



Importance of physical activity in preschool children

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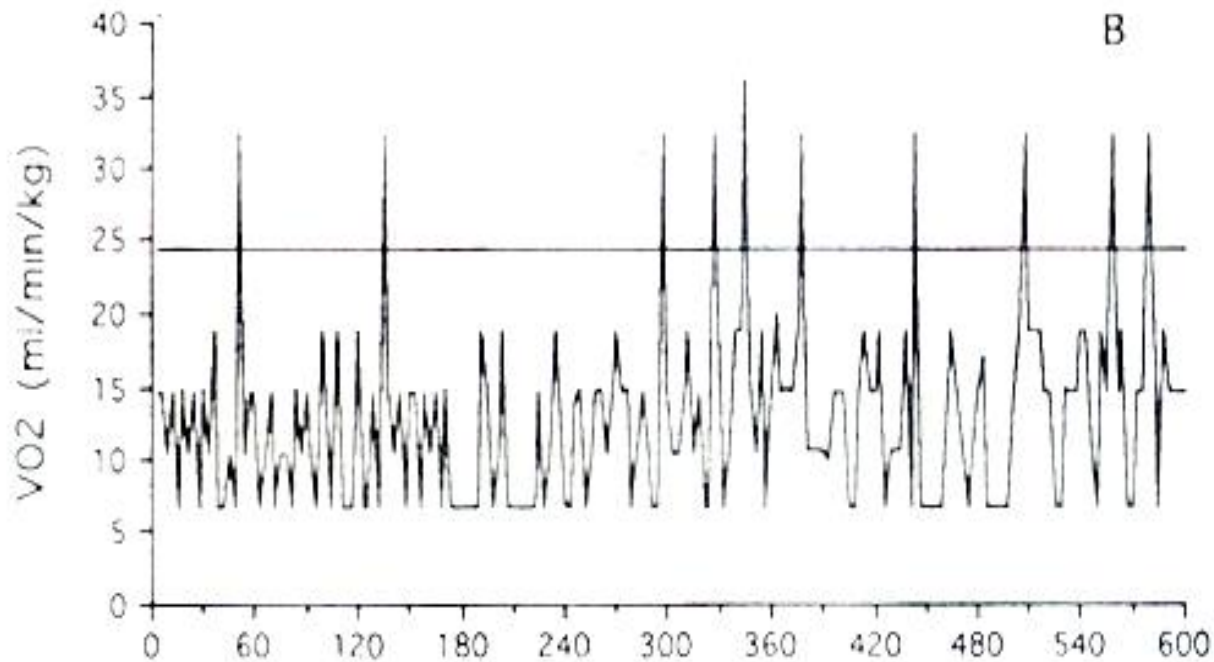
Table of Contents

- Why focusing on preschoolers?
- What is known about health effects of PA in preschoolers?
- Current guidelines
- Do preschoolers move enough?
- Methodological issues in measuring PA
- Summary
- New project SPLASHY



Why focusing on preschoolers?

“Children engage in very short bursts of intense physical activity interspersed with varying intervals of low and moderate intensity.”



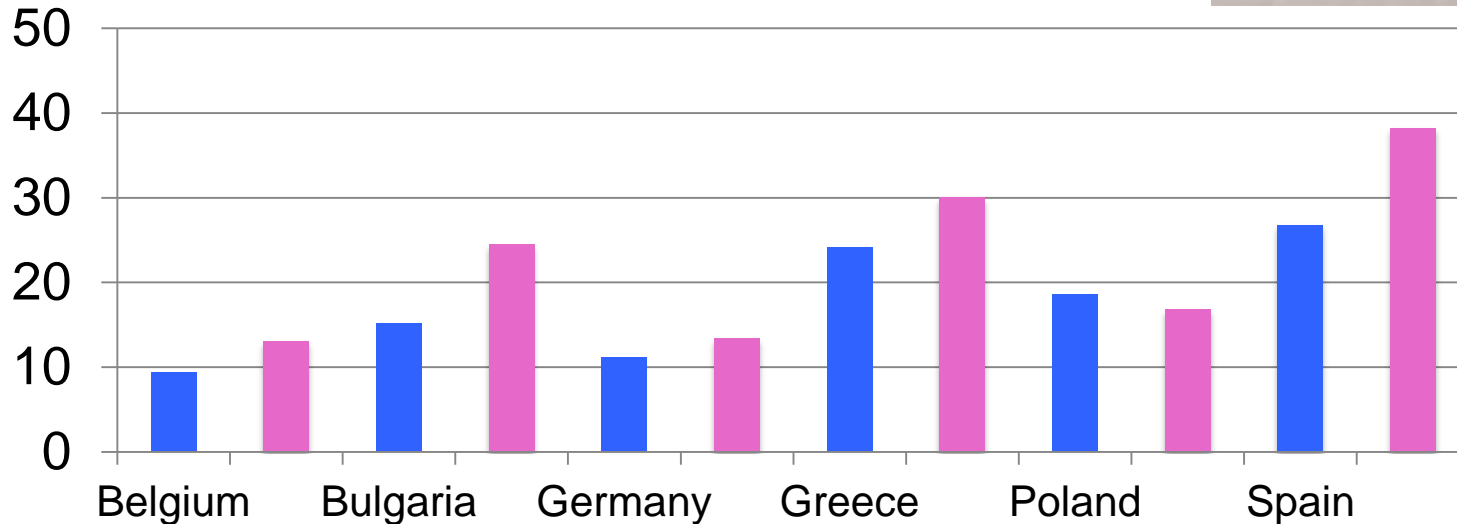
Bailey RC et al. *Medicine and science*, 1995



..as chronic disease start early in childhood



% overweight in 4 to 7 year old children





**..because you can start
early to form habits and
to train motor skills**



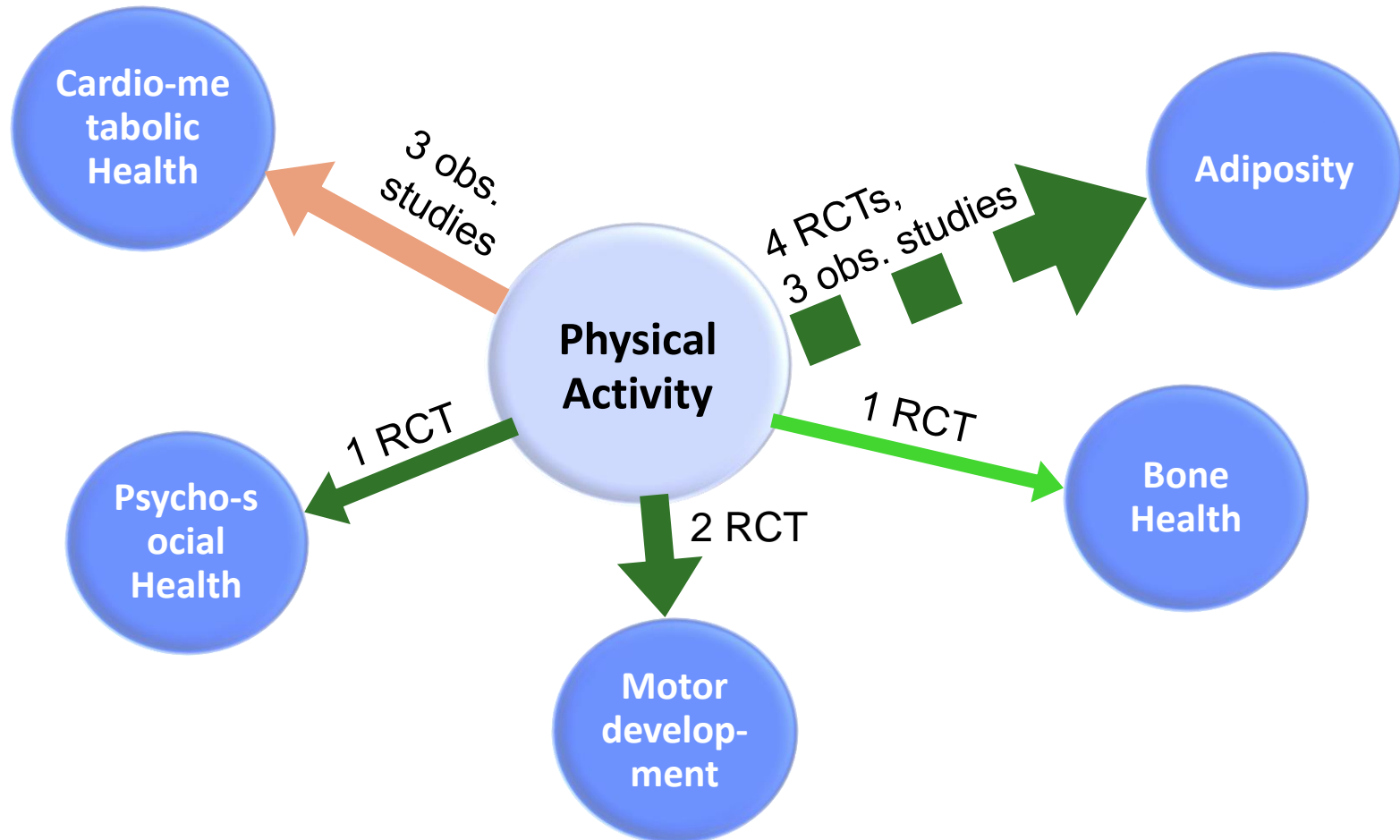


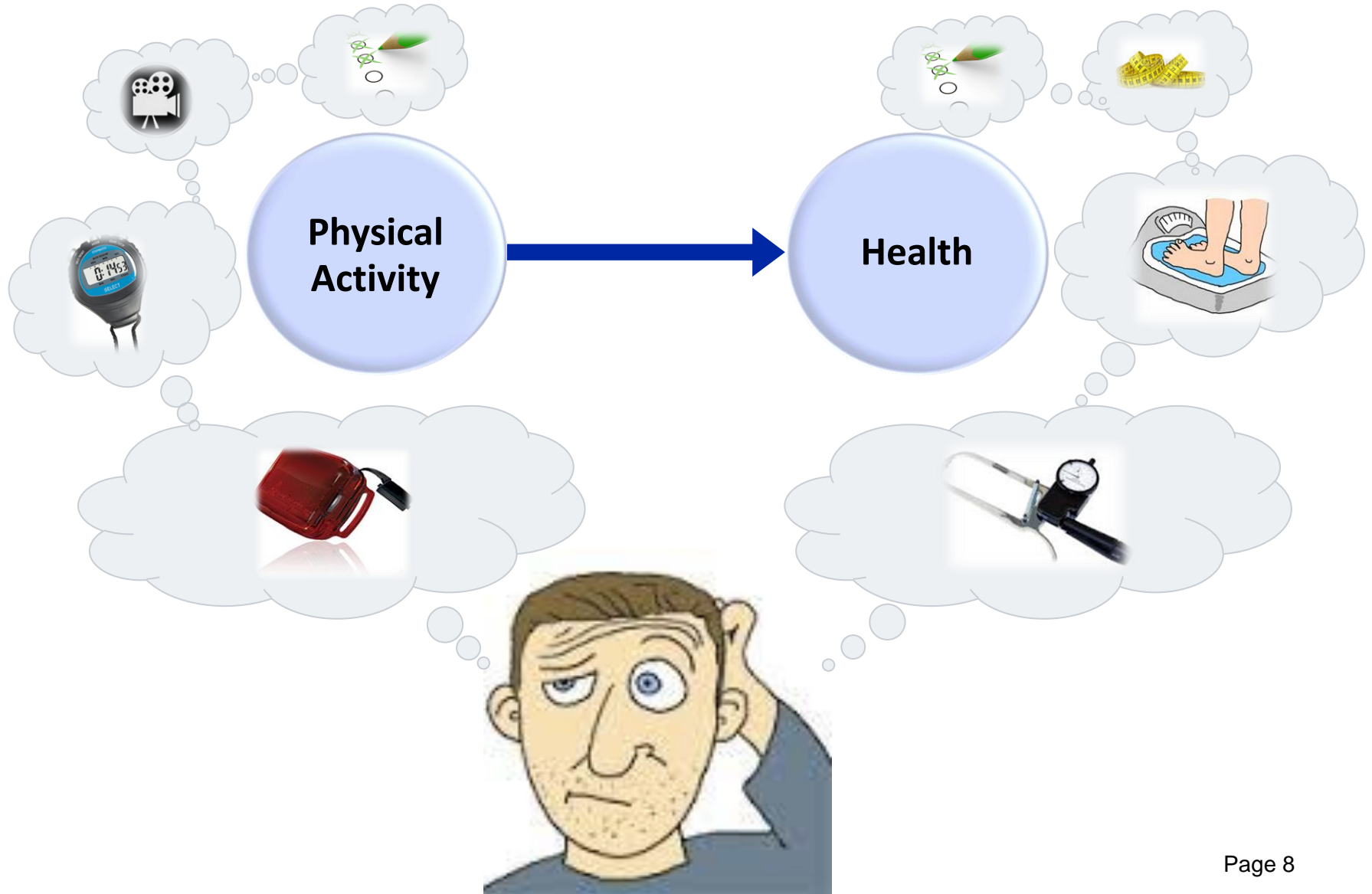
Table of Contents

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Positive health effects of PA in preschoolers







PA and adiposity

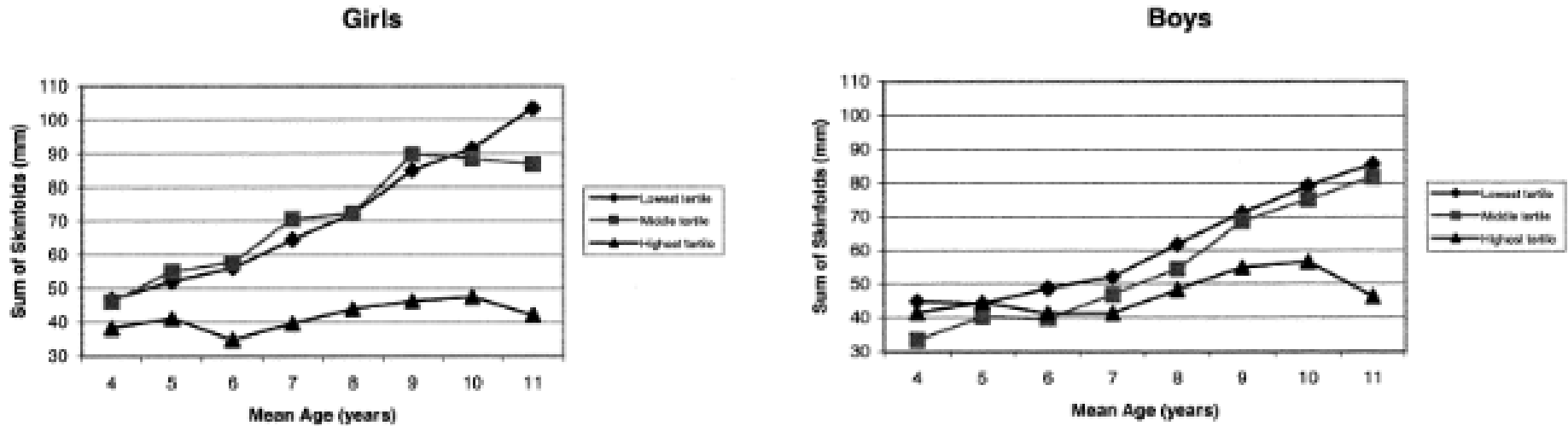
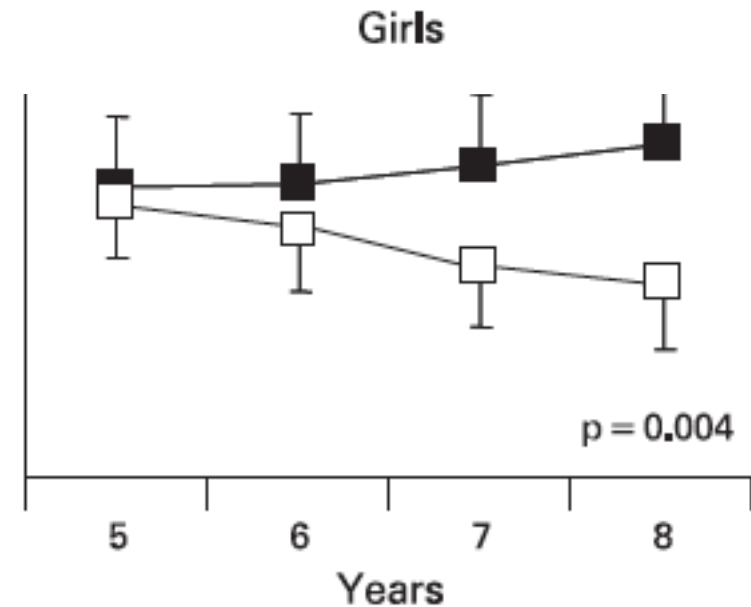
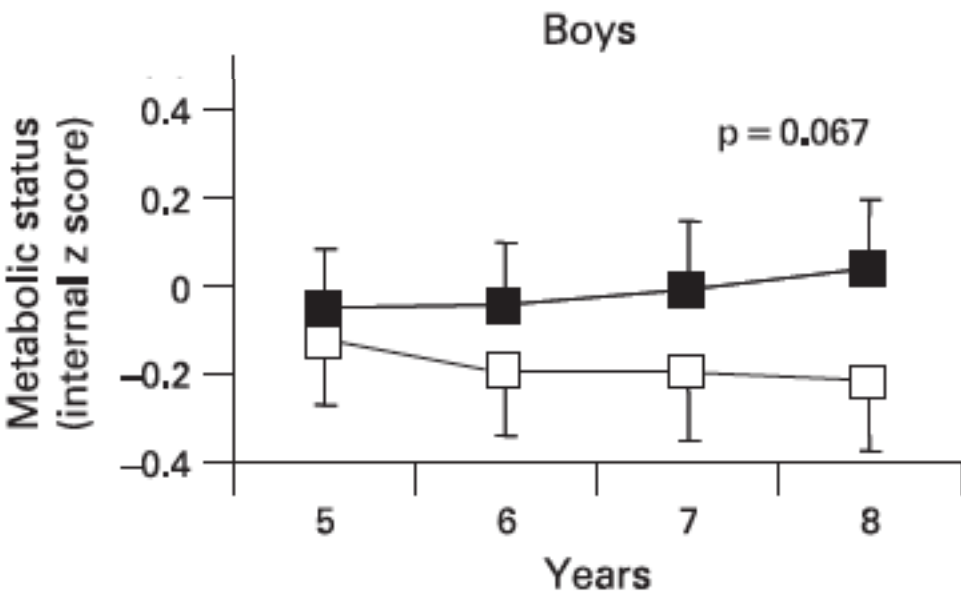
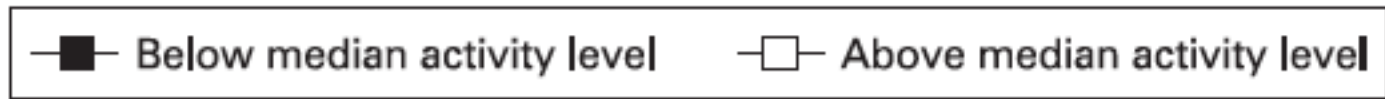


Fig. 4.

Sum of five skinfolds from ages 4 to 11 years, according to tertile of yearly activity, separately for girls and boys. Adjusted for child's baseline age and BMI.

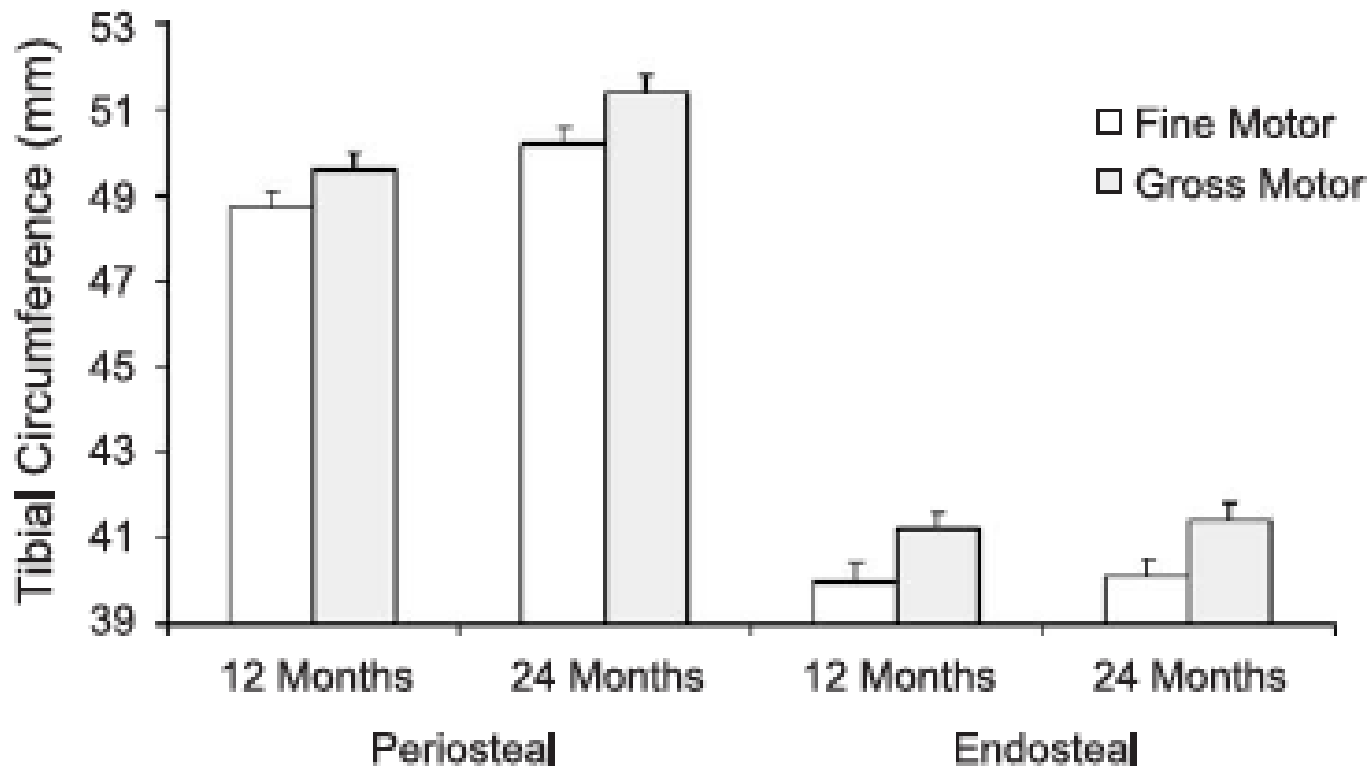


PA and cardiometabolic health





PA and bone health





PA and motor skill development

Review Riethmuller et al. *Pediatrics* 2009

- Healthy children aged <5 years
- 17 studies published before July 2007
- Most interventions had an effect
- Limited methodological quality
- Teacher and parental involvement is critical

Since mid 2007 til now

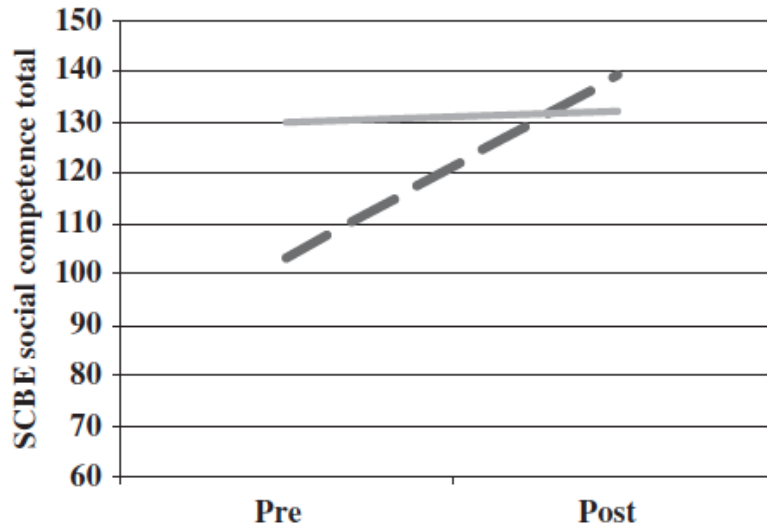
- 10 RCTs of which 5 effective
- Many different FMS assessment tools used



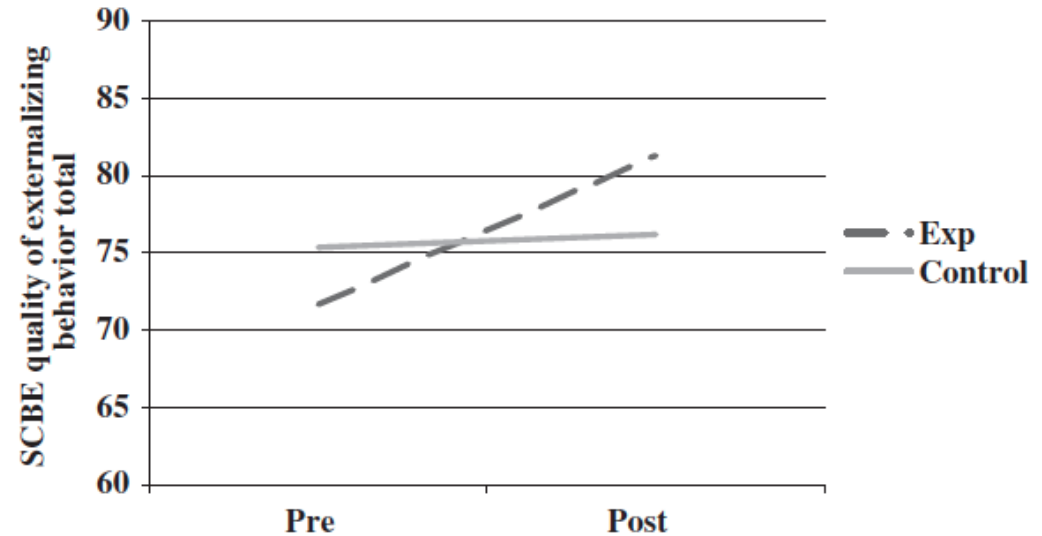


PA and psychosocial health

Parent-reported
Child social competence



Parent-reported
Quality of child externalizing behavior



PA and cognitive function

- Motor agility is related to a better spatial working memory and attention

Niederer I et al. *BMC Pediatrics* 2011

- The positive relationship between motor skills and cognitive functioning in the preschool period may decrease with age as motor skill level increases

Ackerman PL *Journal of Experimental Psychology* 1988





Table of Contents

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Recommended PA for preschoolers - Guidelines

“At least **60 minutes of structured** and **60 minutes of unstructured PA** each day and should not be sedentary for more than 60 minutes at a time except when sleeping”

National Association for Sport and Physical Education in the US, 2002

“At least **3 hours** of PA accumulated throughout the day and not be sedentary, restrained or kept inactive for more than 1 hour at a time except when sleeping”

Australian Department of Health and Ageing, 2008

UK Department of Health, 2011

Canadian Society for Exercise Physiology, 2012

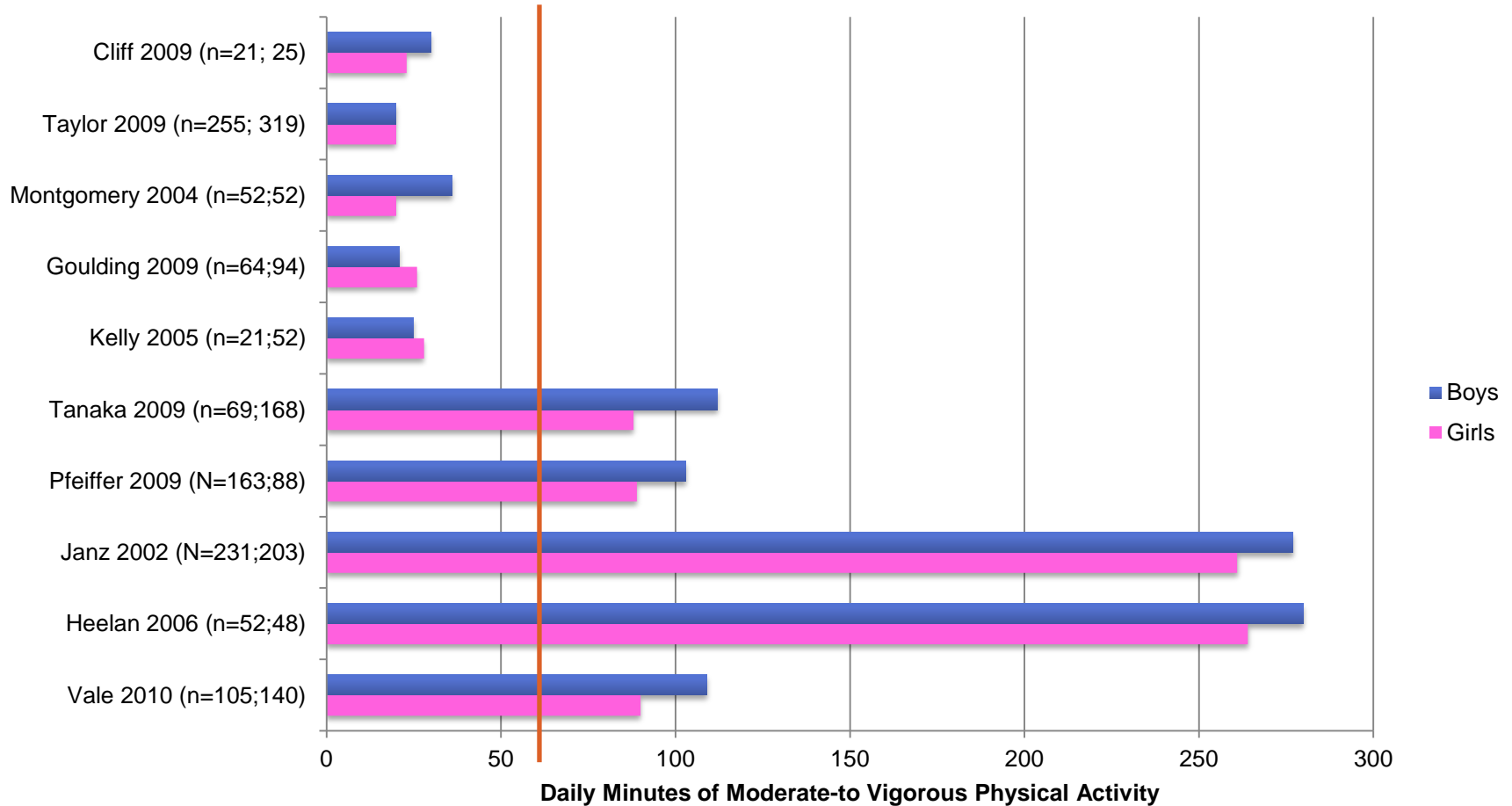


Table of Contents

- Do preschoolers move enough?
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Do preschoolers move enough?





The “problem” of cut points

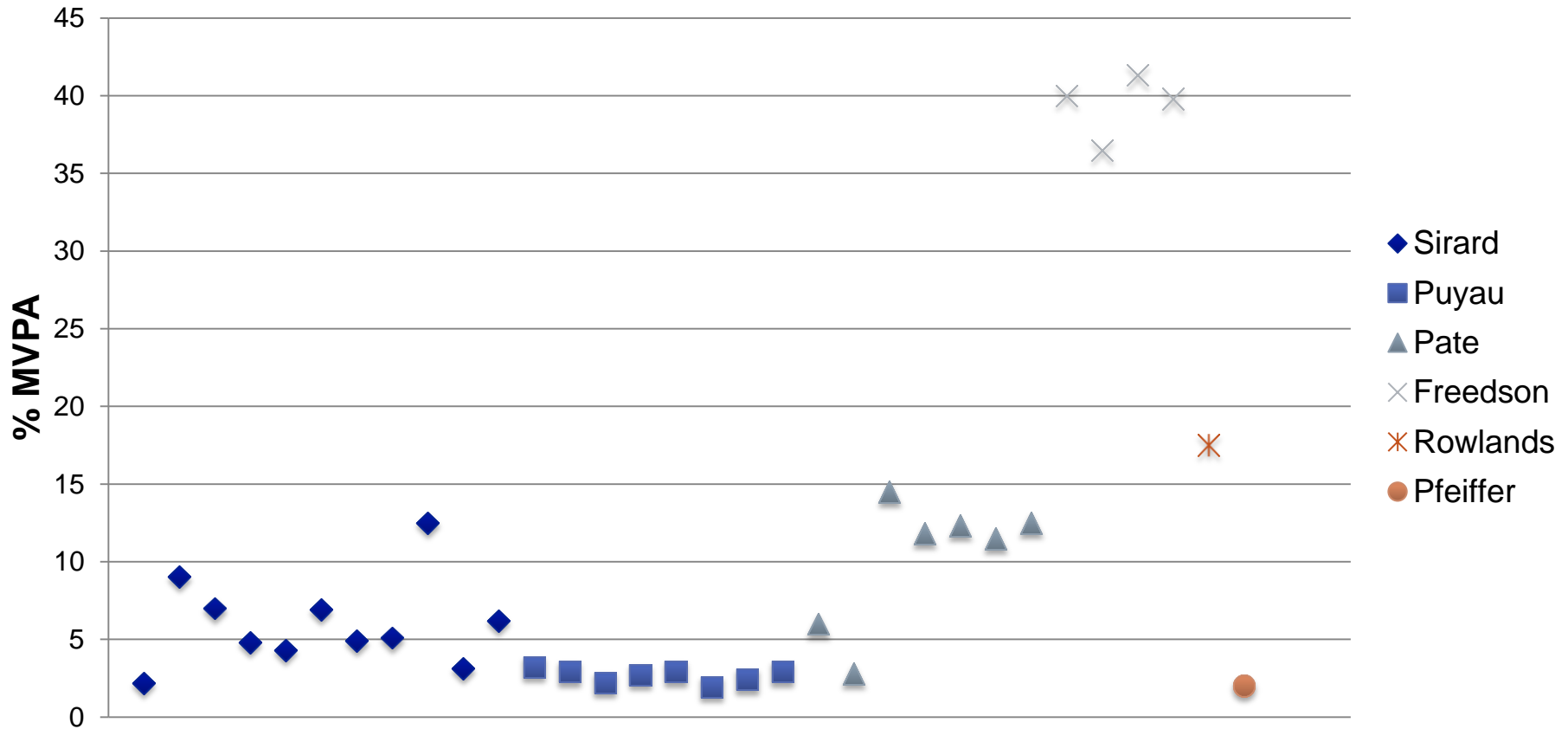




Table of Contents

- Methodological issues in measuring PA
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Open questions in assessing PA in preschoolers



- Which device?
- Epoch length?
- Number of days?
- Daily wearing time?
- Definition of artefacts
- Reactivity
- Which outcomes?
- Cut points?



Measuring PA in preschool children – epoch length

Night sleep

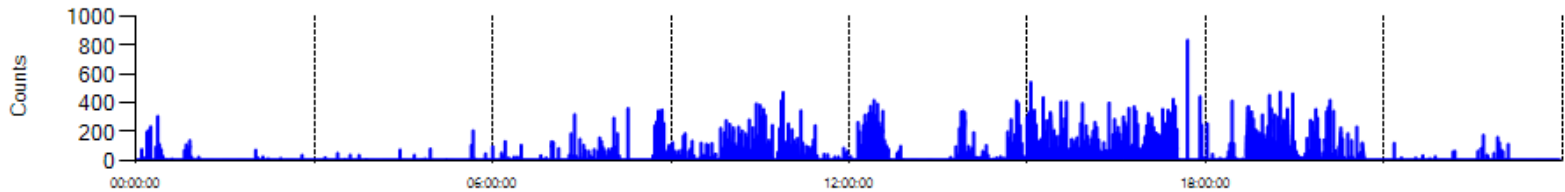
Child Care

Day sleep

Child Care

Bed

Tuesday
04.03.2014



MVPA

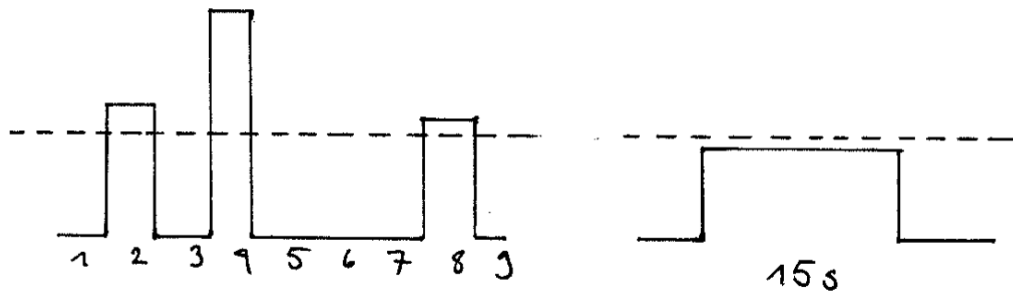




Table of Contents

- Summary
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Summary

- PA levels of preschool children are not well understood
 - Technical issues: epoch time, cut-points...
- More long-term studies on relevant health effects of PA in preschool children are urgently needed
- Appropriate PA guidelines should be based on evidence
- FMS (as a surrogate marker of PA) assessment tools may be refined to differentiate skill levels among healthy children



Table of Contents

- New project SPLASHY



- Interdisciplinary, multi-center cohort study of preschoolers in Switzerland
- N≈500 3-5 year olds attending child care centers
- Aim:
to study how stress (as a potentially health challenging predictor) and/or PA (as a potentially health promoting predictor) influence children's psychological and physiological health





Measures



Physical activity	Actigraph during a week
Stress	Heart rate variability Saliva samples Finger nails Parental questionnaire: „Major life events“
Cognitive function	4 subtests of the IDS
Motor skills	Zurich Neuromotor Assessment
Adiposity	4 skinfolds, BMI, waist circumference
Emotional wellbeing	Statue test, SDQ, CEBQ, EAS



Thank you!

Splashy
Swiss Preschooler's
Health Study

