Physical activity in childcare settings: the role of the environment

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Why the childcare setting?

- Young age
  - Tracking of physical activity and habit formation
  - Tracking of overweight
- Increased childcare use
- Childcare is associated with increased overweight risk*

Window of opportunity!

*e.g. Geoffroy et al., 2012. Childcare and overweight or obesity over 10 years of follow-up. J Ped, 162; Gubbels et al. 2010. Child-care use and the association with body mass index and overweight in children from 7 months to 2 years of age. Int J Obesity, 34.
Content

- Physical activity in the childcare environment
  - Perceived barriers to physical activity promotion in childcare
  - Influence of the childcare environment on physical activity
- A theoretical framework for examining childcare environment
- Overall conclusions

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Methods

- Interviews with
  - 24 childcare staff members from 7 childcare centers
  - 12 parents of children attending childcare
- Topic: Barriers and facilitators of PA at childcare


Results: Childcare staff

- Childcare staff do not have sufficient:
  - Knowledge of PA, e.g.
    - more than half of the did not know insufficient PA was related to overweight,
    - majority thought pre-schoolers are innately sufficiently active
  - Time to focus on PA, especially in mixed age groups
  - Support from parents
    - E.g. children wearing clothes unsuitable for PA
  - Skills to discuss problems with parents

Results: Childcare staff
- Lack of written guidelines/rules regarding PA
- Conflicts between PA and safety concerns
- Childcare staff are aware of their role model function
  - For children
  - For parents

Results: Parents
- Parents were unaware of the amount and types of PA at childcare
- Parents thought pre-schoolers are innately sufficiently active
- Children’s physical activity restricted by staff, especially in younger children
- Childcare PA practices do not play a role in the selection of a childcare center

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- 9 childcare centers in the Netherlands (N=175)
- Observations toddler groups (2-3 yrs):
  - Physical activity (QSRAC-P; 20 children per center; total N=175)
  - Environment / context:
    - Physical environment: Activity opportunities (availability play materials, space)
    - Social environment: Prompts and group size (peers and staff)

Results: Activity levels

- Moderate to vigorous physical activity (MVPA; activity level ≥4):
  - Indoor: 5.5%
  - Outdoor: 21.3%
- Sedentary behavior (activity level ≤2):
  - Indoor: 59.4%
  - Outdoor: 31.2%


Results: Influence physical environment

- Physical environment:
  - Positive association activity opportunities in general and physical activity (PA) level
  - Specific play equipment associated with increased PA:
    - Jumping equipment (outdoors)
    - Playground markings (outdoors)
    - Size playground (indoors)
  - Play equipment associated with decreased PA:
    - Sandboxes, slides and swings (outdoors)
    - Riding toys (indoors)

Results: Influence social environment and child characteristics

• Social environment:
  – Prompts:
    • Positive prompts: higher PA level
    • Negative prompts: no association
  – Group size:
    • The larger the group, the lower the PA levels

• Child characteristics:
  – Age:
    • 3-year-olds were more active than 2-year-olds

Conclusions

• Low levels of activity
• Association with physical and social environment: childcare as setting for interventions

• Some play equipment associated with decreased PA intensity levels
  • Implications for practice: Which play equipment?
  • PA intensity vs. other components (i.e. motor skills)
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A theoretical framework for examining childcare environment

• Applying an ecological framework on children’s physical activity
• Basic assumptions:
  – Not all environmental influences on behavior are direct;
  – Interaction between factors in the environment
• Influence of an environmental factor on behavior is dependent on other factors

A theoretical framework for examining childcare environment

Hypotheses:
- Interaction between environmental settings
  - Influence of childcare environment on PA depends on what happens at home...
  - and vice versa
- Interaction between environmental factors and individual characteristics
  - Children with different characteristics will respond differently to similar environment
- Interaction between environmental types (social, physical)
  - E.g. Influence of childcare staff (social) is dependent on the facilities they can use (physical environment)


Methods
- Systematic review
  - Inclusion criteria:
    - pre-school age
    - childcare setting
    - examining the association between environmental factors and PA
    - including an examination of one of the types of interaction described in the hypotheses

Gubbels et al. 2014. The next step in health behavior research: the need for ecological moderation analyses – an application to diet and physical activity at childcare. IJBNA, 2014, 11.
Interaction between settings (childcare and home)

- No quantitative studies
- Indications from qualitative studies*:
  - Communication between parents and childcare important for PA at childcare
  - Importance of parental support (e.g. limiting time spent outdoors, expressing other priorities)
  - Importance of continuity between both settings (e.g. having the same practices)


Interaction between environment and individual characteristics: gender

- Moderation by gender
  - Physical environment:
    - Boys responded more strongly to physical environment
  - Social environment:
    - Girls more negatively affected by group size
    - Girls more compliant to prompts

Interaction between environment and individual characteristics: age

- Moderation by age
  - Physical environment:
    Activity-promoting playground intervention
    - older children increased VPA
    - younger children increase MVPA
  - Social environment:
    - Older children decrease activity level if more peers are present
    - Younger children decrease activity level if more supervisors are present


Interaction between types of environment

- Interaction between physical and social environment:
  - Positive influence of activity opportunities (physical environment) on PA was only present when children were playing in groups, not when playing alone or one-to-one (social environment)

Conclusions

- Empirical studies supporting an ecological view of physical activity at childcare are scarce.
- Future quantitative studies should adopt an ecological perspective at environmental influences on child behavior.
  - Interaction between all environmental types.
  - Moderating child characteristics other than age and gender (e.g., temperament, behavioral style, weight status).
  - Interaction between home and childcare (and other settings, e.g., preschool, grandparents).
- Importance for intervention development.


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Conclusions...

- Pre-schoolers are quite inactive
- Important influence of the childcare environment
  - Physical environment
  - Social environment
    - Childcare staff
    - Peers
    - Parents
- Interaction between environmental factor: importance of context
- Implications for research and interventions

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Questions?
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