Teaching Schemes for Acceleration & Maximal Velocity Mechanics
Understanding Gait
Understanding Gait

- Natural Movement Patterns
- Pathological Gait
  - Common Causes
  - Misconceptions
- Self Organizing Skills
- Skills to Teach
  - Global Factors
  - Specific Skills
Global Factors in Sprinting
Posture

- Postural Integrity
  - Stability
  - Alignment

- Specifics
  - Head Alignment
  - Pelvic Alignment

- Uniformity of Movement
Posture

- Is It a Condition?
- Is It a Skill?
Elastic Energy Production

Pelvic Origination and the Spinal Engine
  - Amplitudes of Movement
  - Undulations of the Center of Mass
  - Oscillations of the Pelvis
Amplitudes of Movement
Undulations of the Center of Mass
Elastic Energy in Gait

- The Pelvic Engine
  - Transverse Plane Oscillations
  - Sagittal Plane Oscillations
  - The Figure 8 Oscillatory Pattern
- Cuing and Common Errors
Stability

- Stability and Dynamic Stability
- Grounding Strategies
Stability - Pushoff and Touchdown
Summations and Transmission of Forces

- The Gait Triangle

- Elastic Energy Production
- Postural Maintenance
- Stability Preservation
Summations and Transmission of Forces

- Proximal to Distal Firing
- Transmission of Force
- Coaching Implications
  - Pelvic Origination and Cuing
  - Shin Angles
  - Pushing Kinetics
  - Ankle Positions
Summations and Transmission of Forces
Summations and Transmission of Forces
Specific Skills
Momentum and Impulse

- Momentum and Velocity
  - Momentum Prerequisites
  - Relationships
- Impulse Development (ft)
- Coaching Implications
  - The Drive Phase
  - Maximal Velocity
The Start

- Purposes
  - Developing Horizontal Momentum and Velocity
  - Developing Vertical Velocity
  - Establishing Large Amplitudes of Movement
- Relationships – Posture and Vertical Velocities
The Start
The Start
The Start
The Acceleration Process

- Key Shifts
  - Center of Mass/Base of Support Relationships
  - Trajectory Changes
  - Ground Time Changes
  - Body Angle Changes
  - Shin Angle Changes
- Flight Time/Ground Time Ratios
- Breathing Skills
Angle Progressions in Acceleration
Angle Progressions in Acceleration
The Climb - Pushing Up
The Acceleration Process

- Distribution
- Talent Related Factors
- Pushing
  - Underpushing
  - Overpushing
- Frequency Development
  - Frequency Development – Relation to Posture and Amplitudes
  - Groundstrike – To or Through
  - Implications for Transition
Maximal Velocity Mechanics

- Center of Mass/Base of Support Relationships
- Body Angles
- Shin Angles
- Trajectories
- Ground Times
- Flight Time/Ground Time Ratios
Pushoff and Touchdown
The Importance of Flight
Specific Skills
Recovery Heights

- High or Low?
- Acceleration vs. Maximal Velocity
- Recovery Height Production
  - Transfers of Angular Momentum
  - Velocity Shifts
Considering the Upper Body

- Role of the Upper Body
  - Force Production ...
  - A Countering and Balancing Agent
- Implications for Arm Movements - Symptomatic
- Evolution as the Acceleration Process Unfolds
- Specifics
  - Direction of Arm Swing
  - Changes in Radius
Fascial Communication

- Fasica’s Role as a Control System
- The Distal Positioning Phenomenon
- Coaching Implications
Teaching Chores

- Keep Elasticity Factors in Mind
- Teach the Start
- Teach Progression of Body Angles in Acceleration
- Teach Achievement of Proper Postures in Acceleration
- Make Sure Distribution is Patient and Appropriate