4 Change of Direction

How does Strength Deficit Apply to Sprinting?

- Newell's Model
- Power Cutting vs Speed Cutting
- High Constraint vs Low Constraint
- Closed vs Open Drills
- Concentric vs Eccentric Emphasis

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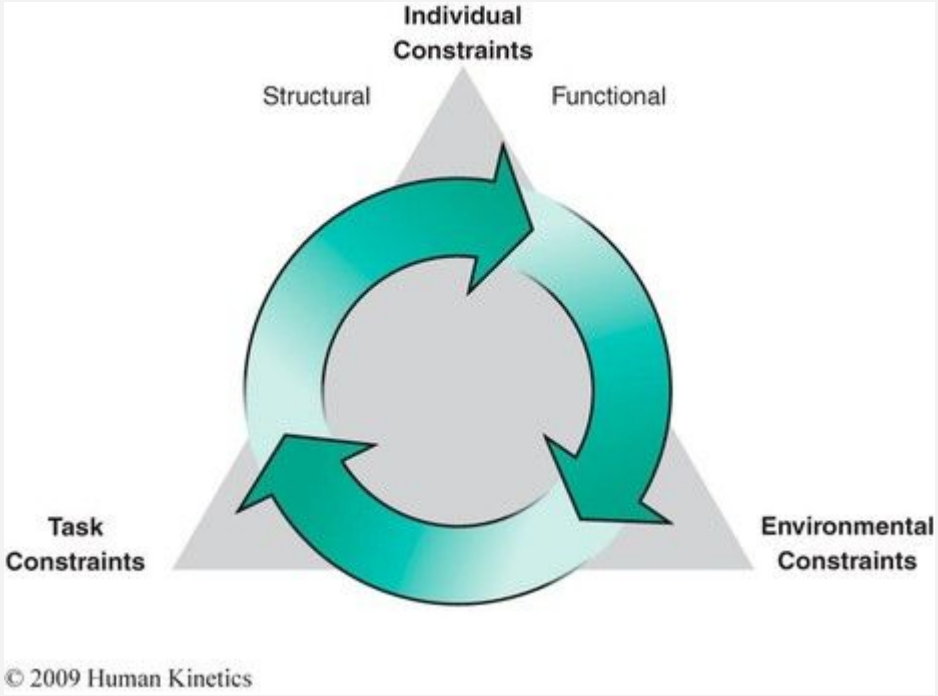
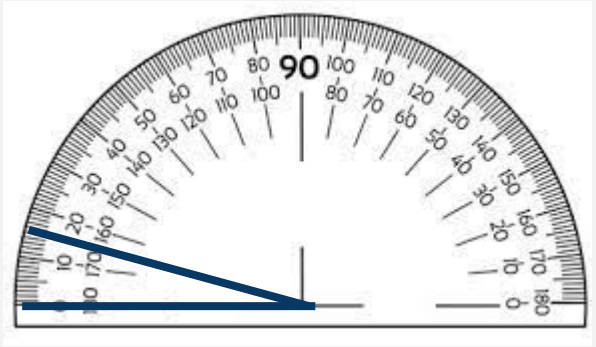
Newell's Model



Power Cutting vs Speed Cutting

- Environment
  - Angles
    - COD Angeles > 5-15% will require some sort of Deceleration
- Task
  - Power Cutting
    - COD w/ Zero Velocity
  - Speed Cutting
    - COD w/ Minimizing Drop in Velocity
- Individual
  - Depending on Eccentric Strength/Relative Strength Degrees of Angles Significantly impact COD Deceleration



High Constraint vs Low Constraint

- Environment/Task
  - High Constraint
    - Bumper Lanes - Low Risk
    - Move Fast and Aggressive w/o Consequence
    - Environments that require low mental bandwidth
  - Low Constraint
    - Remove Bumpers - Higher Risk
    - Move Fast and Aggressive w/ Consequence
    - Environments that require increased mental bandwidth
- Individual
  - Fitness Levels have huge impact on perceived difficulty
  - ‘Athleticism” have huge impact on performance
  - Eccentric Strength has higher transfer to Low Constraint
    - Alternatively, Concentric Strength may transfer more directly to High Constraint

Closed vs Open

- Environment/Task
  - Closed
    - Predetermined List of Objectives before Completion
      - Cones, Lines, Directional Changes
    - Complicated over Complex - Can make more complicated by adding objectives
  - Open
    - Undetermined List of Objectives before Completion
      - Whatever means necessary
    - Complex over Complicated - Can make more complex by adding variables to overcome
- Individual
  - Fitness Levels have huge impact on perceived difficulty
  - ‘Athleticism” have huge impact on performance
  - Eccentric Strength has higher transfer to Open
    - Alternatively, Concentric Strength may transfer more directly to Closed

Eccentric vs Concentric

- Eccentric Emphasis
  - Environment
    - Open
    - Low Constraint
  - Task
    - Speed Cutting
    - Large Angle COD - 15 to 180 degree
  - Individual
    - High Relative Strength
    - Robust SSC
- Concentric Emphasis
  - Environment
    - Closed
    - High Constraint
  - Task
    - Power Cutting
    - Smaller Angle COD 5 to 90 degree
  - Individual
    - High Absolute Strength
    - High CSA