Movement
Concepts and Applications to Training

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Movement Concepts

The foundation for athletics coaching.
Movement Concepts

• What this is and is not
• Where it comes from
Movement Concepts

• Pelvic Alignment

• Force Application
Pelvic Alignment

• The pelvis, spine and head alignment in relation to each
Pelvic Alignment

Pelvic Motion, Lateral View

A: Anterior Tilt
B: Neutral
C: Posterior Tilt

ASIS, pubis symphysis
PIIS
Pelvic Alignment

- The pelvis and commonly related musculature
Force Application

• Force required for movement
  – Force- Causes a body/object to undergo change
    • At rest
    • Re-directing
    • Countering

• Track and Field-
  – Ground based sport- ALL EVENTS
Force Application

• **GOAL**
  – Same force, less time
  And/or
  – More force, same time

• Better performance levels are achieved through more force
Creating & applying force

FLEXION

- To create extension
  - Hip, Knee, Ankle
- Occurs in every event
- Ideal flexion for every movement
- Proximal to distal in applying
Flexion and Extension
Flexion and Extension
Flexion and Extension
Flexion

- Ability to receive force requires flexion
- Proximal to distal
Receiving
Pelvic Alignment and Force
Pelvic Mis-Alignment and Force
Pelvic Alignment and Force

• Alignment
  – Start aligned, apply big force to keep

• Misalignment
  – Magnified furthered out from pelvis
    • Example: Horizontal jumper

• Training alignment all the time
Pelvic Alignment & Force

CREATE MORE EFFICIENT FIRING PATTERNS = MORE FORCE

• Firing patterns uninterrupted and in order
  • Overly plantar flexed in sprinting common error, indicative of anterior rotation

• Through ALL joints
  – Push through hip, knee and ankle
Efficient Firings
Pelvic Alignment and Force

• Preparation for force application typically occurs in front of body

• Lack of appropriate force application/development is made up for in some way, that is never good

• Better performance levels are achieved through more force/ better applied force.
Creating and Applying Force

• **Stretch Shortening Cycle**
  – Isometric prep
  – Rapid eccentric stretch of muscle-tendon unit
  – Amortization
  – Enhanced concentric contraction
  – GIVES BACK GREATER FORCE
  – FREE!
Creating and Applying Force

• Stretch Shortening Cycle
• This is trainable

– COMMON ERRORS IN TRAINING
  1) Too much intensity
  2) Reversing firing order
  3) Poor pelvic alignment
Action-Reaction

• What causes what you see?
  – Applying force versus cosmetic force/pelvic misalignment
  – Examples
    • Sprinting versus jogging
    • Multi jumps
    • Triple jumping- Short run vs Full jumps
      – Cycle occurs naturally
  – Coaching- COACH the ACTION not reaction
Pelvic Alignment- Limb Positioning

• Limb positioning to keep pelvis aligned and resultant forces
Commonly- Knees in front
Pelvic-Extended Limb Positioning
Displacement of Center of Mass (COM)

- Teach the athlete to PUSH to displace
- Each event/action has ideal displacement
- Sets up pelvic alignment for the event
- Creates force
- Uniform rate to keep pelvis aligned
  - Example
Displacement of COM

• **Examples**
  – Acceleration
  – Hurdling
  – Maximum velocity sprinting
  – All jumping events at near and at take off
    • Exaggerations of displacements
Displacement of COM

Ideal Triple Jump

Ideal Long Jump

Poor Long Jump
Displacement of COM

• Displacement of center of mass
Displacement of COM
• Displacement of center of mass
Displacement of COM Horizontal
Displacement of COM
Vertical
Coaching Implications

• TO JUMP FAR AND HIGH
  1) More force on the runway. Hear it!
     • Coach better positions. Demand better positions
  2) Work to positions that keep pelvis aligned
     • Vault
     • HJ
     • TJ
     • LJ

• Cueing/Teaching
  – “BIG OPEN MOVEMENTS”
  – “KNEES IN FRONT”

• To create change- coach to an over exaggeration
Coaching Implications

• Poor cueing/teaching

• “Lift”
What are you coaching?
Coaching Implications

• **WATCH MOVEMENT**
  - Movement tells you more than a stopwatch

• Teach and Coach Everything
  - From the time they walk through the gate to time they leave and then some
QUESTIONS

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