KEYS TO SUCCESSFUL PHYSICAL ACTIVITY DURING CHILDHOOD

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Structure of the presentation

- Children’s physical activity (PA)
- Experiences and examples of PA interventions carried out in Finland
- Keys to successful PA intervention based on systematic analysis studies
- Practical implications
Physical activity? Movement?

Physically active play
Effects of physically active play

Children get important stimuli for their development:
- **Physical**: bones, muscles, joints, neurons
- **Motor**: fundamental motor skills
- **Cognitive**: words, meanings, causal relationships
- **Psychological**: self-image and self-esteem
- **Social-emotional**: recognizing emotions, finding playmates, accepted for groups, having friends
- **Ethical and moral**: the role of rules

=> Necessary for normal growth and overall development
=> Important for daily wellbeing and health

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The amount of MVPA measured by Actigraph

* Soini et al., 2012
** Tammelin et al., 2013 (in press)
There is a need to ensure the appropriate amount of physical activity

Interventions carried out in Finland

- Family-based PA intervention studies
  - STRIP, a PA project (Sääkslahti, 2005)
  - InPact project (Finni et al., 2011; Laukkanen et al. submitted)

- Preschool-based intervention studies
  - The Early Steps (Iivonen, 2008)
  - HIPPA (Mehtälä et al. submitted)
Family-based interventions

STRIP baby project

- **Specific Turku Coronary Risk Intervention Project (STRIP baby)** (Sääkslahti 2005)
- Launched in 1990 with 1,062 seven-month-old children and their families
- In 1994, 3–4-year-old children (N = 228) were randomly selected for PA intervention (n = 116) and control (n = 112) groups.
The four-year physical activity intervention program

Based on the social cognitive theory (Bandura, 1986)

Main ideas:
- Positive atmosphere: No feeling of “must do”
- Multiple information channels
- Cognitive motivation: Voluntary to choose what information each family wanted to use
- Rewarding elements

Parent meetings

Annual meetings with the following topics:
- How to support children’s development through physical activities (from the sensory integration point of view)
- Earlier research results about relationships between children’s physical activity and overall physical development
- Results of STRIP project from a PA perspective
Practical demonstrations

- Once a year with trained PE teachers
- 60-minute PA session (10–20 children in each group)
  - PA games
  - Playing with different equipment
  - Gymnastics
  - Ball games
- Parents could watch if they wanted to

Printed material

- Twice a year, one or more of the following:
  - PA posters for summer and winter months
  - List of PA activities to do at home both indoors and outdoors
  - Dice board game
  - Feedback about the development of children’s motor skill development on a scale of “enough” or “good”
Public media

Twice a year, one or more of the following:

- Popular articles about children’s physical activity and motor skill development
- Radio programs
- Information about local PA possibilities (e.g. playgrounds or sport clubs)

Intervention group children played more outdoors than control children did:
Intervention children had better locomotor skills than control children did (walking and running combination).

Perceptual motor skills of intervention boys were better than those of the control boys:
Lessons

Positive effects on children’s physical activity were achieved by:

- creating positive attitudes in parents toward children’s physical activity
- increasing parents’ knowledge about the importance of PA on children’s overall development
- giving concrete ideas and models of how to activate children
- providing printed material
- encouraging the use of playgrounds, fields, etc.
The InPact intervention project

- Family-based tailored counseling to increase non-exercise physical activity in adults with a sedentary job and physical activity in their young children (Finni et al., 2011; Laukkanen et al. submitted)
- A year-long randomized controlled trial
- Participants: Intervention group, 50 children and their parents; control group, 53 children and their parents
  (age of children were 4–8 years)

Counselling intervention

Based on social cognitive theory (Bandura, 1986) and theory of planned behavior (Ajzen 1985)
- A counselling session included
  - 30-minute lecture
  - 30-minute face-to-face discussion, individual goal-setting
- Reinforcement by regular contact for six months
  - Phone discussion: re-evaluating goals, self-evaluation, barriers, positive causalities
  - Feedback on motor coordination at six months
  - Monthly emails: seasonal tips for physical activities
NOTE: No structured PA was offered
Lessons

- Season matters: body coordination was associated with temperature
  ⇒ Need to focus on cold seasons
- Girls’ ball handling skills improved
  ⇒ Important for girls, because Barnett et al. (2008) showed that object control skills predict physical activity in adolescence
- Face-to-face discussion most valued method by parents

Preschool-based interventions
The Early Steps intervention (Iivonen, 2008)

Philosophy of the Early Steps physical education curriculum:

through the acquisition and development of motor skills, preschool children would have the desire to be involved in a healthy lifestyle, be able to cooperate with others and respect individual differences.

The Early Steps intervention

- PE curriculum for eight months
- Two 45-minute PE lessons per week (48 times)
- 4–5-year-old children in four groups (two intervention groups, n = 39, and two control groups, n = 45)
- Teachers were children’s own kindergarten teachers

http://earlysteps.teithe.gr/
The PE curriculum findings

- Girls' static balance (p = 0.03) and standing broad jump (p = 0.05)
- Boys' running speed (p = 0.02), but no effects on dynamic balance or manipulative skills
- Children's mean activity time during PE lessons:
  - 49% was spent in sedentary behavior
  - Skill-specific practice percentages:
    - Balancing: on one foot (1%)
    - Locomotor skills: walking and running (18%), jumping (7%), walking on all fours and crawling (4%)
    - Manipulative skills: upper limbs (16%), whole body (5%), lower limbs (1%)

Lessons

- The PE curriculum affected locomotor and balance skills positively
- Affecting children’s manipulative skills requires more possibilities for children to use different objects
- There is too much physically inactive time during PE lessons
**Home- and childcare -based Intervention to Promote Physical Activity (HIPPA)** (Mehtälä et al.)

Based on the socioecological model (*Bronfenbrenner, 1986*)

- Interview of principals (childcare environment, daily routines and rules)
- Meetings with staff at each childcare center (N = 7)
  - Possibilities and barriers were recognized
  - Goal-setting for each center with teachers
- Parents wishes were listened to

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**Intervention content**

During one year

- Early educators
  - In-service training to observe motor development
  - Monthly tips for physical activities
  - Interview and intentions for future
- Families
  - Family evenings
  - Monthly letters
  - Possibility to try pedometers
Lessons

- Children increased the amount of light activity, but not of moderate-to-vigorous PA
- In-service training was found to be useful for teachers
- Monthly tips/letters were found to be interesting and supportive for teachers and parents
- Families increased the amount of bicycling

Findings of different systematic analyses
The most effective elements to increase PA

- The most cost effective:
  - PA interventions executed in different institutions, e.g. childcare centers and schools \( (Wu\ et\ al.,\ 2011) \)

Largest increase in moderate-to-vigorous PA \( (Based\ on\ Gordon\ et\ al.,\ 2014) \)

- Implemented in a community- or institutional-based design
- Duration was four weeks or less
- Organized within childcare
- Teacher-led
- Focus on increasing time for outdoor play
- Incorporated unstructured activity
Successful intervention projects from a sociocultural point of view tried to (based on Mehtälä et al., 2014)
- Create a PA-friendly atmosphere within a whole society
- Combine the influence of the childcare and home environments
- Shared and common objectives among parents and childcare personnel
- Listen to childcare staff needs and their feeling of barriers in increasing PA

Curriculum is important
- The role in structured PA (the amount, frequency, content, etc.) (Ward et al., 2012, livonen & Sääkslahti, 2013)
- Development of motor skills (Ward et al., 2012, livonen & Sääkslahti, 2013)
  ⇒ Successful structured PA lessons (Ward et al., 2012)
    ⇒ lasted less than 45 minutes
    ⇒ implemented 3 times or less / week
Appropriate balance…

between structured and unstructured activity?

Overly structured activities

Risk of losing benefits of children’s PA play:

- Enjoyment
- Fun
- Spontaneity
- Freedom
- Flow
Practical implications

There is a lot of physically active play

- Possibilities for free play (Ben-Arie & Ofir, 2002)
- High amount of outdoor play on a daily basis (Sääkslahti 2005)
- PA equipment is available during free play activities (Cardon et al. 2009)
Different learning and playing environments are used in multiple ways

- Access to physical areas for play
  - Green playgrounds (Dyment & Bell, 2007)
  - Parks (Fjortoft et al., 2009)
  - Asphalt surfaces (Cardon et al., 2008; Fjortoft et al., 2009)
  - Forests (Fjortoft, 2004)
  - Bullerby (Kyttä, 2003)

Typical playground vs. the forest
Bullerby (Marketta Kyttä, 2003) inspired by Astrid Lindgren’s Bullerby books

Staff members / early educators

- Encouragement for children to use different types of equipment and toys
  - Outdoor playing equipment (e.g. climbing bars, swings, sandpits, slides) (Cardon et al., 2009)
  - Painting of playgrounds, playground equipment and playground markings (Stratton & Leonard, 2002)
  - Play objects (e.g. balls, wheels) (Cardon et al., 2009)
  - Large wheeled toys to pull and push with whole body (Soini et al., in press)
Sometimes it’s very simple:

Verbal encouragement!

Observation study findings

- Childcare personnel seldom give verbal encouragement for more physically active behavior => 92% of observations did not include any encouragement
  => The level of PA was higher when children were verbally encouraged

(Soini et al., in press)
We need to ensure children’s possibilities for physically active play

Protect children’s right to play!
Defend against the dominance of passivity!

Kiitos – Merci beaucoup – Thank You!