Athlete Today and Active Forever: The Importance of Physical Literacy in Childhood

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Disclosures

• I have nothing to disclose.

Introduction

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- Coach, Northeast Huskies Youth Hockey & WAM United Soccer Club
- K-1 Teacher, Religious Education
- Mom: Jack (9), Will (7), and Luke (5)







Objectives

- 1. Introduce the topic of physical literacy
- 2. Demonstrate the connection between physical literacy and public health
- 3. Discuss possible solutions

In the same way that you need READING LITERACY to succeed in school, you need PHYSICAL LITERACY to be physically active in life.



Physical Literacy CAN Positively Affect:



How do we measure physical literacy?

Ability























How do we measure physical literacy?

Confidence PLAYself

Physical Literacy Assessment for Youth

Gender: M F Age: _____

Your Name

I am most active in (check all that apply): O summer O winter O active in both

How good are you at doing sports and activities?	Never tried	Not so good	OK	Very good	Excellent
1. In the gym?					
2. In and on the water?					
3. On the ice?					
4. On snow?					
5. Outdoors?					
6. On the playground?					
What do you think about doing sports and activities?		Not true at all	Not usually true	True	Very true
7. It doesn't take me long to learn new skills, sports or activities					
8. I think I have enough skills to participate in all the sports and activities I	want				
9. I think being active is important for my health and well-being					
10. I think being active makes me happier					
11. I think I can take part in any sport/physical activity that I choose					
12. My body allows me to participate in any activity I choose					
13. I worry about trying a new sport or activity					
14. I understand the words that coaches and PE teachers use					
15. I'm confident when doing physical activities					
16. I can't wait to try new activities or sports					
17. I'm usually the best in my class at doing an activity					

Preliminary Data**

236-247 children

- 100 males, 127 females
- Elementary school (grades K-4)
- Middle school (grades 5-8)
- Heterogeneous sample



Locomotor

Balance

Object Control: Upper Extremity

Object Control: Lower Extremity





Running

PLAYfun Assessment



Evaluates competency / ABILITY

Level	Score
Proficient	76-100
COMPETENT	51-75
Emerging	26-50
Initial	1-25

Competence

 "Competence" was defined as individuals who scored *over 50* on the 100-point scale.



Confidence

PLAYself

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Confidence

• "I am confident when doing physical activities"

- 30% of elementary school children
- 38% of middle school children (47% boys, 30% girls)

"I can't wait to try new physical activities"

- 31% elementary school children
- 33% middle school children



Window of Motor Development Ends at 12



Physical Literacy





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Relationship between PL & PA

Summary of 2016 Report Card Indicators and Grades

INDICATOR	DEFINITION	DATA SOURCE*	PREVALENCE	GRADE	Improve
Overall Physical Activity	The proportion of U.S. children and youth attaining 60 or more minutes of moderate-to- vigorous activity on at least 5 days per week.	2005-06 NHANES	6-11 y: 43% 12-15 y: 8% 16-19 y: 5%	D-	Physical Literacy
Sedentary Behaviors	The proportion of U.S. youth engaging in 2 hours or less of screen time per day.	2013-14 NHANES	6-11 y: 47% 12-15 y: 39% 16-19 y: 31%	D-	Increase
Active Transportation	The percentage of U.S. children and youth who usually walk or bike to school.	2009 NHTS	5-14 y: 13%	F	Physical Activity
Organized Sport Participation	The proportion of U.S. high school students participating on at least 1 school or community sports team.	2015 YRB\$\$	Boys: 62% Girls: 53%	C-	Docroaso
	1.0				Obesity



World Health Organization, 2018



1961

Is this the shape of things to come?

It can be—with modern conveniences and push buttons. Easy living is sapping the strength and vitality of our children. One-third of them of school age can't pass minimum physical achievement tests.

Urge your school to offer at least 15 minutes of daily, vigorous activity. This can bring our nation's youth up to sound physical standards.

For a free booklet to help you evaluate the youth fitness program of your school, just write: President's Council on Physical Fitness, Washington 25, D.C.



"I failed history again. I guess those who don't learn from history are doomed to repeat it."

George Santayana

U.S. OFFICIAL PHYSICAL FITNESS PROGRAM





A fitness program for all that takes only a few minutes a day

THE PRESIDENT'S COUNCIL ON PHYSICAL FITNESS

"We do not want a nation of spectators. We want a nation of participants in this vigorous life " -President John F. Kennedy 2/21/61

What is the evidence?

Physical Literacy



Improves Public Health

Injury Sequelae







Injury Sequelae



Injury Prevention





What modifiable risk factors predict injury risk?

- 4 year trial at 3 U.S. service academies
- 5758 participants
- 4-year follow-up for incident injury





Landing Error Scoring System (LESS)

- Developed to identify high risk individuals for ACL injury
- 17 item checklist of movement impairments (yes/no)

Initial Contact

- Knee flexion
- Knee valgus
- Hip flexion
- Trunk flexion
- Lateral trunk flexion •
- Toe in & Toe out
- Stance width
- Ankle plantarflexion

Displacement

- Knee flexion
- Knee valgus
- Hip flexion
- Trunk flexion
 - Overall sagittal

Overall impression





_ Total Score = 0 to 17

Padua et al, AJSM, 2009





ACL Injury (n=117)

- Hip ADDuction
- Tibia Internal Rotation



Padua et al, NATA, 2012

Stress Fracture (n=94)

- **V** Knee & Hip Flexion
- Knee valgus
- Tibia Internal Rotation
- rate by 15% for every 1 unit increase in LESS score (RR = 1.15)
- Flat Foot / Heel Landing (RR = 2.3)
- Asymmetrical Landing (RR = 2.5)



Cameron et al, NATA, 2013

Patellofemoral Pain (n=188) (*Boling, 2009*)

- Hip External Rotation
- Quadriceps & Hamstring Strength



Boling et al, AJSM, 2009 Boling et al, NATA, 2013

Bottom Line: How You Move!



Movement quality (LESS) prediction of **ACL injury** during a jumplanding task in <u>youth soccer athletes</u>



LESS Score & ACL Injury: Youth Soccer



Overall 1-year risk of ACL injury = 0.58% (95% CI: 0.23%, 1.18%)

1-season risk difference between LESS score of ≥5 vs. <5 = +1.24% (95%CI: 0.12, 2.36; *p*=0.0103)

Risk ratio for a LESS score of 5+ vs. <5 = 10.7

Effect of maturation for girls



DiStefano, 2007



Injury risk or developmental deficiency?



Injury risk or developmental deficiency?







Injury Sequelae



Physical Literacy = Public Health



ACTIVE KIDS DO BETTER IN LIFE WHAT THE RESEARCH SHOWS ON THE COMPOUNDING BENEFITS



EARLY CHILDHOOD

ADOLESCENCE

How do we improve?

40

Physical Literacy



How we improve PHYSICAL literacy

ATHLETICISM

- Fundamental movement skills (e.g., throwing, skipping, running, jumping)
- Healthy

SPORT SAMPLING

- Cross-over skills
- Game-sense

MOTIVATION

- Fun
- Exploration of novel tasks

SELF-PERCEPTION

- Ability to learn
- Support





KID S SHOULD FOLLOW ROGERS PATH, NOT TIGER'S



But Tiger Woods "made it"







Need to Identify & Improve

- Identify *individual* athletes that are not physically literate
- Identify consistent areas of weakness within a *team / grade level*
- Promote development of physical literacy throughout the organization / school

Improving movement quality during training preparation can ENHANCE PERFORMANCE and PLAYER DURABILITY.





Neuromuscular Training Interventions

- **30-85%** reduction in injuries (*Soligard, 2008; Labella, 2011; Aaltonen, 2007; Emery, 2010*)
 - Youth/HS Female Soccer (Walden et al., 2012; Labella et al., 2012; Soligard et al., 2008; Mandelbaum et al., 2005)
 - Youth/HS Male Basketball (Longo et al., 2012)

What is in a *Neuromuscular / Preventive Training Program*?

- Exercise-based program
- Multi-faceted program consists of:
 - Plyometric -Strengthening
 - Balance -Flexibility
 - Agility
- Emphasize high movement quality











Dynamic Warm-up/Injury Prevention Program



TIPS



- Play many sports/activities as a child
- Do NOT specialize prior to puberty
- Age-Hour Rule
- Keep activities FUN and POSITIVE
- Integrate fundamental skills in warm-up activities and CLASSROOM BASED ACTIVITIES
- Grow the athlete, not the [hockey] player



2,000 Olympic athletes: Avg. 3 sports/year < 15 y/o



Change Perceptions





let them PI AY let them HAVE FUN let them FΔI let them LEARN let them SUCCEED let them **BE KIDS** admkids.com

Conclusion

Conclusion



Acknowledgements





Thank you! Lindsay.distefano@uconn.edu