Foundations of Youth Athletic Development

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Athletic Development

- Speed
- Agility
- Power
- Stamina
- Robustness

Strength

Fundamental Movement Skills
Why do youths need strength training?

- Health benefits
- Performance benefits – all sports require motor control under conditions of loading and force production
- Injury risk reduction – Correctly managing movement and loading can reduce injury risk
- Is strength training for kids safe? **YES!**
  (see Lloyd et al., 2014, Position Statement on Youth Resistance Training)
- Remember we also need progression!!!

Warm-up Programmes

Low dose, high frequency

Prevent Injury Enhance Performance

http://smsmf.org/smsf-programs/pep-program

FIFA 11+ & FIFA11+ Kids

http://f-marc.com/11plus/11plus/
### Prevent Injury Enhance Performance

<table>
<thead>
<tr>
<th>Phase</th>
<th>Exercise</th>
<th>Duration</th>
<th>min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warm-up</td>
<td>Jogging</td>
<td>30 s</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>Shuttle run</td>
<td>30 s</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>Backward run</td>
<td>30 s</td>
<td>1.5</td>
</tr>
<tr>
<td>Strength</td>
<td>Walking lunges</td>
<td>30 s (30 s rest)</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>Nordic hamstrings</td>
<td>30 s (30 s rest)</td>
<td>3.5</td>
</tr>
<tr>
<td></td>
<td>Single toe (calf raises)</td>
<td>30 s (30 s rest)</td>
<td>4.5</td>
</tr>
<tr>
<td>Plyometrics</td>
<td>Lateral hops</td>
<td>30 s</td>
<td>5.0</td>
</tr>
<tr>
<td></td>
<td>Forwards/backwards hops</td>
<td>30 s</td>
<td>5.5</td>
</tr>
<tr>
<td></td>
<td>Single leg hops</td>
<td>30 s</td>
<td>6.0</td>
</tr>
<tr>
<td></td>
<td>Vertical jumps</td>
<td>30 s</td>
<td>6.5</td>
</tr>
<tr>
<td></td>
<td>Scissor jumps</td>
<td>30 s</td>
<td>7.0</td>
</tr>
<tr>
<td>Agility</td>
<td>3-step deceleration</td>
<td>1 min</td>
<td>8.0</td>
</tr>
<tr>
<td></td>
<td>Lateral diagonal runs</td>
<td>1 min</td>
<td>9.0</td>
</tr>
<tr>
<td></td>
<td>Bounding run</td>
<td>1 min</td>
<td>10.0</td>
</tr>
</tbody>
</table>

### FIFA 11+

- **Phase 1** = Running, change of direction, jumping
- **Phase 2** = Strengthening, plyometrics, balance
- **Phase 3** = Running, bounding, cutting
We suggest that programmes to improve strength, awareness, and neuromuscular control of static and dynamic movements should be implemented as soon as children start playing organised football.
Growth and Maturation

Growth Rate (cm/yr) vs Age (years)

- Peak Height velocity
- End of childhood and start of adolescence
- End of adolescence and start of adulthood

Fundamental Movement skills
Specialised Movement skills

Absolute Strength
Training Prescription and Progression

- Growth and maturation (and training age) inform strength training prescription and expected adaptations for youths

But

- Technical competency is what drives training prescription and progression
Technical Competency

• Ensures desirable movement patterns are established while challenging the neuromuscular systems

• Provides coaching and assessment focus
  – Movement posture
  – Body alignment
  – Segment sequencing

• Provides a tool for progression – e.g. when to increase complexity, speed of movement and/or loading

• Provides a way to identify complimentary/corrective exercises

What does technical competency look like?

(Myer et al., 2014)
What does technical competency look like?
What does technical competency look like?

- Can athlete find position?
  - Yes
  - No
- Can athlete hold position
  - Yes
  - No
- Can athlete repeatedly move in and out of position?
  - Yes
  - No

Does coaching/cueing resolve issue?

- Yes
- No

Progress Exercise
- e.g. add loading, Increase complexity

Introduce corrective exercises

Regress Exercise
- e.g. reduce loading, Decrease complexity

How to Progress/Regress

- Manipulate the demands of the tasks (constraints)
  - Complexity: Simple, Moderate, Complex
  - Resistance: Assisted, Body Weight, External loading
  - Movement: Static, Dynamic – Concentric, Dynamic - Eccentric

- Use corrective/complimentary drills to assist progression/regression
Multiple Progression

- Complexity: Squat, Front Squat, Overhead Squat, Single Leg Squat
- Resistance: Assisted, Body Mass, +50% Body Mass, +75% Body Mass
- Movement: Static, Eccentric – Concentric, Eccentric focus, Dynamic - Explosive

Assessing Technical Competency

- Formal assessment versus coaching
- Established protocols exist:
  - Resistance Skills Test Battery
    http://links.lww.com/JSCR/A6
  - Movement Competency Screen
    http://www.movementcompetencyscreen.com/
  - The Back Squat Assessment
    http://tinyurl.com/q74md4d
- It may be more appropriate to develop your own screen based on your needs
Assessing Technical Competency

• Task: In small groups complete the back squat assessment screen

• Consider how consistent scoring is between different raters

• Consider what cues and corrective exercises might help correct deficits

• For those who are competent at a back squat try progressing the task to an overhead or single leg squat

Corrective/Complimentary Exercises

The Back Squat: Targeted Training Techniques to Correct Functional Deficits and Technical Factors That Limit Performance
Corrective/Complimentary Exercises

- Start Position: Stand, weight on ball of foot.
  - Arms out at 90 degrees relaxed.
  - Back straight.
  - Hips squared.
  - Midfoot/forefoot.
  - Weight in middle of foot.

- Lowering: Hips drift back as shoulders move backwards.
  - Lower back remains flat with weight.
  - Knees stay at 90 degrees.
  - Eyes stay in contact.
  - Weight towards heels.

- Bottom: Lift bottom when upright with no longer retract back without flexing.
  - Staying balanced by maintaining painted or bending knees.
  - Back flat with head up.
  - Weight on heels with knees at 90 degrees.
  - Arms straight.

- Return: Stand to return to start position.
  - Shoulders互联网 at top.
  - Weight in middle of foot.
<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>Unable to perform movement</td>
</tr>
<tr>
<td>Level 2</td>
<td>Regular occurrence of two or more issues</td>
</tr>
<tr>
<td>Level 3</td>
<td>Irregular occurrence of two or more issues</td>
</tr>
<tr>
<td>Level 4</td>
<td>Irregular occurrence of a single issue</td>
</tr>
<tr>
<td>Level 5</td>
<td>Perfect technique for 3 x 10 repetitions</td>
</tr>
</tbody>
</table>

### Scoring system

**Lose Of Posture**
- Player rounds spine or shoulders to lose neutral spine position.

**Bar Loos Contact With Body**
- Bar comes away from legs at any point of the lift.
- Result of shoulders rounding, knees locking, backwards or weight moving onto back.

**Arms Bend**
- The arms bend, either from not releasing or pulling the bar into the body.

**Knee Bend Increases**
- Knee bend during any stage of the lift.
- Often a result of weak hamstrings or not wanting to feel strain.
- Initial stiffness in knees is fine, but can’t increase.

**Weight Off Toes**
- Weight shifts forward onto toes.
- Can mean knee lift up, but won’t always happen.

**Shoulders Round Off**
- Shoulders drop forward as a result of not pulling bar in or losing posture.