Intergenerational physical activity: effects of a three-month intervention bringing together older adults and elementary school children

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Physical activity (PA) Vs sedentary lifestyles: an alarming situation

Ng & Popkin (2012); Saunders et al. (2014)
The cost of inactivity over a lifetime

Phases of inactivity:
- Physically inactive children: 30% of children present inactivity.
- Results: Missed school days, lower fitness, lower test scores, lower income, and higher health care costs.
- Adolescent: 2x more likely to be obese as adults.
- Early childhood: Pre-schoolers with inactive parents are four times more likely to be active.

Introduction

Objectives

Methods

Results

Discussion

Conclusion

Bailey et al. (2013)

Designedtomove.org
Introduction

The gain of physical activity over a lifetime

- Active parents associated with active kids
- Kids of active parents are 2x as likely to be active

Early Childhood > Adolescence > Adulthood

Morris (2013)
Designedtomove.org

Physical activity: a complex behaviour

- Demographical & biological
- Individual
- Behavioral
- Social & cultural

PA characteristics

Environmental (natural & built)

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An ecological perspective

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Intergenerational activities

✔ Primarily delivered within social and educational contexts
  (Williams & Nussbaum, 2001)

Bringing young people and older together with PA
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Intergenerational physical activity

- Innovative interventions are required to help older adults increase and maintain healthy levels of PA (Flora & Faulkner, 2007)
- PA provides opportunities for intergenerational contact which can diminish stereotype perceptions about aging and the elderly (WHO, 2010)
- To date, intergenerational PA research has received few attention (Mouton, Henriouille & Cloes, 2014)

Study the effects of a three-month intervention bringing together older adults and elementary school children on:

- PA behaviour
- Physical fitness
- Perceived physical and mental health
- Social relationships
- PA level
- Peers PA level

Influence of child age on the intervention outcomes

Satisfaction level of the participants

Assessment at baseline (T0), after the intervention (T1) and after 3 months follow-up (T2)
Inclusion criteria

- Preschoolers (4-5 yrs old) from the same class
- Primary school children (7-8) from the same class

In the same school context

- 50 years or older
- Non-institutionalized (functional autonomy)
- Family relationship accepted (grand-parent/grand child)

Intergenerational PA program development

Based on a previous study from our research team (Mouton, Henriouille & Cloes, 2014)

Improvements in the program according to several suggestions:

- Cooperation activities
- Ratio max. of 1 older adult for 1.5 child
- Several levels of difficulty
- Diversification of activities
- Shorten transition periods
- Supply with documentation about the activities performed

9 intergenerational PA sessions (1/week)

S1 : Mime games
S5 : Orienteering (treasure hunt)
S6 : Relay and skill games
**Data collection**

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**Stage of change questionnaire** (SOC; Marcus et al. 1992)

**Senior Fitness Test** (SFT; Jones & Rikli, 2001)

**SF-36** (Ware & Gandek, 1998)

**Loneliness scale** (UCLA-v3; Russel, 1996)

- PA behaviour
- Physical fitness
- Perceived physical and mental health
- Social relationships
- PA level
- Peers PA level

**7-days PA behaviour** (Kowalski, 1997)

**7-days family-PA behaviour** (PNNS, n.d.)

**7-days family members PA behaviour** (Godin, 2006)

**Post-sessions questionnaires (9)**

**Post-program questionnaire**

Satisfaction level of the participants

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**Table 1: Participants characteristics**

<table>
<thead>
<tr>
<th>Children</th>
<th>Baseline (T0)</th>
<th>Follow-up (T2)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PRECHILD (n = 13)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>mean ± σ</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>4.85 ± 0.38</td>
<td></td>
</tr>
<tr>
<td>Gender (% Female)</td>
<td>30.77</td>
<td></td>
</tr>
<tr>
<td><strong>PRICHILD (n = 18)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>mean ± σ</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>7.17 ± 0.38</td>
<td></td>
</tr>
<tr>
<td>Gender (% Female)</td>
<td>50</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Senior adults</th>
<th>Baseline (T0)</th>
<th>Follow-up (T2)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SEN1 (n = 11)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>mean ± σ</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>64.3 ± 7.92</td>
<td></td>
</tr>
<tr>
<td>Gender (% Female)</td>
<td>44.44</td>
<td></td>
</tr>
<tr>
<td><strong>SEN2 (n = 9)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>mean ± σ</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>68.67 ± 7.25</td>
<td></td>
</tr>
<tr>
<td>Gender (% Female)</td>
<td>88.89</td>
<td></td>
</tr>
</tbody>
</table>

- High participation rates (SEN1: 81.48% - PRECHILD: 93.21%; SEN2: 83.33% - PRICHILD: 91.45%)

- But high dropout due to lack of questionnaire completion by parents (SEN1 : 1; PRECHILD: 6; PRICHILD: 9)
**Results**

- No significant differences
  - Between T0, T1 & T2
  - Between the 2 age groups

- Direct relationship between child PA and family PA
  - Grand-parent PA level (PRECHILD: p<0,01; PRICHILD : p<0,05)
  - Parents PA level (PRECHILD: p<0,01)
  - PA practiced with at least one parent (PRECHILD: p<0,05; PRICHILD : p<0,05)

- Goodman, 2012 ; Moore, 1991 ; Sallis et al, 2006 ; Tucker, 2007 ; Zecevic 2010

- No significant differences between SEN1 & SEN2 groups

- Short-term improvement of the PA stage of change level

- Short-term increase of the health-perception level

- No impact on loneliness level
Senior Fitness Test

- Significant differences:
  - SEN1: 2/7 tests
  - SEN2: 3/7 tests
- No direct relationship between:
  - Physical components targeted in the program;
  - Physical increases during SFT assessment

<table>
<thead>
<tr>
<th>Physical components</th>
<th>SEN1 (mean ± σ)</th>
<th>SEN2 (mean ± σ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper limbs strength (N repetitions)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower limbs strength (N repetitions)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Endurance (N steps)</td>
<td>0.100 ± 8.621</td>
<td>2.400 ± 9.058</td>
</tr>
<tr>
<td>Lower limbs flexibility (N centimetres)</td>
<td>-2.333 ± 6.557</td>
<td>3.444 ± 4.693</td>
</tr>
<tr>
<td>Upper limbs flexibility (N centimetres)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agility (seconds)</td>
<td>6.972 ± 1.680</td>
<td>6.781 ± 1.723</td>
</tr>
<tr>
<td>Balance (&lt;5'' : 5 à 15'' : &gt;15'')</td>
<td>8.246 ± 2.945</td>
<td>8.014 ± 1.717</td>
</tr>
</tbody>
</table>

Jones & Rikli, 2002

Post-sessions questionnaires

- Positive immediate feedbacks
  - Values > 4/5
  - Except for the feeling right after session
- Significant difference
  - Perceived difficulty level between child groups (p<0.05)

Did the coach had given clear information?
Did the coach was motivating?
Which difficulty level did you feel during the session?
Who do you feel when thinking about the next session?
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**Post-program questionnaires**

- Low motor engagement
- Sessions guided by a central thread
- Developed competitive spirit among primary school children
- Expression and confidence games premature for preschool child

AVSI, nd; Brunelle, 1996

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- Participants don’t want an increase of the 1,5 senior - 1 child ratio
- Participants discovered new activities during the PA sessions
- Participants appreciated the social relationship during the program
- Participants and parents agreed with the organisation of an upcoming comparable intergenerational PA program
- Difficulty level must be adapted to the physical capacity of participating children and older adults

- Few participants have reported practicing games and activities of the program in their family environment
- Program didn’t contribute to the long-term adoption of PA among seniors

**Perspectives**

- Encourage transfer to the familial environment
- Contribute to a long-term adoption of PA among children and seniors
  - Overtake mistaken beliefs about PA (ex.: lack of time)
  - Involve more the parents in the program
  - Develop attracting and easy-to-read activity sheets
  - Increase the follow-up period (not only during fall-winter time)

**Children**

- No impact on global PA level
- Importance of family environment PA habits

**Seniors**

- Short term enhancement of perceived health
- Short term enhancement of PA stage of change
- Some improvements of the physical fitness

**All participants**

- High satisfaction level regarding to the PA program
- Age influence on the program perception among children
- No age influence of the program effects among children
References


References

Figures (page 3 & 5)


References