



# Coaching the 300/400-meter Hurdler

Loren Seagrave, Speed Dynamics

# Where Do You Find 400-meter Hurdlers?

- **Short Hurdlers** Who Have Speed Endurance Capacity
- **400-meter Runners** who Have Coordination Capacity to Hurdle
- **800-meter Runners** who have the Speed, Power and Coordination to run the 400-meters and Hurdle
- **Long/Triple Jump:** Take-Off Ability



# Main Area of Training Concerns

---

- **Technique:** The Ability to Efficiently Negotiate the Hurdle
- **Strength and Power:** The Ability to Generate High Rate of Force Development
- **Race Strategy and Distribution:** The Ability to Execute a Race Plan and Adjust Under varied Situations
- **Metabolic Fitness:** All Appropriate Energy Systems are Developed.
- **Speed:** Combination of Power and Neuromuscular Coordination

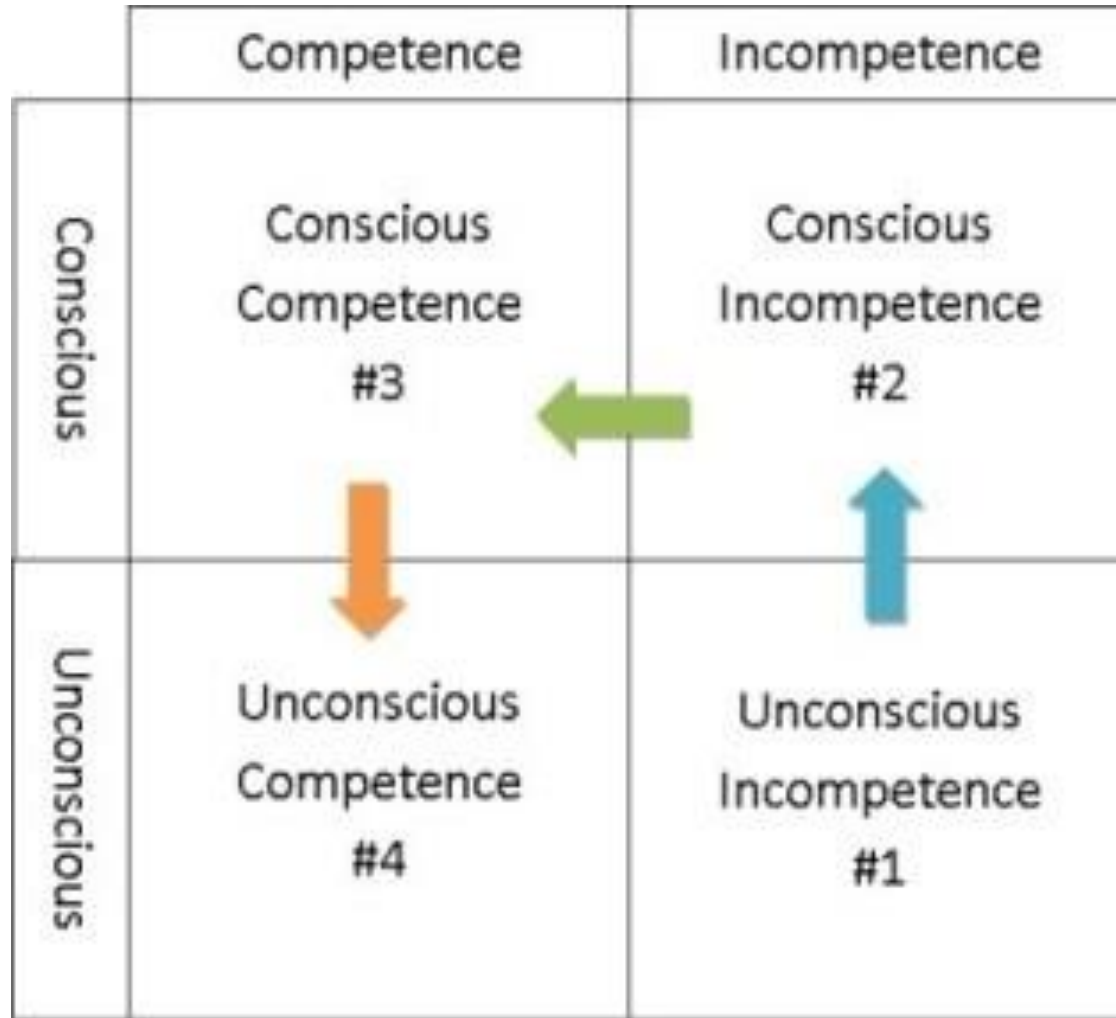


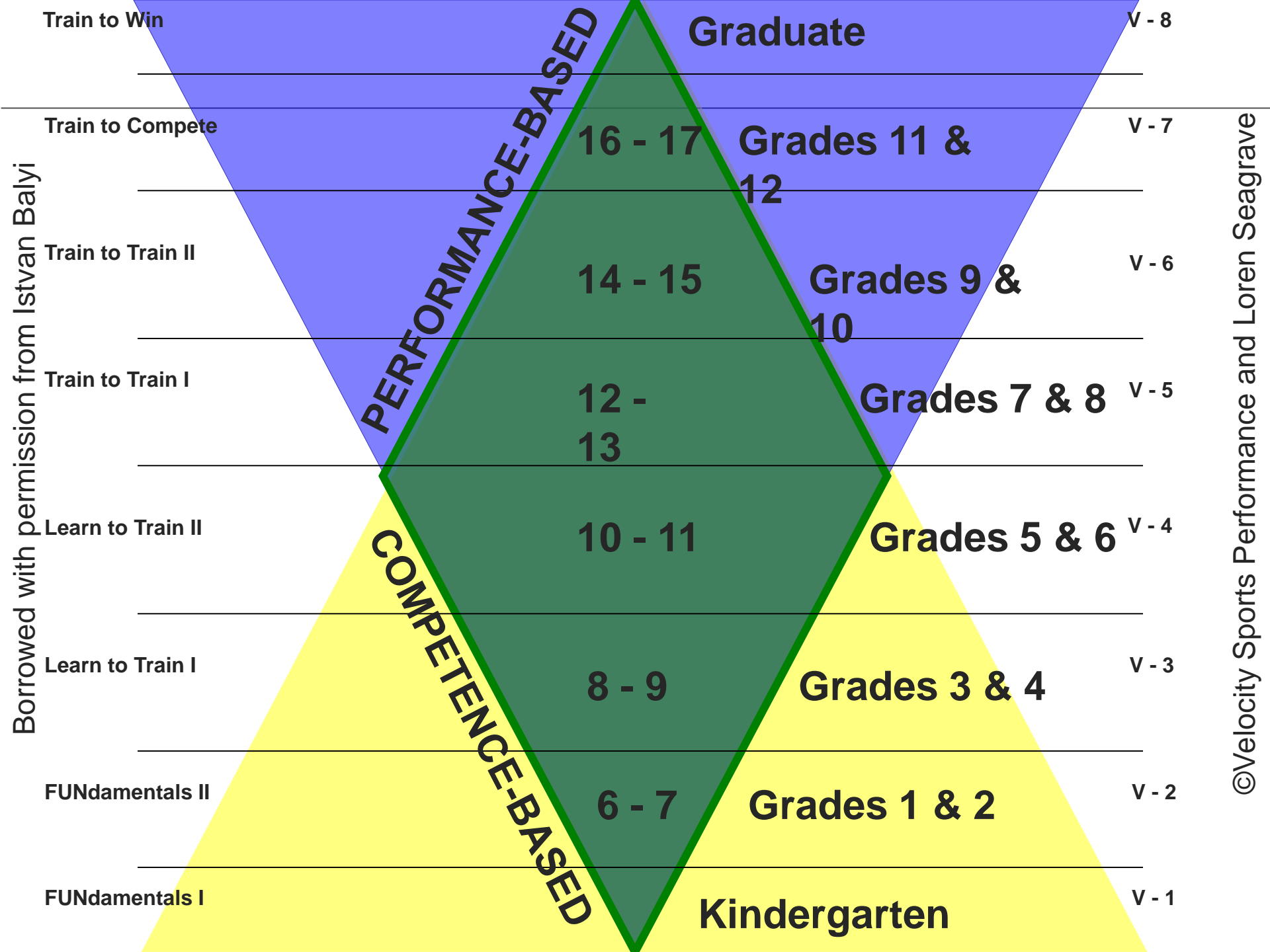
# Levels of Technical Proficiency and Corresponding Pre-Requisite Strength

- » No Technical Model
  - Insufficient Levels of Strength & Power
- » Rough Technical Model
  - Good Natural Levels of Strength and Power
- » Basic Technical Model
  - Basic Levels of Strength and Power
- » Advanced Technical Model
  - Advanced Levels of Strength and Power



# Maslow's Stages of Learning





Borrowed with permission from Istvan Balyi

©Velocity Sports Performance and Loren Seagrave

# Coaching and The Learning Process Applied to 400 Hurdles

---

## » Pre-Instruction Considerations

- Communication-Greatest Factor to Impact Ability to Understand and Achieve Movement Proficiency
- Individual Differences Receiving/Processing Information
  - ...Learning Style
  - ...Past Experience (Transfer of Learning)
  - ...Environment (Transfer and Instructional Design)
  - ...Level of Motivation to Learn



# Skill Presentation Applied to 400 Hurdles

## » Preparation of the Learner

- Attain Undivided Attention Before Instruction
- Arrangement of Learners
  - Distractions and Visibility
- Present Skill to Stimulate Interest Enthusiasm is contagious





# Instruction Strategies Applied to 400 Hurdles

---

- » Choose Mode of Instruction
  - Verbal, Visual and/or Kinesthetic
- » Amount of Information
- » Precision of Instruction
- » Initial Instructions (Level of Details)
- » Skill Refinement (Internal vs External Focus)
- » Frame of Reference
- » Learning Styles
- » Previously Learned Skills
- » Use of Verbal Cues



# Learning Routines Applied to 400-meter Hurdles

---

- Hurdle Walkovers and Skip-Overs (Spacing)
  - Foot Pops
  - Foot Pop – A-Skip
  - A-Skip – C-Skip



# Learning Routines Applied to 400-meter Hurdles

---

- Straight Leg Bounding – Fast Leg Routines
  - Learn Single Fast Leg Drill
  - Learn Alternate Fast Leg Drill
  - Learn Straight Leg Bound
  - Complex Fast Leg with Straight Leg Bound
  - Complex Alternate Fast Leg with SL Bound



# Learning Routines Applied to 400-meter Hurdles

---

- Alternate Lead Leg (4 Step)  
Hurdling



# Learning Routines Applied to 400-meter Hurdles

---

- 5 - 10 Step Hurdling



# Load Dynamics for Training

» Start    ▶    1<sup>st</sup> Hurdle (45m) Consistent

▶ **SPEED**

» Start    ▶    4<sup>th</sup> hurdle (150m)

▶ **Speed Endurance**

» Start    ▶    4<sup>th</sup> - 8<sup>th</sup> hurdle (300m)

▶ **Special Endurance I**    20 – 40sec

» Start    ▶    7<sup>th</sup> – 9<sup>th</sup> hurdle

▶ **Special Endurance II**    40 – 90sec

Replicate rhythmic unit demand

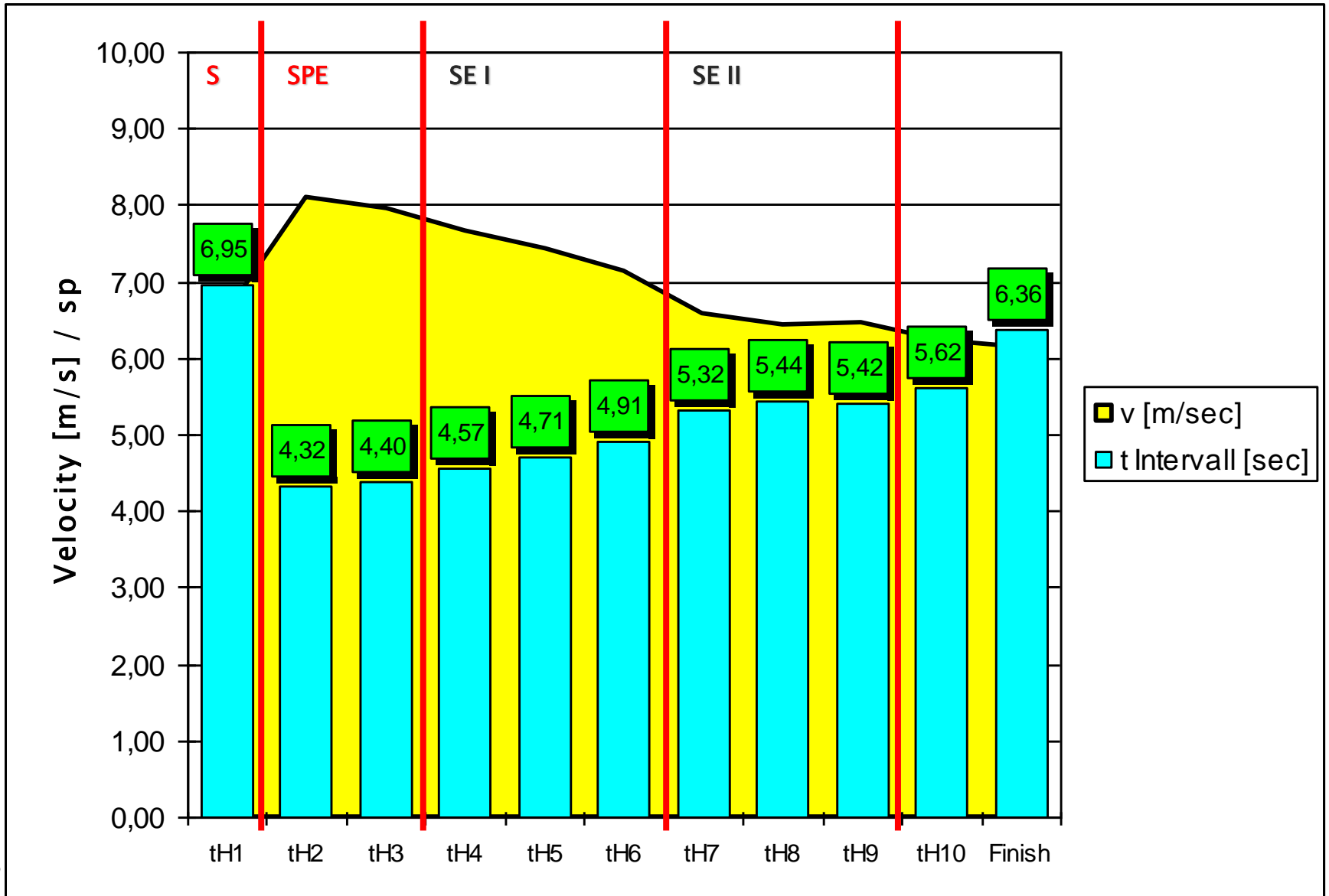
# Guidelines 400m Hurdles

	split times	projected times
Start – 1st step	< 1s	reaction
Start – H1	5.80 – 6.50s	5 – 6s
H 1 – 3	6.50 – 8.50s	10 – 11s
H 3 – 5	8 – 9s	22 – 23s
H 5 - 8	11 – 12.50s	38 – 40s
H 8 - 10	8 – 10s	44 – 48s
Finish	4 – 6.50s	<b>47 – 50s</b>

IMG Presentation to AFC AJAX

May 2011

# Race Distribution in the 400 Meter Hurdles

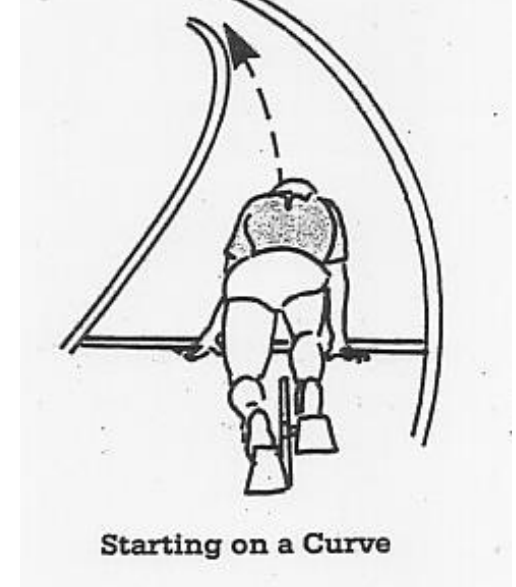
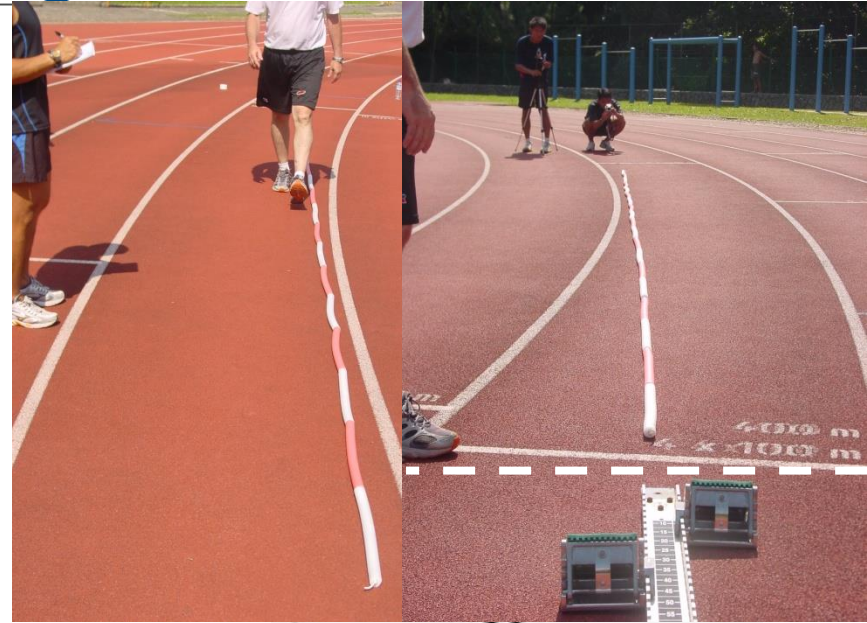




# Positioning of Starting Blocks

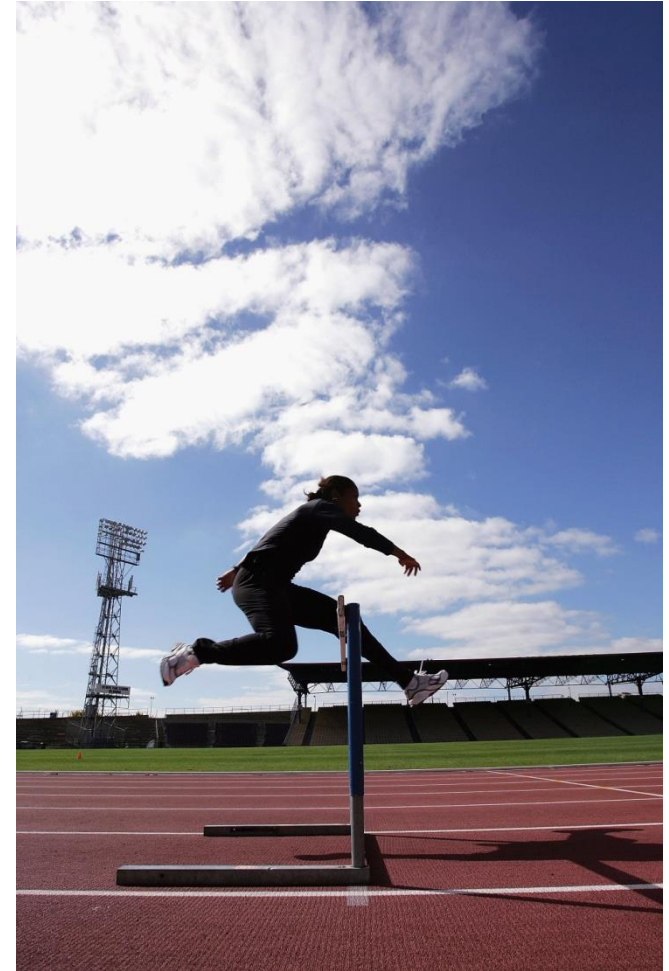
## Block placements for events that start on a curve

- ↳ Blocks set so that the athlete runs on tangent to the curve
- ↳ Initial straight run contributes to better acceleration
- ↳ Place fingers and thumbs along an imaginary line at right angles to the direction of running
- ↳ Hands inside the lane
- ↳ Start and accelerate as in 100m
- ↳ Run as close as possible to inside edge of the lane on the curve



# Coaching the 400-meter Hurdlers

- **Individualizing the Choice of the Lead Leg**



# Coaching the 400-meter Hurdlers

- **Implications for Hurdling on the Bend**



# Coaching the 400-meter Hurdlers

- **Performance Evaluation and Touchdown Times**



# Curve Running and Handling Efficiency

---

- Proper High Speed Running Mechanics
- Characteristics of Foot Strike
  - Single Tract versus Dual Tract Model
  - Position of the Center of Gravity relative to the base of support
    - During Right support
    - During left support



# Profile 400m Hurdles

Hurdles #	splits [sec]	t Intervall [sec]	t Hurdle [sec]	v [m/sec]	Comment
tH1	6,95	6,95	0,41	6,62	
tH2	11,27	4,32	0,37	8,10	
tH3	15,67	4,40	0,37	7,95	
tH4	20,24	4,57	0,39	7,66	
tH5	24,95	4,71	0,40	7,43	
tH6	29,86	4,91	0,38	7,13	
tH7	35,18	5,32	0,38	6,58	
tH8	40,62	5,44	0,37	6,43	
tH9	46,04	5,42	0,38	6,46	
tH10	51,66	5,62	0,40	6,23	
Finish	<b>58,02</b>	6,36		6,13	

**øtInt. = 4,97**

**øtH = 0,39**

**vø = 6,97**



# Coaching and Training Considerations for 400m Hurdles

---

- **Energy System Demands**
- **Pacing**
- **Common Problems in Program Design**
  - **Failure to Teach Alternation**
  - **Balance of Training (Neuro-Muscular – Metabolic)**
  - **Inflexibility in the Step Pattern**
- **Training Steering Skills**



# Strategies for 400 meter Hurdles in Training

- Utilize the technical drills for the short hurdles implementing both legs and add metabolic training for the 400 metres
- Integrate hurdles into extensive repetition and interval sessions
- Discussion of stride patterns and change downs
- The use of hollow runs
- Simulate situations affecting stride pattern - lane placement, head winds, tail winds
- Half hurdling, alternating lead leg or trail leg only (hurdle placement on each side of line.)
- Dynamics of hurdling on a curve
- RL lead v LL lead





# Hurdles

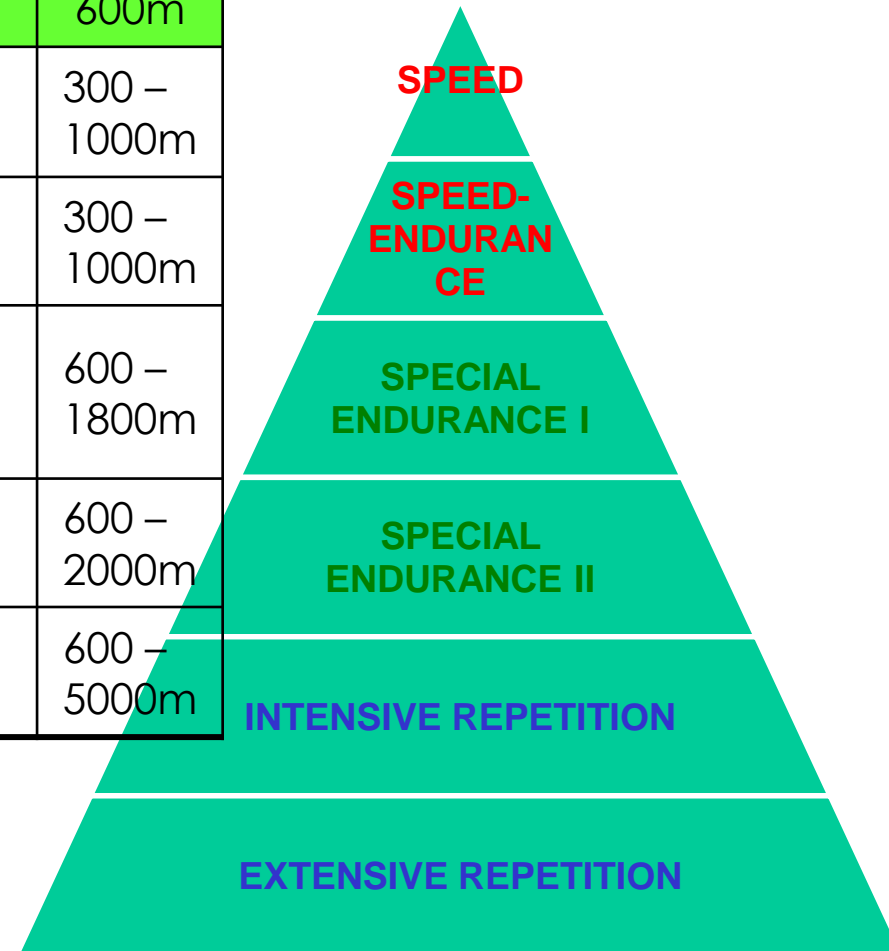
---

- **Takeoff Distance**
- **Touchdown Distance**
- **Hurdle Step Length**
- **Hurdle Step Flight Time**
- **Hurdle Step Ground Time - Takeoff**



# Training Emphasis

Component of Fitness	Int.	Duration	Rest (ratio)	Dist.	Total Dist.
<b>SPEED</b>	<b>&gt;95%</b>	< 5s	1:30 to 1:50	20 – 40m	200 – 600m
<b>SPEED- ENDURANCE</b>	<b>≥95%</b>	6-20s	1:10 to 1:20	50 – 180m	300 – 1000m
<b>SPECIAL ENDURANCE I</b>	<b>≥95%</b>	20-40s	1:10 to 1:20	200 – 300m	300 – 1000m
<b>SPECIAL ENDURANCE II</b>	<b>≥95%</b>	40-90s	1:10 to 1:20	350 – 600m	600 – 1800m
<b>INTENSIVE REPETITION</b>	<b>80 – 90%</b>	10-70s	1:4 to 1:8	75 – 500m	600 – 2000m
<b>EXTENSIVE REPETITION</b>	<b>≤75%</b>	10-120s	1:1 to 1:4	50 – 600m	600 – 5000m



# Hurdle Specific Special Endurance

---

