

University of Windsor

## Scholarship at UWindsor

---

Relative Age Effects: An International  
Conference

Conference Schedule

---

Oct 17th, 11:30 AM - 12:00 PM

### Mechanisms of Relative Age Effects

David Hancock

*Indiana University Kokomo*, dahancoc@iuk.edu

Follow this and additional works at: <https://scholar.uwindsor.ca/rae-conference>

---

Hancock, David, "Mechanisms of Relative Age Effects" (2018). *Relative Age Effects: An International Conference*. 9.

<https://scholar.uwindsor.ca/rae-conference/rae-theme/Schedule/9>

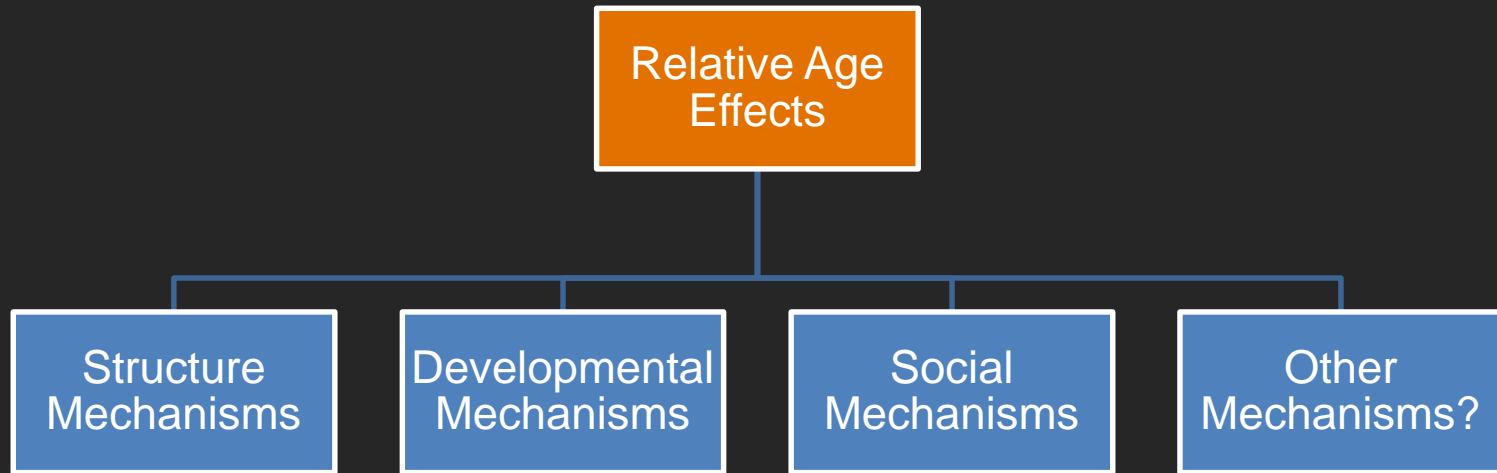
This Event is brought to you for free and open access by the Conferences and Conference Proceedings at Scholarship at UWindsor. It has been accepted for inclusion in Relative Age Effects: An International Conference by an authorized administrator of Scholarship at UWindsor. For more information, please contact [scholarship@uwindsor.ca](mailto:scholarship@uwindsor.ca).



# Mechanisms of Relative Age Effects

David J. Hancock

# RAEs: Why Do They Happen?



# 1. Sport Structure Mechanisms

# Age Bands

- Governing bodies have to group children together somehow

2011

January	February	March	April
M T W T F S S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	M T W T F S S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	M T W T F S S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	M T W T F S S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
May	June	July	August
M T W T F S S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	M T W T F S S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	M T W T F S S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	M T W T F S S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
September	October	November	December
M T W T F S S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	M T W T F S S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	M T W T F S S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	M T W T F S S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Up to 364 days difference!

2012

January	February	March	April
M T W T F S S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	M T W T F S S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	M T W T F S S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	M T W T F S S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
May	June	July	August
M T W T F S S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	M T W T F S S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	M T W T F S S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	M T W T F S S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
September	October	November	December
M T W T F S S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	M T W T F S S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	M T W T F S S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	M T W T F S S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Up to 730 days difference!  
(leap year)



# Age Bands

- Governing bodies have to group children together somehow
- On January 1, 2018...

- Child born January 1, 2011 is 2557 days old

- Child born December 31, 2011 is 2193 days old

← Only been alive  
85.7% as long  
as first child!

That's the equivalent of a 40- vs. 34-year-old, or 21- vs. 18-year-old

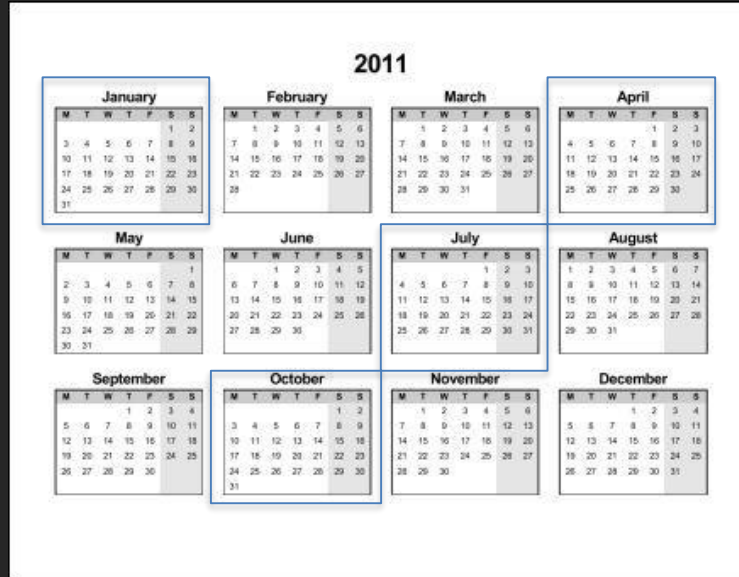


# Age Bands

- Can we avoid it?



- Challenges for governing bodies...

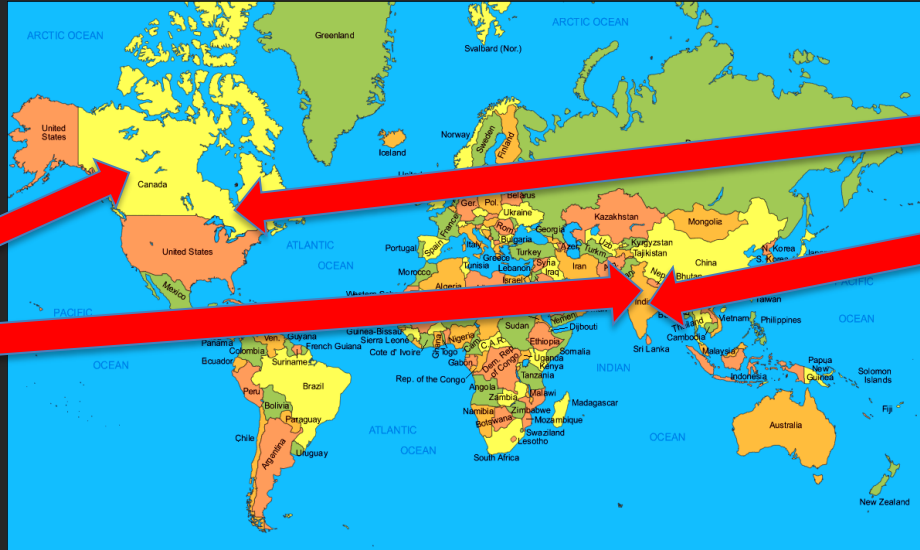


*Andronikos et al., 2016; Hurley et al., 2001*



# Depth of Competition

- Different sports have different meanings in different locations



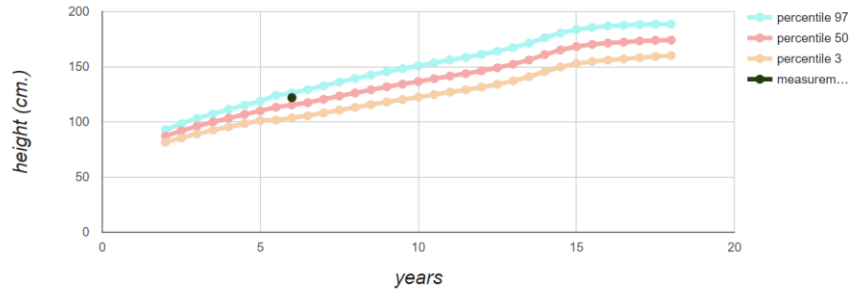
*Musch & Grondin, 2001*





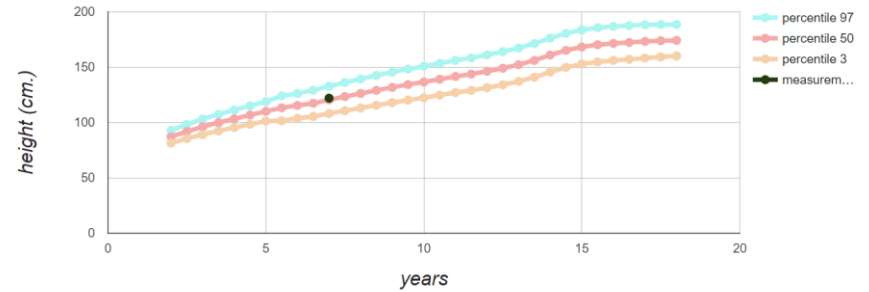
## **2. Developmental Mechanisms**

### height (boys)



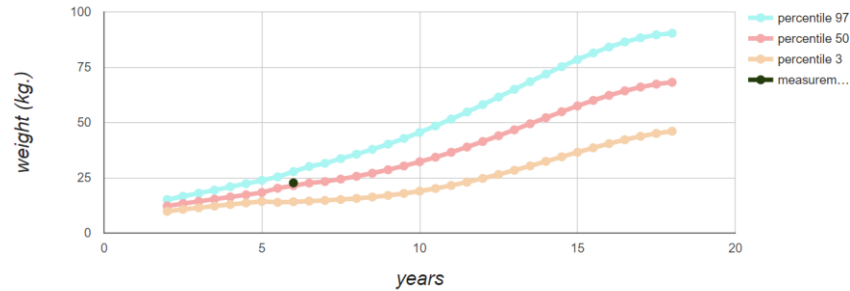
The child's percentile is **86.4**, i.e., his/her height is a little bit bigger than the height of most of the children his/her age.  
Calculations done using data from the [World Health Organization](#).

### height (boys)



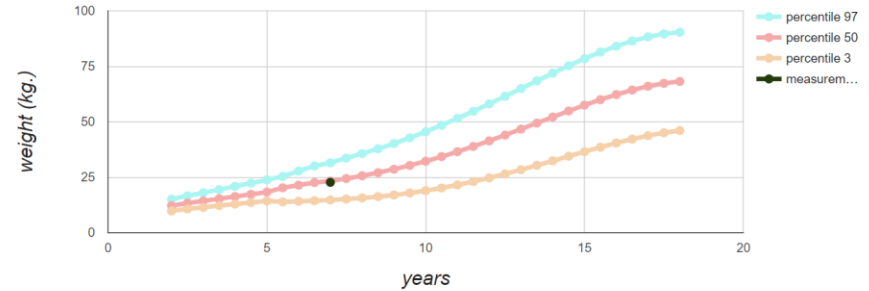
The child's percentile is **57.9**, i.e., his/her height is similar to the height of most of the children his/her age.  
Calculations done using data from the [World Health Organization](#).

### weight (boys)



The child's percentile is **65.5**, i.e., his/her weight is similar to the weight of most of the children his/her age.  
Calculations done using data from the [World Health Organization](#).

### weight (boys)



The child's percentile is **46**, i.e., his/her weight is similar to the weight of most of the children his/her age.  
Calculations done using data from the [World Health Organization](#).



# Growth

## Average 8-year-old

- 58lbs
- 51"
- Plays Novice hockey
- Distinct physical advantage

## Average 7-year-old + 1 day

- 51lbs
- 48"
- Plays Novice hockey
- Distinct physical disadvantage

Does not guarantee sport skill (dis)advantages



# Maturation

- Timing/tempo of maturation not as closely linked to chronological age
  - Still more likely that relatively older children are more mature than younger peers
- For early maturers:
  - Cognitive superiority
  - Advanced coordination

Does not always equate to better skill...

*Figueiredo et al., 2009; Haywood & Getchell, 2014*



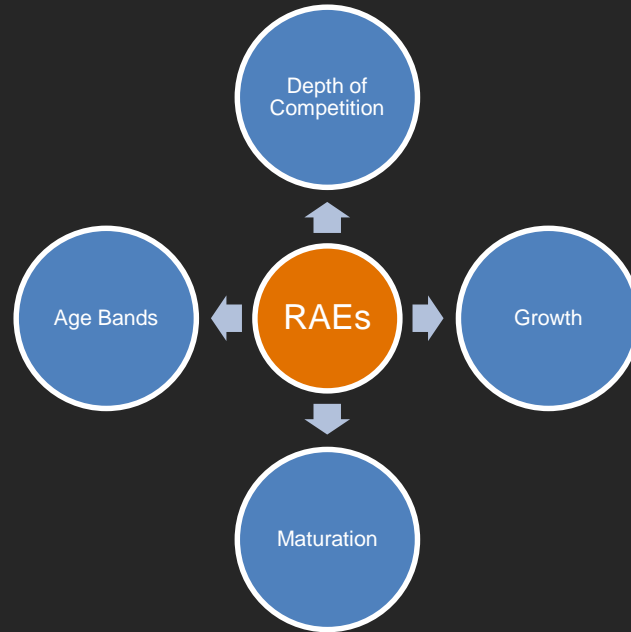
# Developmental Mechanisms

- Relatively older = more likely to have accelerated growth and maturation
- Accelerated growth and maturation  $\neq$  better sport skills
- So what leads to advantages for relatively older children?

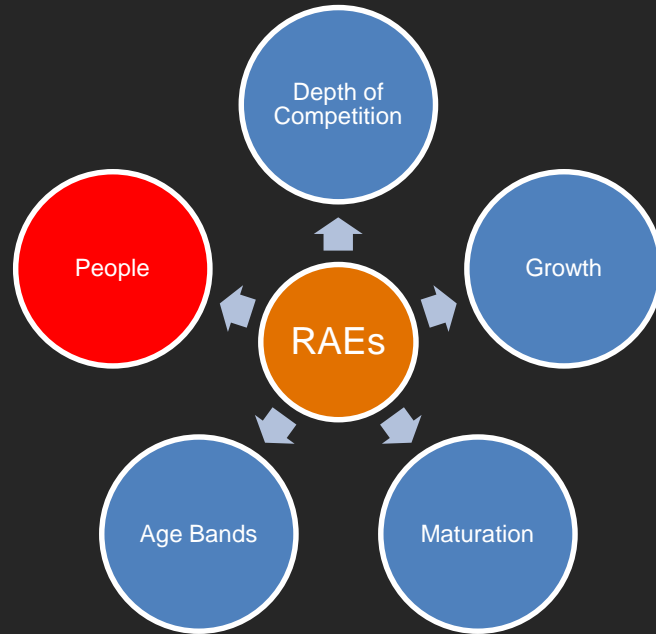


# 3. Social Mechanisms

# RAE Influences



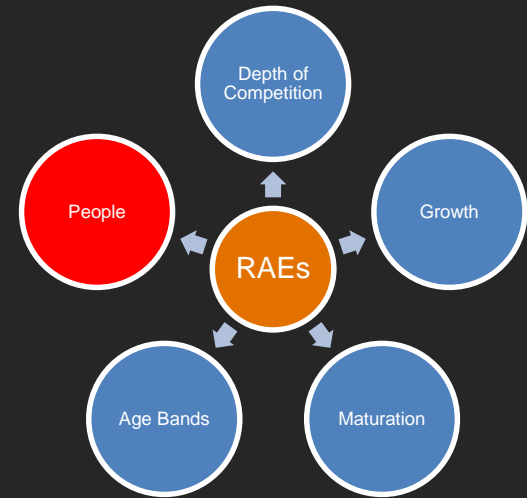
# RAE Influences





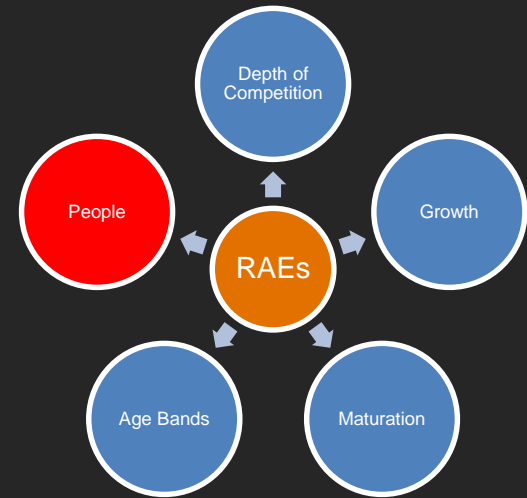
# The Influence of People

- Across contexts, people place value on certain characteristics that *might* drive relative age effects
  - Sport: growth = athletic ability
  - Education: cognitive maturity = academic ability



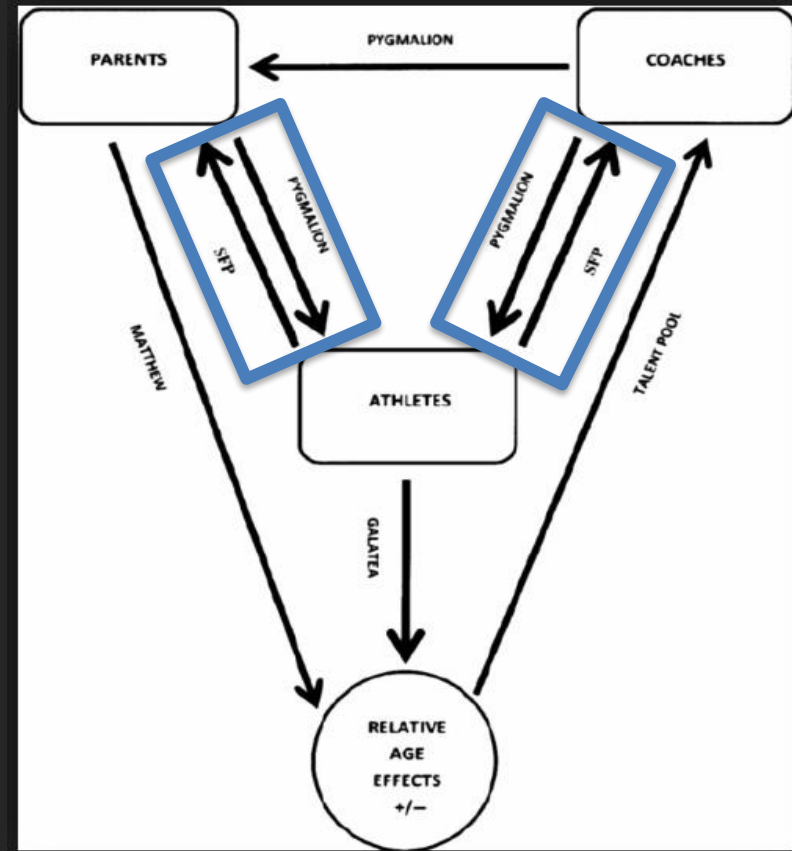
# The Influence of People

- Beliefs (whether accurate or inaccurate) can alter behaviors, leading to confirmation of original beliefs
  - Sport: elite team, coaching, playing time = athletic ability
  - Education: advanced classes, additional work, notifying parents = academic ability



# The Influence of People

- Self-fulfilling prophecy
  - Pygmalion Effect
    - Expectations (high or low, true or false) alter behaviors, allowing expectations to be met
    - First National Trust Bank



*Hancock et al., 2013a; Merton, 1948; Rosenthal & Jacobson, 1968*



# The Influence of People: RAE Case Study

- Parents
  - Aware of relative age effects
  - Believed their children received advantages due to being older (elite teams, more practice, more competition, better coaching, etc...)
- Coach
  - Aware of relative age effects
  - “If two kids have similar skill, I’m taking the bigger one”



# Pygmalion Effect: Parents

- Parent beliefs might drive initial enrollment bias
  - Register relatively older children sooner than relatively younger children
  - Leads to earlier gains in practice, competition, and instruction
- Parent beliefs might lead to higher expectations for relatively older athletes
  - Pay for additional sport camps, specialized coaching
  - Join elite teams, with more extensive travel

*Hancock et al., 2013a; Hancock et al., 2013b*



# Pygmalion Effect: Coaches

- Coaches might not initiate relative age effects
  - Appear to be selecting teams from an already skewed talent pool
- Coach beliefs might lead to higher expectations for relatively older players
  - Selections based on size and “talent/potential”
  - Provided better instruction, more feedback, more playing time

*Hancock et al., 2013a*





# Discussion

# Takeaway Messages

- Sport structure mechanisms inherently facilitate relative age effects
- Developmental mechanisms have potential influence on relative age effects
- Social mechanisms might have the strongest influence on relative age effects
  - But might also be the area in which researchers can have the most influence





# Questions Still to be Answered

- If social mechanisms are the major influence, how can we minimize them?
- Parents
  - Why are parents not enrolling their relatively younger children?
    - Fear of injury? Child not physically/cognitively ready?
  - Can we increase parents' expectations for their relatively younger children?



# Questions Still to be Answered

- If social mechanisms are the major influence, how can we minimize them?
- Coaches
  - Can we make them aware of selection biases?

3:15 PM	<a href="#"><u>Helping talent scouts to overcome the RAE</u></a> David Mann, <i>Vrije Universiteit Amsterdam</i> Room 320, Norman Bethune College, York University (Toronto, ON) 3:15 PM - 3:45 PM
---------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

- If so, can we ensure equal treatment/expectations regardless of relative age?



# Questions Still to be Answered

- If social mechanisms are the major influence, how can we minimize them?
- Sport Governing Organizations
  - Are there sufficient grassroots programs to ensure early enrollment regardless of relative age? And are parents aware of these programs?
  - Are coaches educated on relative age effects as it relates to talent identification?
  - Is it feasible to institute rotating cut-off dates?



# Questions?

- Thank you Jess, Joe, Sean, and Laura



dahancoc@iuk.edu



@profhancockiuk



# References

- Andronikos, G., Elumaro, A. I., Westbury, T., & Martindale, R. J. J. (2016). Relative age effect: Implications for effective practice. *Journal of Sports Sciences, 34*, 1124-1131.
- Figueiredo, A. J., Gonçalves, C. E., Coelho E Silva, M. J., & Malina, R. M. (2009). Youth soccer players, 11-14 years: Maturity, size, function, skill and goal orientation. *Annals of Human Biology, 36*, 60-73.
- Hancock, D. J., Adler, A. A., & Côté, J. (2013a). A proposed theoretical model to explain relative age effects in sport. *European Journal of Sport Science, 13*, 630-637.
- Hancock, D. J., Ste-Marie, D. M., & Young, B. W. (2013b). Coach selections and the relative age effect in male youth ice hockey. *Research Quarterly for Exercise and Sport, 84*, 126-130.
- Haywood, K. M., & Getchell, H. (2014). *Lifespan motor development* (6<sup>th</sup> ed.). Champaign, IL: Human Kinetics.
- Hurley, W., Lior, D., & Tracze, S. (2001). A proposal to reduce age discrimination in Canadian minor hockey. *Canadian Public Policy, 27*, 65-75.
- Merton, R. K. (1948). The self-fulfilling prophecy. *The Antioch Review, 8*, 193-210.
- Musch, J., & Grondin, S. (2001). Unequal competition as an impediment to personal development: A review of the relative age effect in sport. *Developmental Review, 21*, 147-167.
- Rosenthal, R., & Jacobson, L. (1968). *Pygmalion in the classroom*. New York, NY: Holt, Rinehart & Winston.

