‘Interactive Workshop – Learning To React’

Jay Dawes - NSCA

Learning to React

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National Strength and Conditioning Association

Objectives

• Terminology
• Purpose of Reactive Training
• Incorporating Sensory Motor Integration
• Training into Training Sessions
• Program Design Suggestions
• Drills-Hands-on Participation
Speed
• The rate at which something is done
• Is the rate of motion, or equivalently the rate of change in position, often expressed as distance traveled per unit of time.

Agility
• The ability to start, stop and change directions rapidly and efficiently.
• The ability of the neuromuscular system to coordinate explosive changes of direction and or multiple body segments in all planes of motion at variable velocities by effective use of the Stretch shortening cycle.
• The skills and abilities needed to explosively change movement velocities or modes—Essentials of S&C 3rd ed.

Chaos
• Most sports that require explosive changes of direction are chaotic in nature!

Reactive Agility
• Agility is a rapid whole body movement with change in velocity or direction in response to a stimulus.

What is missing?
Reactive Training

- The purpose of reaction training is to stimulate mental processing speed.
  - Reaction time is a precursor to quickness.
  - Athlete must first identify the need to react.
- Reaction With a Correct Action is Most Important
  - Process the information
  - Send the Correct Sequence
  - Execute The Proper Movement

Can response time be improved?

- Abilities-genetic
- Capabilities-characteristics that are changeable as a result of practice
- Skills- capabilities that are developed as result of practice

*By improving either RT or MT an athlete has a greater likelihood of improving performance.*

Program Design

- Peak - Specific movement patterns at game speeds.
- Development – Movement combinations, effective transitions
- Base – Fundamental movement patterns (Acceleration gait, max speed gait, cross-step, drop-step, side-shuffle, track, back-pedal, hop-step, jumping)

Jeffreys, 2008
Discrete-Serial-Continuous Skill Dimension

<table>
<thead>
<tr>
<th>Discrete Skills</th>
<th>Serial Skills</th>
<th>Continuous Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Well-defined with a clear beginning and end</em></td>
<td><em>A group of discrete skills strung together to make a new and complex movement</em></td>
<td><em>No obvious beginning or end</em></td>
</tr>
<tr>
<td><em>Cyclical in nature</em></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Open-Closed Skill Dimension

<table>
<thead>
<tr>
<th>Closed Skills</th>
<th>Open Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Predictable</em></td>
<td><em>Un-Predictable</em></td>
</tr>
<tr>
<td><em>Pre-programmed</em></td>
<td><em>Non-programmed</em></td>
</tr>
<tr>
<td><em>Proprioceptive</em></td>
<td><em>Proprioceptive and Exteroceptive</em></td>
</tr>
<tr>
<td>Semi-predictable Environment</td>
<td></td>
</tr>
</tbody>
</table>

Motor-Cognitive Skill Dimension

<table>
<thead>
<tr>
<th>Motor Skills</th>
<th>Cognitive Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Decision making minimized and motor control maximized</em></td>
<td><em>Decision making maximized and motor control minimized</em></td>
</tr>
<tr>
<td><em>Some decision making and motor control</em></td>
<td></td>
</tr>
</tbody>
</table>

Training Considerations

- Movement Mechanics
  - Upper and Lower body
- Impulse
  - the product of a force and the time interval over which the force acts
- Power
  - the ability to convert an Eccentric Load into a Concentric Action (activating the SSC) as rapidly as possible

- Fitness Level
  - Novice
  - Advanced
- Age
  - Chronological
  - Physiological
- Number of Stimuli
  - Simple RT
  - Choice RT
  - Recognition RT
- Anticipation
  - Spatial
  - Temporal
Constructing the Program

• Speed and Agility Only
  • 10-15 minutes movement preparation
    • Includes both general and specific warm-up
  • Fundamental movement skills/drills
  • 10-20 minutes Sport Specific Movement Drills and Complex Reaction Drills.
  • 5-10 minutes Conditioning Games

Reactive Training Drills
Hands-on/Demonstration

Training Volume Guidelines

<table>
<thead>
<tr>
<th>Training Level</th>
<th>Fundamental Movement Skills/Drills (# sets)</th>
<th>Sport-Specific Movement Drills/Complex Reaction Drills (# sets)</th>
<th>Conditioning Games</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginner(AO)</td>
<td>15-20</td>
<td>8-10</td>
<td>4-5 minutes</td>
</tr>
<tr>
<td>Beginner(RTr)</td>
<td>4-6</td>
<td>2-4</td>
<td></td>
</tr>
<tr>
<td>Intermediate(AO)</td>
<td>8-10</td>
<td>14-16</td>
<td>5-10 minutes</td>
</tr>
<tr>
<td>Intermediate(RTr)</td>
<td>4-6</td>
<td>2-4</td>
<td></td>
</tr>
<tr>
<td>Advanced(AO)</td>
<td>4-6</td>
<td>20-22</td>
<td>5-10 minutes</td>
</tr>
<tr>
<td>Advanced(RTr)</td>
<td></td>
<td>6-8</td>
<td></td>
</tr>
</tbody>
</table>

*AO = Agility Only
*RTr = Resistance Training Day
Work to Rest - 1:3-1:30


Thank You

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