Promoting Fundamental Motor Skill Development in the Early Years

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2016 Pennington Biomedical Research Center Childhood Obesity & Public Health Conference
“Mountain of Motor Development”

Context-Specific Motor Skills Period
7-11 years

Fundamental Motor Skills Period
1 to 7 years

Pre-adapted Motor Patterns Period
2 wks to 1 year

Reflexive Period
3rd gestational mo to 2 wks

Skillfullness

Clark, 1994; Clark & Metcalfe, 2002
Fundamental Motor Skills (FMS)

- “Building blocks” for more advanced movements
- Gross motor skills
  - Locomotor
  - Object Control
  - Balance
- Diverse motor repertoire

Clark, 1994
Fundamental Motor Skills

- do not “naturally emerge” (Logan et al., 2011)
- must be “taught, practiced, and reinforced” (Robinson & Goodway, 2009)
“Mountain of Motor Development”

Context-Specific Motor Skills Period
7-11 years

Fundamental Motor Skills Period
1 to 7 years

“Proficiency Barrier”
Seefeldt (1980)

Skillfullness

Clark, 1994; Clark & Metcalfe, 2002
• “... a confident and competent mover will be an active mover.”

Clark, 1995, p. 44
Physical Activity

Motor Skills
Developmental Mechanisms Influencing Physical Activity Trajectories of Children

Stodden et al., 2008
Preschool Project SKILL

- \( N = 77 \) preschoolers
  - \( \text{INT} \ n = 39 \)
  - \( \text{CON} \ n = 38 \)
- 9-week intervention
- 2, 30-min sessions
  - totaling 540 minutes
- System for Observing Fitness Instruction Time

Robinson, Webster, & Logan, in review
Preschool Project SKILL

<table>
<thead>
<tr>
<th>Activity</th>
<th>Low Autonomy</th>
<th>MMC (High Autonomy)</th>
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</thead>
<tbody>
<tr>
<td>Lying</td>
<td></td>
<td></td>
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<tr>
<td>Sitting</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Standing</td>
<td>†</td>
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<tr>
<td>Walking</td>
<td>*</td>
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<tr>
<td>Vigorous</td>
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<tr>
<td>MVPA</td>
<td>*</td>
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</tbody>
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* = p < .05 ; † = p < .001

Robinson, Webster, & Logan, in review
Classroom-based activity breaks

- $N = 118$ preschoolers
- Within subjects
- Teacher-implemented 10 minute activity breaks
  - Accelerometry
  - Academic time on-task
  - FMS competence
  - weight status

Webster, Wadsworth, & Robinson, 2015
Classroom-based activity breaks

• Locomotor skills*
• Increased MVPA during the breaks
• Improved time on-task
• Weight – no influence

• Increase FMS knowledge

Webster, Wadsworth, & Robinson, 2015; Webster, Robinson, & Wadsworth, in review
Relationship Between Fundamental Motor Skill Competence and Physical Activity During Childhood and Adolescence: A Systematic Review

Samuel W. Logan, E. Kipling Webster, Nancy Getchell, Karin A. Pfeiffer, and Leah E. Robinson
Adolescence and Adulthood

Middle Childhood

Low to moderate correlations

(Houwen, Hartman, & Visscher, 2008; Hume et al., 2008; Lopes et al., 2011; Morgan, Okely, Cliff, Jones, & Burr, 2008; Raudeseep & Pall 2006; Reed, Metzker, & Phillips, 2004; Ziviani, Poulsen, & Hansen, 2009).

Longitudinal

(Barnett et al., 2009; McKenzie et al., 2002)

Early Childhood

Low to moderate correlations

(Cliff, Okely, Smith, & McKeen, 2009; Sääkslahti et al., 1999; Williams et al., 2008)

Adolescence and Adulthood

Low to moderate correlations

(Jaakkola et al., 2009; Okely et al., 2001)
Systematic Review

- The most physically active children are also the most skilled

- Preschool
  (Fisher et al., 2005; Kambas et al., 2012; Robinson, Wadsworth, & Peoples 2012; Williams et al., 2008)

- Elementary school-age
  (Bouffard, Watkinson, Thompson, Dunn, & Romanow, 1996; Graf et al., 2004; Hume et al., 2008; Wrotniak, Epstein, Dorn, Jones, & Kondilis, 2006)

- Adolescence
  (Okely, Booth, & Patterson, 2001)
Pictorial Scale of Perceived Movement Competence

Barnett, Robinson, Webster, Salmon, & Ridgers, 2015; Robinson, Webster, & Barnett, in prep
Systematic Review

- Mixed results related to gender and the relationship between FMS and PA
  - **Stronger for boys than girls** (Cliff et al., 2009; Hume et al., 2008; Sääkslahti et al., 1999; Williams et al., 2008)
  - **Stronger for girls than boys** (Okely, Booth, & Patterson, 2001)
  - **No gender differences** (Fisher et al., 2005; Morgan et al., 2008)
  - **Negative correlations for girls** (Cliff, Okely, Smith, & McKeen, 2009; Reed, Metzker, & Phillips 2004; Ziviani, Poulsen, & Hansen 2009)

- Girls are more proficient in locomotor skills
- Boys are more proficient in object control skills
Take home

• Higher competence in FMS is related to higher physical activity levels
• Early childhood education centers should implement “planned” movement programs to promote skill development
• Parental involvement is encouraged for FMS development