Hockey Alberta
Skill Development and Learning--Youth
Rob Weddell M.Ed., BPE, RN1

Outline
1) Defining motor learning
2) Culture for learning
3) Growth & Development considerations for motor learning and performance

What is Motor Learning?
How do we know a skill has been learned?

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What is Motor Learning?
How do we know a skill has been learned?
Three elements are critical to almost every skill:

“READ” “PLAN” “DO”

What are some examples of hockey practice activities structure to train the “Read & Plan”? 

High-Tech Vision Training of Tennessee / Edgar Martinez / Mariners
https://www.youtube.com/watch?v=Br_mc-kwmHU
### Stages of Motor Learning: Teaching Support

<table>
<thead>
<tr>
<th><strong>Cognitive Phase:</strong></th>
<th><strong>Associative Phase:</strong></th>
<th><strong>Autonomous Phase:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-talk</td>
<td>more effective and efficient movement</td>
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<td>Inconsistent Motor Plan</td>
<td>Engaged problem solving</td>
<td>Performs skill in many different settings</td>
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<tr>
<td>Tentative &amp; uncoordinated movement.</td>
<td>Ability to detect errors</td>
<td>Accurate self assessment and error detection</td>
</tr>
<tr>
<td>Teaching Keys:</td>
<td></td>
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</tr>
<tr>
<td>Establish Teaching Cues</td>
<td>Reduce Feedback (ask Q’s)</td>
<td>Increase challenges</td>
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<td>Reinforce “correct” movement/ positive feedback</td>
<td>Provide progressive challenges with success</td>
<td>Motivation (improvements at this stage are small)</td>
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#### Cognitive Phase:
- Self-talk
- Inconsistent Motor Plan
- Tentative & uncoordinated movement.

#### Teaching Keys:
- Establish Teaching Cues
- Reinforce “correct” movement/ positive feedback

#### Associative Phase:
- Motor Program developed
- More effective and efficient movement
- Engaged problem solving
- Ability to detect errors

#### Teacher Keys:
- Reinforce Teaching Cues and proper form
- Reduce Feedback (ask Q’s)
- Provide progressive challenges with success

#### Autonomous Phase:
- Expert performance.
- Automatic and effortless
- Performs skill in many different settings
- Accurate self assessment and error detection

Teacher Keys:
- Increase challenges
- Motivation (improvements at this stage are small)
Culture For Learning:

To **Learn** you need **Participation**

- 70% of kids drop out of sports before their high school graduation.
- Only 15% leave because they feel they are not good enough.
- Almost 70% leave because they were not having fun, or due to problems with the coach.
- Injuries cause 30% to give up sports.

Research from University of Florida

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**Physical literacy** is the...
Confidence and Learning

- What builds confidence?
- How does your planning influence player confidence?
  - Practice structure
  - Game day

Personal Confidence in a Team Game

Motivation to Learn Skills & Growth Mindset

"Failure is an opportunity to grow."  
"Challenges help me to grow."  
"I can learn to do anything I want."  
"I am good at it and the rest will come."  
"Feedback is essential."  
"If I don’t succeed, I don’t give up."  
"I like to try new things."  

"Failure is the limit of my abilities."  
"I can’t do it."  
"It’s not possible for me."  
"I am not good at it."  
"My potential is predetermined."  
"When I’m frustrated, I give up."  
"I don’t know what I can do."  
"I don’t try new things."  

Developing a Growth Mindset is a core life skill.  
BY KERRYN KOHL ON FEBRUARY 20, 2017  
https://www.talenttalks.net/developing-growth-mindset-core-life-skill/
Growth & Development considerations for motor learning and performance

Deliberate Practice =
- purposeful structured activity
- the motivation is to achieve a specific goal to improve

Deliberate Play =
- Designed to maximize fun
- intrinsically motivating

Contextual Interference (depress performance)

Elaboration Hypothesis
- Discover distinctiveness among skills

Forgetting Hypothesis
- Generate the solution on every trial

Retrieval practice
- Repeated retrieving of movements (long term memory)
Block Practice

<table>
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<tr>
<th>Block Practice</th>
<th>Variable Practice</th>
<th>Random Practice</th>
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<tr>
<td>a) 4x4=</td>
<td>a) 4x1=</td>
<td>a) 4x4=</td>
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<td>b) 4x4=</td>
<td>b) 4x2=</td>
<td>b) How many sides does a triangle have?</td>
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<tr>
<td>c) 4x4=</td>
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<td>c) 4x3=</td>
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G & D considerations for motor learning and performance

Performance =
Physical Work Capacity
(endurance, speed, strength, coordination, and flexibility)

+ Exploitation Capability
(skills, technique, and tactics)

Dr. Chris Brooks, University of Florida. The Science of Training Youth [https://www.coursera.org/learn/youth-sports/hom4g]

Hockey skill practice examples?

HOCKEY CANADA, LTPD

LEARN TO PLAY: MALE 9 - 10 and FEMALE 8 - 9
- best opportunity to learn and begin to master fine motor skills
- begin to transfer skills and concepts from practices to games.

LEARN TO TRAIN: MALE 11 - 12 and FEMALE 10 - 11
- most significant period for development
- window of accelerated adaptation to motor coordination.

TRAIN TO TRAIN: MALE 12 - 16 and FEMALE 11 - 15
- building an aerobic base, developing speed and strength and further developing and consolidating sport specific technical skills
Applications for the Pee Wee Hockey Player

**Stamina**
- Entering a sensitive period for aerobic capacity (before PHV)
- Progressive training of aerobic power as growth decelerates

**Suppleness (flexibility)**
- Sensitive period during childhood
- Note stress on muscles, ligaments and tendons during growth spurts.

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**Strength**
- Youth can benefit from resistance training
- Resistance training needs to be supervised by a certified trainer.

Focus on:
- Fundamental movements skills (run, jump, hop, skip, leap, LAND, & squat, lunge, pull, press, plank)
- Posture & form
- Progressions
- Appropriate activities- FUN

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**Sensitivity Periods**

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<th>MALES</th>
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<tr>
<td>FLEXIBILITY</td>
<td>5-10</td>
<td>6-10</td>
</tr>
<tr>
<td>SPEED 1</td>
<td>6-9</td>
<td>7-9</td>
</tr>
<tr>
<td>MOVEMENT SKILLS</td>
<td>8-11</td>
<td>9-12</td>
</tr>
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<td>AEROBIC ENDURANCE</td>
<td>10-13</td>
<td>13-16</td>
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Applications for the Pee Wee Hockey Player

**Speed**

Kevin Neeld, Long-Term Athletic Development Applications to Speed Training

#1 – With kids younger than 12, focus on the 3 E’s: Exposure, Engagement, and Enjoyment.

#2 – During periods of rapid growth (typically starting around age 12), slow things down to speed things up.

#3 – When height changes start to stabilize (i.e. slower changes, starting around age 16), start to ramp up training intensity.

Kevin Neeld, Long-Term Athletic Development Applications to Speed Training

Applications for the Pee Wee Hockey Player

**Skill**

- By the age of 8, the brain of children is 90 to 95% fully developed.
- Coordination improves as the nervous system (NS) matures.
  - NS developed by age 12 — coordination skills should be fully developed
  - sensory input by the vestibular, the visual and the proprioceptive systems continue to develop (15 to 16 years of age) - some effect on coordination ability
- Kinesthetic sense increases by almost 75% between the age of 10 and 11 years alone
- By 9 to 11 years, reaction time, rhythm capabilities and balance are almost fully developed.
- By age 11-12 children can become very efficient in their interception skills.

“Superior performance of early maturing children is due in a large part to their physical size and not necessarily because they have superior talent.” (Dr. Brook, University of Florida)

Learning to Train Stage’s Growth and Development

Considerations For PE (approx. ages 8-12)

**General**

- Children at this age have a high degree of imagination, being active is very important; they like to work, learn, and accomplish things
- They want to act on their own, do not like conventions or norms, accept the teacher as the leader but want to be involved establishing the rules and conditions governing the activity
- Still needs well established routines in daily activities
- Athletic or competitive backgrounds vary greatly with each student.
- Interests in sport activities is often high
- Participation is sports is often influenced by friends participation
Suggestions for Appropriate Activities
✓ Sport skills development focus
✓ Establish guidelines for acceptable behaviour, and act in a constant and predictable manner; however accept each child unconditionally.
✓ Modified scaled down equipment should be used; set up competitive games where ability levels are matched.
✓ Demonstrations should be highly specific, simple and aimed at the achievement of a well-defined objective.
✓ Duration of activities should be relatively short and exercise should change frequently.

Suggestions for Appropriate Activity Focus
✓ Praise child frequently; Feedback should focus on one point (choose the most important one).
✓ Emphasize the following:
  ✓ development of confidence,
  ✓ self-esteem,
  ✓ peer interaction,
  ✓ cooperation,
  ✓ having FUN,
  ✓ putting winning and losing into perspective and focusing on effort.

Activities should be adapted to encourage interaction between students, allow the student to demonstrate progress that he/ she has made and be balanced with challenge and success.
Summary

- Kevin Neeld, Long-Term Athletic Development Applications to Speed Training
- Dr. Chris Brooks, University of Florida. The Science of Training Youth
  [https://www.coursera.org/learn/youth-sports/home/info]
- Mike Bracko, Myths and Facts about youth Training.
- Canada Sports 4 life. [https://sportforlife.ca/quality-sport/long-term-athlete-development/]

References