rhythm can be clapped, stomped or mimicked by the arm action. The athlete should listen to the rhythm for immediate feedback.
- G. Learning Routine from the Start to the First Hurdle*
1. The position of the body at the start must be such that the hurdler can arrive at the hurdle in a position to efficiently negotiate the barrier.
 - a. A consistent stride pattern during acceleration is the key to rapid improvement and success (Refer to stride drill in sprint outline). The ability to confidently accelerate at the barrier knowing that during every trial the take-off foot will hit the same mark is essential.
 - b. The eight-stride pattern.
 - i. Necessitates placing the trail leg on the front block.
 - ii. This preferred pattern allows for an easier conversion from the starting line to the first hurdle and then to the desired rhythm between hurdles.
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- c. The seven- and nine-stride patterns.
 - i. Necessitates placing the lead leg on the front block. The seven-stride pattern usually results in a slower, long-reaching stride pattern which doesn't position the body correctly for clearing the hurdle. The nine-stride pattern usually promotes an inefficient acceleration pattern. For the young athlete, it is better to reduce the distance to the first hurdle to accommodate 8 strides.
 2. The start.
 - a. Should be essentially the same as the sprint start.
 - b. The hips should be in a tall position after the 6th stride.
 - c. Any adjustment in stride pattern should occur in the 4th to 6th strides.
- H. *The "Sticks and Bricks" Method of Teaching Hurdling*
1. Advantages of this method.
 - a. Adheres to the basic principle of sound teaching through gradual progression.
 - b. Can be used to teach a large group effectively.
 - c. Produces success and good results in a very short time period. It is possible to have beginners hurdling in 50 to 60 minutes.
 - d. Emphasizes hurdling as a rhythmic sprinting event.
 - e. May be adapted so that any readily available objects can be used in lieu of hurdles, thus, very little specialized equipment is needed (36-inch sticks and bricks, shoe boxes, traffic cones, etc.).
 2. Teach foot position at the hurdle start as you would teach the sprint start.
 - a. Emphasize the same foot position at the start each time. In addition, it is common practice to put the left foot back so that it becomes the lead leg. This position is preferable for the 400 meter hurdle event.
 - b. Using this foot position, sprint 20 to 25 meters using the proper acceleration pattern.
 3. Eight strides to the first hurdle.
 - a. Using the same foot position, the athlete sprints from the blocks as the coach counts the steps.
 - i. The eighth step should be with the right foot, if the left leg is leading.
 - ii. Repeat a second time to better develop a consistent stride pattern.
 - b. For the third trial, place a stick on the ground midway between the eighth and ninth strides. For advanced athletes, this distance should be 2 meters beyond the eighth contact.
 4. Three-stride rhythm.
 - a. For the next trial, place a stick on the ground midway between the 12th and 13th strides. For advanced athletes, this is 2 meters beyond the contact point of the 12th stride.
 - b. Have the athlete run through again and place a stick between their 16th and 17th strides. Again, this is 2 meters beyond the contact point of the 16th stride for the advanced athlete.
 - c. Do not use more than three sticks or fatigue will soon inhibit learning.
 - i. The third or fourth session would be a preferred time to add more sticks.
 - d. The hurdler should not be conscious of the sticks.
 - ii. Emphasize sprinting through the sticks.
- I. *Lead-leg Routine Over Low Barriers*
1. Set-up equipment.
 - a. Barrier height.
 - i. No height is too low for beginners. For example, 3 to 8 inches is fine.
 - ii. Progress at 10 to 20 centimeter increments to make the task more demanding.
 - b. Distance between barriers.
 - i. There is no "set" spacing between the hurdles.
 - ii. Adjust spacing to the athlete's stride. For example, 4 to 6 feet is adequate.
 - c. Construction of the barriers.
 - i. The material should not be threatening to the athlete.
 - ii. It must be readily adjustable to accommodate even very low heights.
 2. The routine should be practiced at a jog pace.
 3. Practice using both legs as the lead leg.
 - a. Excellent preparation for 200, 300, and 400 meter hurdlers.
 - b. Good exercise for experienced hurdlers who are learning to alternate lead legs.
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IX. DIFFERENCES IN MEN'S HURDLE TECHNIQUE

The basic technical elements of the teaching program for both the women's 100 and 400 meter hurdle events and the men's 400 meter barrier race are virtually identical. This is due to the close relationship that exists between the height of the hurdles (33, 30 and 36 inches respectively) and the hurdler's center of mass. Although the men's 110 meter barrier of 42 inches has significantly greater demands, the basic differences in technique must be minimized in order to maximize performance.

A. Basic Mechanical Goals are Essentially the Same as the Women's 100 Meter Event

1. Minimize breaking forces to conserve horizontal momentum at both take-off and landing.
2. Minimize the degree of vertical displacement of the center of mass as much as possible, while still accomplishing the task of barrier clearance.

B. Specific Differences in 110 Meter Hurdle Technique

1. Vertical forces are greater. This must be accomplished through greater power output of the athlete. This involves better transfer of momentum vertically from legs and arms to the entire body.
2. The take-off point is further from the hurdle. This is necessary so that the take-off angle can be lower and still clear the higher barrier.
3. There is greater deviation from sprint mechanics because of the need to rearrange the limbs over the hurdle to facilitate clearance.
4. Flight time and flight distance are greater. This is noted in point 2 above which means a greater landing distance.

X. DIFFERENCES IN THE 400 METER HURDLE EVENT

A. Take-off Distance

1. A greater take-off distance and lower hurdle height results in a lower flight parabola over the hurdle. This lower trajectory translates into a more economical clearance.

B. Rhythm and Stride Length

1. It is important to develop and perfect an efficient rhythm and uniform stride length.
 - a. A higher frequency, quicker rhythm is more energy efficient than emphasizing stride length.
 - b. Efficiency is sacrificed when the athlete over-strides in an attempt to run with fewer strides between hurdles.
2. Stride pattern in the 400 meter hurdles.
 - a. Women and youth typically take 23 to 25 strides to the first hurdle and 15 to 19 strides between the hurdles.
 - b. Men typically take 21 to 22 strides to the first hurdle and 13 to 15 strides between hurdles.

C. Lead-leg Preference

1. The ability to negotiate the barriers with either leg as take-off or lead leg is very advantageous, especially for the young and developing hurdler.
 - a. An even stride pattern necessitates alternating lead legs.
 - b. Adaptation to situations involving fatigue or wind can be accomplished more easily.
 - c. Advantages of the left lead leg.
 - i. The athlete is able to run closer to the inside of the lane without risking disqualification for trailing the leg on the inside of the hurdle.
 - ii. Gives the athlete better balance during take-off and clearance as the forces produced better resist inertia.