<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker(s)</th>
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<tbody>
<tr>
<td>9.00-</td>
<td>Registration opens</td>
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<tr>
<td>10.00-10.30</td>
<td>Opening session, L304</td>
<td>Matti Manninen, Rector of JYU</td>
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<td>Lasse Kannas, Dean, Faculty of sport and health sciences</td>
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<td>Arja Sääkslahti, Conference Chair</td>
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<tr>
<td>10.30-11.30</td>
<td>Keynote session 1, L304</td>
<td>David Stodd: A Developmental Perspective on the Role of Motor Development for Children’s Health</td>
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<td>Chair: Taija Juutinen Finni</td>
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<tr>
<td>11:45-13:00</td>
<td>Parallel session 1</td>
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<tr>
<td></td>
<td>Oral 1, L303 (3.floor)</td>
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<td></td>
<td>Motor skills and health</td>
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<td>Chair: Marita Poskiparta</td>
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<td>Oral 2, L304 (3.floor)</td>
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<td>Pre-School Interventions</td>
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<td>Chair: Greet Cardon</td>
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<tr>
<td>11:45-12:00</td>
<td>Tortella et al: A cross-cultural study in motor skills development in</td>
<td>Kaukonen et al: Development of a randomized controlled intervention decreasing socioeconomic</td>
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<td>Italian, Greek and Norwegen 7-8 years old children</td>
<td>inequalities in energy balance-related behaviors at a preschool setting</td>
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<tr>
<td>12:00-12:15</td>
<td>Matarma: Motor skills are associated with % body fat but not with</td>
<td>Mehtälä et al: The effect of the cluster randomized HIPPA intervention on childcare children’s</td>
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<td>physical activity</td>
<td>overall physical activity</td>
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<td>12:15-12:30</td>
<td>Niemistö et al: Motor skills of Finnish 3- to 7-year-old kindergarten</td>
<td>Van Stappen et al: Daily patterns of European preschoolers’ objectively measured step counts:</td>
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<td>children: associations with sex, geographical location and residential</td>
<td>results from the ToyBox-study</td>
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<td>density</td>
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<tr>
<td>12:30-12:45</td>
<td>Luz et al: The relationship between motor competence and health-related</td>
<td>Kyhälä &amp; Reunamo: Children’s High physical activity in different day care activities</td>
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<td>fitness in children and adolescents</td>
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<td>João et al: Relationship Between Physical Activity and Physical</td>
<td>Tortella &amp; Fumagalli: A national program of good practices to implement physical activity in</td>
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<td>Coordination, Speed, and Balance skills in 6-9 years old</td>
<td>kindergartens: the project of Laboratorio 0246</td>
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<td>Time</td>
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<tr>
<td>13:15-14:15</td>
<td>Lunch at Lozzi</td>
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<td>14:30-15:45</td>
<td><strong>Parallell session 2</strong></td>
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<td><strong>Oral 3, L303 (3.floor)</strong></td>
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<td></td>
<td>Active exergames</td>
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<td><strong>Oral 4, L304 (3.floor)</strong></td>
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<td>Health</td>
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<td><strong>Chair: Tuomas Kari</strong></td>
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<tr>
<td>14:30-14:45</td>
<td>Kari: Introduction to Active Exergames symposium</td>
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<td>14:45-15:00</td>
<td>Howells: What is Being Healthy within UK Primary School setting?</td>
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<td>15:00-15:15</td>
<td>Jongh et al: Bone density in young children</td>
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<td>15:15-15:30</td>
<td>Jongh et al: Bone density in young children</td>
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<td>15:30-15:45</td>
<td>Haapala et al: Ability of measures of physical fitness and adiposity to identify children with increased cardiometabolic risk – the PANIC Study</td>
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<td>Hamari et al: Comparison of Fitbit One® Against ActiGraph in Measuring Habitual Physical Activity of Children</td>
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<td></td>
<td>Barnett: Development of an app to assess young children’s perceptions of movement competence</td>
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<tr>
<td>15:45-16:15</td>
<td>Break: Coffee</td>
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<tr>
<td>16:15-18:00</td>
<td><strong>SIG-meeting, L303</strong></td>
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<td><strong>Chair: Ingunn Fjortoft</strong></td>
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<td>AIESEP</td>
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<tr>
<td>19:00-20:30</td>
<td>City reception at town hall, Address: Vapaudenkatu 32</td>
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</table>
FRIDAY 27 January

7:00-7:45  Instructed morning activities

Activity 1: Morning walking / jogging from hotel Paviljonki
Activity 2: Morning walking / jogging from hotel Alba
Activity 3: Feldenkrais at hotel Alba
Activity 4: Skating at Jyväsjärvi

8.30-9.30  Keynote session 2, L304
Chair: Marja Cantell

Anthony Pellegrini: The Development and Function of rough-and-tumble play in childhood and adolescence

9:45-11:00  Parallel session 3
Oral 5, L303 (3.floor)
Play
Chair: Ingunn Fjortoft

Oral 6, L304 (3.floor)
School
Chair: Marc Cloes

9:45-10:00  Koivula et al: Papilio-programme in promoting children’s play in Finnish day care centres through “Toys-go-on-holiday day”
Haapala et al: Physical activity and liking school in primary school students

10:00-10:15  Barnett et al: How important is play competence perception to physical activity?
Wellard & Perry: Putting theory into practice: Developing increased physical literacy in children through CrossFit and Strength and Conditioning activities

10:15-10:30  Iivonen et al: Kindergarteners’ types of physical activity during free play while outdoors in the winter
Huhtiniemi et al: Associations between basic psychological needs, motivational regulations and enjoyment among Finnish 5th grade students

10:30-10:45  Costa et al: How well do children perceive their aquatic competence?
Quitério et al: Assessment of basic motor competences in primary school aged Portuguese children – the Gender Issue

10:45-11:00  none

Scheuer et al: Development and validation of a survey instrument for detecting basic motor qualifications in elementary school children
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Details</th>
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<tbody>
<tr>
<td>11:00-11:30</td>
<td>Break</td>
<td>Coffee and fruits</td>
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<tr>
<td>11:30-13:00</td>
<td>Poster session, L304 &amp; Lobby of 3rd floor</td>
<td>Chair: Anne Soini</td>
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<tr>
<td>13:00-14:00</td>
<td>Lunch at Lozzi</td>
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<td>14:15-15:15</td>
<td>Keynote session 3, L304</td>
<td>Chair: Tuija Tammelin</td>
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<td>Anna Bugge: The effects of school-based physical activity interventions on physical health and scholastic performance</td>
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<td>15:30-16:45</td>
<td>Parallel session 4</td>
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<td></td>
<td>Oral 7, L303 (3.floor)</td>
<td><em>Family and physical activity</em></td>
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<td>Chair: Arto Laukkanen</td>
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<td>Oral 8, L304 (3.floor)</td>
<td>Chair: Tuija Tammelin</td>
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<td></td>
<td>Physical activity recommendations</td>
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<td>Practical demonstration L123 (1.floor)</td>
<td>Chair: Susanna Iivonen</td>
</tr>
<tr>
<td>15:45-16:00</td>
<td>Tuominen et al: Preschool children’s and their mothers’ objectively measured sedentary time, physical activity, and effect of movement-to-music video program: a randomized controlled trial</td>
<td>Sacko &amp; Stodden: MC=MVPA: New Insight for Activity Intensity Relativity</td>
</tr>
<tr>
<td>16:00-16:15</td>
<td>Laukkanen: Physical Activity and Motor Competence in 4-8-Year-Old Children: Results of a Family-Based Cluster-Randomized Controlled Physical Activity Trial</td>
<td>Howells: Using basic biomechanics to support observation, assessment and progression of learning.</td>
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<tr>
<td>18:00-20:00</td>
<td>Social program</td>
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<td>Social program 1: Hockey game, address: Rautpohjankatu 10. Meeting at lobby of Liikunta at 18:00 and 18:10 in front of cafeteria Alakulma at hockey hall.</td>
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</tbody>
</table>
SATURDAY 28 JANUARY

7:00-7:45  Instructed morning activities

Activity 1: Morning walking / jogging from hotel Paviljonki
Activity 2: Morning walking / jogging from hotel Alba
Activity 3: Yoga at hotel Alba
Activity 4: Skating at Jyväsjärvi

8:30-9:30  Keynote session 4, L304
Chair: Kaisu Mononen
Marije T Eferink-Gemser: Sport & Talent: performance development in children

09:45-11:00  Parallel session 6
Oral 9, L303 (3.floor)  Oral 10, L304 (3.floor)
Chair: Sami Kalaja  Chair: Marja Cantell
Sport  Motor development

9:45-10:00  Smits et al: Organised sports activities for pre-schoolers in the Netherlands: an exploratory study
Rodrigues et al: Motor competence model assessment. Performance of manipulative skills over the growing years

10:00-10:15  Jidovtseff et al: Analysis of Kids' Athletics implementation in Wallonia

10:15-10:30  Foucart et al: Use of sports to demystify Science
Houwen & Cantell: Can early motor milestones predict later development?

10:30-10:45  Scharenberg: Salutogenetic Experience in Apparatus Gymnastics
Cordovil et al: Dealing with risk along development: Are we wrapping our children in cotton wool?

10:45-11:00  Saraiva et al: What are the biosocial determinants associated with low gross motor competence in preschool children?

Break: Coffee and fruits
<table>
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<th>Time</th>
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<tbody>
<tr>
<td>11:30-12:45</td>
<td>Keynote session 5, L304</td>
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<td>Chair: Marc Cloes</td>
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<td></td>
<td>Kini Tarkka, Matti Pietilä &amp; Arja Sääkslahti: Finnish curriculum from early childhood through primary school – in physical activity and learning in focus</td>
</tr>
<tr>
<td>13:00-14:00</td>
<td>Lunch at Lozzi</td>
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<tr>
<td>14:15-15:15</td>
<td>Keynote session 6, L304</td>
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<td>Chair: Arja Sääkslahti</td>
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<td>Timo Järvensivu &amp; Nina Korhonen: Building successful network to enhance young children's physical activity - case Finland</td>
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<tr>
<td>15:30-16:45</td>
<td>Parallell session 7</td>
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<td>Oral 11, L303 (3.floor)</td>
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<td>Motor assesment</td>
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<td>Chair: Lisa M Barnett</td>
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<td>Oral 12, L304 (3.floor)</td>
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<td>Physical activity, brain and learning</td>
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<td>Chair: Anna Bugge</td>
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<tr>
<td>15:30:45</td>
<td>Cloes &amp; Vandermeeren: Motor assessment of children at school: pupils’ opinion about MOBAK-1</td>
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<tr>
<td>15:45:00</td>
<td>Cloes et al: Involvement of physical education teachers in motor testing. A pilot study with the MOBAK-1</td>
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<tr>
<td>16:15:30</td>
<td>Jidovteff et al: Measuring children motor skills with MOBACK-1: descriptive data and critical analysis</td>
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<td>16:30:45</td>
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<td>Cloes et al: Involvement of physical education teachers in motor testing. A pilot study with the MOBAK-1</td>
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<td>Jidovteff et al: Measuring children motor skills with MOBACK-1: descriptive data and critical analysis</td>
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<td>Donati et al: Toward a movement-centred view on development: Interrelations between skilled and creative moving and higher-level cognitive functioning in typical/atypical developing children</td>
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<td>Federici et al: Moving and thinking creatively: Inhibition of cognitive routines? Age and gender differences</td>
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<td>Koutsouki et al: Detection and evaluation of movement characteristics in students with dyslexia</td>
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<td>Syväoja et al: The cross-sectional associations of physical activity, sedentary behaviors and academic achievement are mediated by fitness and bedtime</td>
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<tr>
<td>19:00-22:00</td>
<td>Congress dinner: bus service, pickup from hotels Alba, Paviljonki and Scandic at 18:30, back to hotels or city centre at 22:00</td>
</tr>
</tbody>
</table>
Poster presentations

1. **Kallinen et al.**: Perceived volume and intensity of physical activity among 10-year-old children.

2. **Matarma**: Factors associated with objectively measured physical activity and sedentary time of 5-6-year-old children in the STEPS Study 10.

3. **Adler**: Physical activity of 4-6-year old children in German child care.

4. **Sigmund et al.**: Weekday-weekend patterns of physical activity and screen time in parents and their pre-schoolers.

5. **Wiik et al.**: To increase physical activity and the joy of movement among pre-schoolers.

6. **Santos et al.**: Cognitive development and physical activity in toddlers.

7. **Zapata et al.**: Nutritional status, body composition, fitness and the relationship between them in chilean kindergarten teachers.

8. **Morgado & Jidovtseff**: Children’s engagement in physical education could be improved by stories and imagination.


13. **Fettweis et al.**: Impact of dynamic seating on child’s behavior and concentration in classroom.

14. **Pereira et al.**: Association between body mass index and gross motor development in toddlers.

15. **Monsalves-Alvarez et al.**: Main nutritional and motor skills outcomes of a pilot physical activity intervention for preschool children living in semi-rural sectors.


17. **Houwen et al.**: Developmental trajectories of motor skills, executive functions, and language in preschool children with and without developmental risk: The MELLE-project.
18. **Haga:** The Relationship between Motor Competence and Physical Fitness is Weaker in the 15–16 Yr. Adolescent Age Group than in Younger Age Groups (4–5 Yr. and 11–12 Yr.).

19. **Morgado et al.**: The acquisition of aquatic skills in preschool children: deep vs shallow water swimming lessons.

20. **Vandermeulen et al.**: Elaboration of a water familiarization testing battery adapted for young children.


23. **Martin et al.**: Does sport club participation contribute to physical activity among children and adolescents in Finland - Sports Club for Health project.

24. **Asunta et al.**: Observational screening tools for teachers for early identification of children with DCD.

25. **Kull et al.**: Results From the Estonian 2016 Report Card on Physical Activity for Children and Youth.

26. **Mooses & Kull**: School day physical activity of students aged 7-13 years.

27. **Tammelin et al.**: Finland’s 2016 Report Card on Physical Activity for Children and Youth.

28. **Mäkäräinen**: 7-year-old children’s physical activity and motor skills measured with EMG-pants and accelerometer and the relationship between physical activity and the skills.

29. **Mota et al.**: Motor Fitness and Preschooler Children Obesity Status.

30. **Hernández et al.**: Cardiorespiratory Fitness is Associated with Inhibitory Functions in the Developing Brain."
A Developmental Perspective on the Role of Motor Development for Children’s Health

*David Stodden
University of South Carolina, USA

There is strong evidence supporting the link between motor competence and physical activity (Holfelder & Schott, 2014; Logan et al., 2014; Lubans et al., 2010), many aspects of health-related physical fitness (Cattuzzo et al., 2015; Lubans et al., 2010) and obesity (Cattuzzo et al., 2015). In addition, emerging longitudinal and experimental evidence is providing a direct causal linkage (Cohen et al., 2015; D’Hondt et al., 2013; Smith et al., 2016; Rodriguez et al., 2016) between the development of motor competence and the aforementioned health-related variables. This cumulative evidence aligns with a theoretical model (Stodden et al., 2008) that synergistically links motor competence, physical activity, physical fitness, obesity as well as the critical mediating roles of perceived competence (Barnett et al. 2008, 2011), and physical fitness (Khodaverdi et al., 2015) on the relationship between motor competence and physical activity. Understanding antecedent/consequent mechanisms among variables in the model and how the relationships may change across time is paramount to promote innovative research in this area. Important considerations for future work include promoting additional longitudinal and effective experimental studies, as well as examining whether the strength of associations among variables in the model increase across the lifespan (Robinson et al., 2015). In essence, promoting positive developmental trajectories of multiple physical, psychological, social/emotional and cognitive aspects of health via a lens that incorporates the development of motor competence as part of every child’s journey through childhood and adolescence is our long-term goal.

*Keywords: Health, Physical Activity, Motor Competence*
Special interst group (SIG) meeting

*Ingunn Fjørtoft*
Univ.College of Southeast Norway, Norway

The aim of this special interest group (SIG) is to create an active network of researchers/academics with an interest in issues relating to early childhood education, physical activity and health, with a particular focus on: teaching physical education for professional working in early childhood education; early years physical activity, physical development and health; and children’s development through play.

During this session we discuss about physical activity and physical education in the Early Years: What are the guidelines, curriculum and practices?

Everyone are welcome to join this discussion.

*Keywords: guidelines, curriculum, practices*
The Development and Function of rough-and-tumble play in childhood 
and adolescence

Anthony Pellegrini
Univ Minnesota, USA

Rough-and-tumble play (R&T) is a pan-mammalian social behavior, and common in preschool children. In this talk I present research from a series of observational, longitudinal studies on R&T in childhood and adolescence where I will first define rough-and-tumble play (R&T)(1,2,3,4,5). Second, I propose a model of individual x environment transaction that attempts to explain the development and function of R&T. Third, as part of my exploration of putative functions of R&T, I explicate costs and benefits of R&T from childhood through adolescence. I then explore some immediate and deferred functions of R&T in childhood and in adolescence.

Keywords: Play, aggression, social development

References
The effects of school-based physical activity interventions on physical health and scholastic performance

Anna Bugge
University of Southern Denmark, Denmark

Physical activity has been found to induce multiple health benefits in youth. Furthermore, it has been demonstrated that physical activity also is associated with brain development and cognition, including scholastic outcomes such as academic achievement and classroom behavior. This association has been found both in cross-sectional and longitudinal studies. Furthermore, novel experimental studies show promising results relating improvements in physical fitness to increased cognitive performance. However, when it comes to results from school-based interventions the picture is not quite as clear, neither for metabolic health outcomes nor academic achievements. Explanations for these differential effects are multiple, with some addressing the mixed implementation success of different interventions or differences in intervention intensity, others talking about the ‘activity stat’ and others again the diverse starting point of participants in different studies. Also, the term ‘physical activity in school’ is a complex parameter to study, as the same wording can have different meanings. Thus, two researchers or practitioners working with the implementation of more physical activity in schools can be engaged in very different interventions. Therefore, for clarification, physical activity in schools can be divided into different domains; e.g. 1) physical education, 2) physical activity integrated in academic subjects, 3) exercise training, 4) active breaks or ‘brain breaks’, 5) recess/free play and, 6) active transportation. Some interventions target multiple domains and are therefore called multi-component interventions. This presentation will focus on the effect on both metabolic health and academic achievement of school-based interventions focusing on implementing physical activity during the school day in different physical activity domains.

Keywords: Academic achievement, Intervention, Children, Metabolic Health

*Presenting author
Sport & Talent: performance development in children

*Marije T Elferink-Gemser, Sebastiaan Platvoet, Chris Visscher*

1Center for Human Movement Sciences, University Medical Center Groningen, University of Groningen, Netherlands
2HAN Sports and Exercise, HAN University of Applied Sciences, Netherlands

Different definitions can be used for the term 'talent', depending on the reference that is applied. When talent is regarded as the potential of a person to develop towards the best performance, we can look for talent within every child using a personal reference for each child. An important question is how we can challenge children to improve? To help children in their performance development, the context of PE is highly suitable in which virtually all children can be reached. We designed an intervention with goal-directed exercises leading to substantial short- and longterm improvement of young children’s motor skills. This applied to children with a variety of motor skills. A second definition of talent refers to an extern reference, the comparison with peers: A talented athlete is considered an athlete who performs better than peers during training and competition and has the potential to reach the top in the future. According to PE-teachers, young children aged 6-8 who may become a talented athlete several years later, are characterized by their sport learning capacity, work attitude capacity and motor capacity. To further explore the question who may become the superstars of the future, we started from a model with relations between the task, the person, and his environment over time. From this, we designed longitudinal, multidimensional studies in which we monitored thousands of talented athletes’ performance development in a variety of sports. Results show interesting developmental trends for talented athletes who became later professionals versus those who dropped-out or became later amateurs in terms of their anthropometric, physiological, technical, tactical and psychological characteristics. Implications for talent identification and talent development will be shared.

Keywords: development, physical education, talent, performance

*Presenting author*
Finnish curriculum from early childhood through primary school – in physical activity and learning in focus

*Kirsi Tarkka
Finnish National Board of Education, Finland

Finnish curriculum from early childhood through primary school – in physical activity and learning in focus.
Building successful network to enhance young children’s physical activity – case Finland (created by VALO)

*Timo Järvensivu* 1, Nina Korhonen 2

1 Aalto University and nommoC seugolaiD osk, Finland
2 Valo, Finland

Introduction: In 2012, based on earlier work, Nuori Suomi, a Finnish non-governmental organization (NGO) (recently integrated with Valo and the Finnish Olympic Committee) initiated an expert network with a mission to build a national physical activity and well-being programme for early childhood education.

Implemented project: The network has been constructed following proven networking principles, including familiarity, trust, commitment, mutual goals, openness and dialogue, and organized coordination and facilitation. These networking efforts have boosted connectedness and collective focus and produced various concrete results, such as best practices for kindergartens and early childhood physical activity improvement guidelines for municipalities. National and regional events have been organized by the network to disseminate the results and to energize actors. To solidify these efforts, the network has recently been involved in producing new scientifically justified national recommendations for physical activity in early childhood.

Critical analysis: The initiative has been successful in many accounts. The network has grown into an action-oriented learning community including actors from multiple levels, such as public and private kindergartens, municipalities, research institutions, and the government. Around 40 percent of Finnish kindergartens are now involved. More work is needed to assess the impact of the initiative: Are children physically now more active? What kind of changes can we witness in kindergarten teachers’ behavior and attitudes? How much of this is due to the initiative? What kind of geographical or other gaps are there in disseminating the efforts? A further concern relates to coordination resources as the economic downturn presses NGOs to cut their spending.

Conclusions: The networking initiative has been successful in many accounts. It has brought expert knowledge together, strengthened cooperation, and produced various concrete results such as best practices and guidelines. The next phase should comprise an impact assessment of the initiative and strengthened efforts at localized dissemination.

Keywords: Network, Physical activity, Kindergartens, National initiative

References
The relationship between motor competence and health-related fitness in children and adolescents

Carlos Luz¹, An De Meester², Luís P. Rodrigues³, Rita Cordovil⁴

¹Escola Superior de Educação de Lisboa, Instituto Politécnico de Lisboa, Portugal
²Department of Movement and Sports Sciences, Ghent University, Ghent, Belgium
³Escola Superior de Desporto e Lazer, Instituto Politécnico de Viana do Castelo, Portugal
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Introduction: In the last twenty years a growing body of evidence advocates that early Motor Competence (MC) is of vital importance for developing an active and healthy lifestyle(1). This study analyses the associations between motor competence and its components with health-related fitness (HRF) and body composition.

Method: a random sample of 546 children (278 males) divided into four age groups was evaluated. A quantitative MC instrument(2) (evaluated stability, locomotor and manipulative skills) a maximal multistage 20-m shuttle-run test and the handgrip test were used. Body composition was measured following standard procedures. Pearson correlations and standard regression modelling were used to explore the associations between variables.

Results: Several significant moderate to high correlations between MC and HRF and an inverse correlation between MC and body composition were found for both genders. However the strength of the correlations was not, as hypothesized, stronger in the older age group. The MC model explained 75% of the HRF variance, with the locomotor component being the highest predictor for the entire sample. When analysed for each age group and by gender, different predictors emerged across age groups, but stability skills were the highest predictors for both genders in the two older groups.

Conclusion: These results support the idea that the relationship between MC and HRF is strong and may change across childhood, and the development of stability skills in childhood may be important for HRF performances across childhood and into adolescence.

Keywords: Motor competence, childhood, health-related fitness

References

*Presenting author
Motor skills are associated with % body fat but not with physical activity

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Introduction: There are inconsistent results in the association of physical activity (PA), motor skills, and anthropometric measures within preschool-aged children.1,2,3 The main purpose of this study was to examine the association between four different composites of motor skills and PA, sedentary time, and anthropometric measures (body mass index (BMI), and % body fat) to find out whether some motor skill composites would associate stronger with other measures. Day care attendance and parents education were included in the examination.

Methods: The data came from the longitudinal STEPS Study (Steps to the healthy development and well-being of children) carried out in Turku in Southwest Finland.4 The study participants were 5-6-year-old children who attended the sub study of Physical Activity and Motor Skills (n=158) in 2013-2014. The PA was measured objectively with the Actigraph GT3X accelerometers; moderate-to-vigorous PA (MVPA) and sedentary time were used. Motor skills were measured with the complete form of Bruininks-Oseretsky-Test, second version (BOT-2), and body composition with bio-electronical impedance analysis (BIA), InbodyJ10.

Results: Preliminary results show that body coordination and strength and agility were positively associated with day care attendance, and with %body fat within girls and within children with higher mother’s education. No associations were found between any of the motor skills and MVPA or sedentary time.

Conclusions: Anthropometrics were stronger associated with some composites of the motor skills. It seems that other issues than PA or sedentary time influences the competence in motor skills.

Keywords: children, body composition, physical activity, motor skills

References

*Presenting author
Motor skills of Finnish 3- to 7-year-old kindergarten children: associations with sex, geographical location and residential density

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Motor competence is an important mediator for a physical activity (Stodden et al. 2008). Nevertheless, previous studies have shown a downward trend in children’s motor skills (Vandorpe et al. 2011). This may be due to environmental possibilities to be physically active.

The study participants were 1,036 children aged 3 to 7 (595 girls, 4.92yy±112.8 cm; 578 boys, 5.03yy±114.6 cm p < .01) from randomly selected kindergartens (N = 38) around Finland. The study sample was divided into four categories based on geographical location (capital, south, central, north) and residential density (capital, cities, rural areas, countryside). Motor skills were measured with the TGMD-3 (modified from Ulrich 2000), and children’s hobbies were assessed using parental questionnaires. Descriptive statistics were used to describe motor skills and hobbies in various geographical and residential areas. The four categories were compared using one-way ANOVA.

Girls had more physically active hobbies than boys did (p < .01), with the most physically active girls living in the capital. In movement skills, girls outperformed boys (p < .001) whereas boys scored higher in object control skills (p < .001) and in the TGMD-3 total score (p < .01). This was found in every geographical location and residential intensity. Comparing the differences between geographical locations, a few distinctions were observed. Girls in central Finland achieved higher values in object control skills than girls in the south (p < .01) or capital (p < .05). Similarly, boys in central Finland outperformed boys in the capital in object control skills (p < .01).

Some differences were found in motor skills in children living in different geographical locations within Finland. Residential intensity seemed to influence the number of physically active hobbies among girls. Furthermore, the study results confirmed that parents and early educators should monitor the development of object control skills in girls.

Keywords: geographical location, children, residential intensity, motor skills

References
A cross-cultural study in motor skills development in Italian, Greek and Norwegen 7-8 years old children.

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Introduction

Regular physical activity contributes to health and longer lives. The level of actual motor competence influences quality and amount of physical activities in children with differences occurring between various countries also due to differences in believes and practices of caregivers. In this research we examine cross-cultural differences in motor competence of 6-8 years old children from Greece, Italy and Norway.

Methods: subjects, material and method, data analysis

Norwegian (205), Italian (126) and Greek (132) children from 6 to 8 years old were tested in four standardized tests, two measuring fine motor skills and 2 for gross motor skills (Sigmundsson et al. 2016). The three unmatched groups of children were analyzed by Kruskal-Wallis test followed by Donn’s post test.

Results: summary of the main results and discussion

Norwegians outweighed Italian and Greek children in speed, accuracy, sureness, coordination of the two hands, hand-eye coordination and dynamic balance. Large differences exists between the three countries in terms of time dedicated to physical activity at school and the curricula objectives EACEA/Eurydice, 2013).

Conclusions: the main conclusions of the study

The Norwegian curriculum has an interdisciplinary orientation with many outdoor activities which are missing in Greece and Italy. The frequency and time of practice is also different in the three countries: Norwegian children spend 10% of the full-time general education by practicing physical activity and consider physical education a compulsory subject.

This pilot study should push governments and stakeholders to realize the importance that cultural differences in the practice of PA at school and “local” believes have on motor development. Ecological approaches adaptable to all environments together with evidence-based strategies to promote physical activities should be considered by administrators and teachers.

Keywords: gross motor skills, fine motor skills, Cross-cultural, primary school

References

Relationship Between Physical Activity and Physical Coordination, Speed, and Balance skills in 6-9 years old

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Introduction: Agility refers to physical coordination, speed, and balance skills. Systematically developed in children, as the current increase in sedentary behaviors appears to be linked to a degradation youth in recent years. The aim of the present study was to improve coordination, speed and balance skills in children involved in physical activities at school.

Methods: The sample comprised 31 children (6–9 years old; 18 girls and 13 boys). We used the Body Coordination Test for Children (KTK) composed of four tasks: catching balance (dynamic balance); moving across the floor in 20 seconds by stepping from one plate to the next, transferring the first plate (strength of the lower limbs); lateral jumps (speed); transfer platforms (space–time structure and laterality). The results from these tests required us to let the traditional standard data processing based on t tests and use more general linear modeling structures, such as those provided by the extendable ANOVA framework.

Results: All exercises of the KTK battery have been measured in pre- and post-tests. Without gender or age discrimination, it appears that pre-test motor performances of the children did not differ than those described in the literature. The better performances were identified in 6 and 8 year-old boys and girls. A regular progression of task complexity appears to represent an important factor for the achievement of coordination, balance, laterality and fine motor skills in children.

Conclusions: There is a general trend for girls, regardless of age, to show profiles of motor coordination lower than those that are expected for their age. The present study led to a significant proposal considering the practical application of all exercises for use by physical educators and coaches, because children need to be stimulated the most basic skills such as coordination, agility, laterality, execution speed and fine motor skills

Keywords: Agility, Physical Activity, Children, Coordination

*Presenting author
Development of a randomized controlled intervention decreasing socioeconomic inequalities in energy balance-related behaviors at a preschool setting

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To avoid the widening of socioeconomic inequalities in health, effective interventions are needed. Preschool children are a valuable intervention target, since sedentary behaviors, physical activity, and dietary behaviors, jointly called energy balance-related behaviors (EBRBs), are established in early childhood (1). To decrease SES inequalities, an intervention can be delivered to the whole target population, with the intensity adjusted to the needs of those in most vulnerable position (2). Preschool can be a useful setting in efforts to decrease SES inequalities in EBRBs (3). The ongoing DAGIS project aims to develop a multi-component setting-based intervention targeting SES inequalities in preschool children’s EBRBs.

A comprehensive needs assessment was planned for the first three school years of the project to create a base for the development of a six-month intervention in the school year 2017-2018. The needs assessment included the following steps: a) focus groups for parents and preschool personnel in 2014, b) pilot tests in 2014-2015, c) a cross-sectional study in 2015-2016 (N=864 children in 66 preschools) to recognize possible SES differences in EBRBs and factors associated with them, d) co-operation with a non-profit organization in development of practical methods throughout the steps, e) testing of the practical implementation of the intervention and workshops for target groups in 2016-2017.

Focus groups gave valuable information about home and preschool as contexts for children’s EBRBs. The information was used in questionnaire development for the cross-sectional study. Preliminary results from the cross-sectional study have indicated some factors potentially acting between SES and children’s EBRBs. The workshops with parents and preschool personnel will give additional knowledge for the development of practical methods for the intervention.

In conclusion, the phases of the needs assessment of the DAGIS study created foundations and provided useful information for the development of an intervention targeting SES inequalities in pre-school children’s EBRBs.

Keywords: socioeconomic inequality, intervention development, preschool, energy balance-related behaviors

References

*Presenting author
The effect of the cluster randomized HIPPA intervention on childcare children’s overall physical activity

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Introduction
The effect of the cluster randomized Home- and childcare-based Intervention to Promote Physical Activity (HIPPA) intervention on the everyday physical activity (PA) of children aged four to five was evaluated in this study.

Methods
14 childcare centers with 102 children born in 2007 (about three-year-olds) and their families participated in the study. The one-preschool-year long HIPPA was implemented in seven childcare centers while seven other centers continued their normal care (control group, CG). The PA levels of children were assessed by accelerometers six times in every six months during two and half research years. Valid PA data were obtained from 69 children at baseline and analyzed by intention-to-treat principle with linear mixed model.

Results
Children in the HIPPA increased their MVPA (moderate-to-vigorous PA) on weekdays significantly more than the CG did (p = 0.007, ES = 0.73), but the difference was diminished at six months follow-up. The difference between HIPPA and control girls in post-intervention weekday levels of LMVPA (light-to-vigorous PA; p = 0.005, ES = 0.90) was sustained (p = 0.003, ES = 1.11). There wasn’t significant difference between HIPPA and control boys in LMVPA.

Conclusions
HIPPA was effective in increasing PA in childcare-aged children, especially in girls.

Keywords: childcare, children, physical activity, intervention
Daily patterns of European preschoolers’ objectively measured step counts: results from the ToyBox-study

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Introduction: The purpose of this study was to examine and compare preschoolers’ physical activity (PA) patterns, across six European countries (Belgium, Bulgaria, Germany, Greece, Poland and Spain), participating in the Toybox-study.

Methods: A sample of 3,578 preschoolers (mean age: 4.8 (±0.42); 52.3% boys) was included. Step counts with two valid weekdays and two valid weekend days were used to describe preschoolers’ PA-patterns. Multilevel analyses were performed to take clustering of measurements into account.

Results: This study indicates that PA-patterns during weekdays show a high variability of step counts. Different peaks and troughs in step counts are observed and the PA-patterns differ between countries. However, in all countries, expect for Germany, the PA-patterns clearly mirror the daily schedule in preschools. In general, low PA step counts can be observed especially during rest periods, classroom activities, lunch breaks but also during after-school-hours. In Germany less variability in preschoolers PA-patterns can be observed. On weekend days, PA-patterns across the different countries showed comparable PA-patterns, with less variability compared to the weekdays. In all countries the lowest step counts can be observed in the afternoon.

Conclusion: Preschool elements (recess, classroom activities, sleep periods) across the countries are clearly reflecting the step count patterns during weekdays (e.g. In Bulgaria children are put to bed after lunch, reflected by a long period of low step counts). In Germany, preschools can independently choose their own daily schedule, which results in a less clear pattern. In general, it can be recommended to focus especially on classroom activities and on after-school-hours to improve preschoolers’ PA-levels. PA-patterns during weekend days show comparable patterns, however the time of the PA peaks and troughs differ between countries. Therefore, we recommend to develop comparable interventions to promote PA in preschoolers during weekdays and weekend days, but to make local adaptations.

Keywords: “Preschoolers” “physical activity” “patterns” “hour-by-hour”

*Presenting author
Children’s High physical activity in different day care activities

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Introduction: Children’s high Physical Activity (PA) varies substantially during the day care day between 8:00-16:00 (Reunamo & Kyhälä, 2016). Also children’s high PA varies considerably in different day care activities (Reunamo, 2016). In this study, the variation of high PA of children’s own activities is studied. In the study we concentrate on children’s activities, gender differences and children’s ages in relation to PA.

Methods: In this study observation data was used. Between January and May 2015, among other things, children’s physical activity (low, moderate or high) and children’s activity (role play, rule play, material play, physical play, reading, task, activity without a focus, forbidden activity, hanging about with others, action within general activity, other activity). Systematic sampling (with five minute intervals between observations) was used and the observation took place between 8:00-16:00 in day care centres.

Results: The percentage of children’s high PA was above average in physical play, rule play and forbidden activities and the lowest when the children followed the general activity (for example, dressed up during basic care or ate during lunch), when they were reading, doing tasks or were in activities without focus. The percentage of children’s high PA was above average in physical play, rule play and forbidden activities and the lowest when the children acted along the general activity, were reading, doing tasks or were in activities without focus. Boys were more often highly physically active in rule play and forbidden activities. Girls were more highly physically active when they did tasks and in reading sessions. Younger children were more often highly physically active in material play and in tasks while older children’s high PA percentage was higher during rule play. The results are discussed in the light of learning environment development and pedagogical emphasis.

Keywords: early childhood education, gender, physical activity, learning environment

References

*Presenting author
A national program of good practices to implement physical activity in kindergartens: the project of Laboratorio 0246.

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Introduction:

The practice of physical activity and the reduction of sedentary behavior are important predictors of better and longer lives. Very little time is dedicated to physical activity (PA) in Italian kindergartens where children spend up to 8 hours/day. This project has been developed to increase awareness of the problem among kindergarten teachers and to promote organization of PAs in daily practice.

Implemented project:

A short manual was prepared to provide kindergarten teachers with indications concerning the “why”, the “how” of PA with guidelines to organize lessons for 3-6 years old children where opportunities of physical activities are specifically developed. A total of 207 teachers from 17 different regions of Italy were recruited by 17 (one per region) physical activity promoters. A three steps process lead teachers to organize PAs that were shown to and discussed with colleagues and parents at the end of the project.

Critical analysis:

Teacher opinions were obtained by interviews; PAs were organized following indications but with freedom to contextualize the indications, a condition evaluated as very positive. The major outcome was an increase of teacher self-confidence of conducting PA with children. Movement-based activities were deeply appreciated by children and their parents.

Aspects that required reconsideration concern coordination between regional promoters and teachers and/or University.

Conclusions:

The project stimulated organization of PAs for preschoolers by empowering the teachers in their work. These were motivated and declared enhanced perception of PA teaching competence. Understanding the role of PA in child development, appreciation of evidence-based approach to physical education, motivation and self perception of teaching competence appeared relevant aspects stimulating educators to plan movement-based activities.

Keywords: kindergartens, physical activity, implementation, preschool teachers

References

Introduction to Active Exergames symposium

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Introduction to Active Exergames symposium. Laying ground for the presentations by presenting relevant findings from the particular research field.

Keywords: Physical activity, Digital technology, Exergames, Active video games

*Presenting author
Comparison of Fitbit One® Against ActiGraph in Measuring Habitual Physical Activity of Children

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Introduction

Valid, reliable and easily implemented measurements are needed in order to achieve valuable knowledge of children’s physical activity. From the user’s point of view, tracking health data may motivate to achieve and sustain individual health goals and desired behavior changes (1). Based on a recent systematic review (2), Fitbit One activity trackers have previously been validated in six studies, however, none of these studies included children (2). The aim of this study was to evaluate the convergent validity of Fitbit One (Fitbit Inc., San Francisco, CA, USA) against Actigraph wActisleep-BT (ActiGraph, LLC, Pensacola, FL, USA) in measuring habitual physical activity among children.

Methods

Experimental design where healthy 9–10-year-old participants, chosen with a convenient sampling method, carried two waist-worn accelerometers (Fitbit One and Actigraph wActisleep-BT) for six consecutive days. The final sample (n=26, 15 boys, 11 girls) was analyzed with a correlation analysis, Bland-Altman plots, and the Kruskal-Wallis test.

Results

Strong positive correlations were consistent: increasing activity counts in Actigraph showed as increasing activity counts in Fitbit One. The average correlation coefficients were 0.71 and 0.94 for raw data and the moving averages, respectively. The differences between the Actigraph mean count and the Fitbit One mean count per day was 1937 (standard deviation 1003) in the whole range [116–5052]. Fitbit One gave higher counts for all but one participant (the least active). The differences were explained by the activity intensity: higher intensity denoted higher differences, and light intensity denoted lower differences.

Conclusions

Fitbit One counts are comparable to the Actigraph counts in 9–10-year-old children engaged in habitual physical activity in low (at most 2295 counts per minute (3)) intensities. However, in high intensity of activities (at least 2296 counts per minute (3)), Fitbit One overestimates the counts significantly, and thus shows divergent validity when compared to Actigraph.

Keywords: Accelerometry, Physical Activity, Investigative Techniques, Children

References

Introduction: Assessing perceived competence in young children is time consuming as it is commonly done one on one with an interviewer due to literacy considerations. An app which children could independently complete could save time in the field but it needs to be reliable. The purpose was to present consistency of child responses i) across one week using the Pictorial Scale of Perceived Movement Skill Competence in Young Children (PMSC) app and ii) between the interviewer administered PMSC and the app. Methods: The PMSC (18 items) has fundamental movement skill (FMS) items (e.g. catch and throw), and play items (e.g. cycle, scooter). Children first respond to whether they are ‘good’ or ‘not so good’ as represented by two cartoon images. Finally their response is recorded (‘not too good’, ‘sort of good’, ‘pretty good’, ‘really good’) for each item. The PMSC android app is delivered the same way in terms of presentation and responses but with audio. This paper uses two samples from the same Australian city. Intraclass correlations (ICC) were used to i) assess test retest reliability using the PMSC app (all 18 items) in 42 children (mean age 6 years) and ii) consistency between measures (interviewer administered and app) for the 12 FMS items in 44 children (mean age of 8). Results: Over time (6.9 days, SD = 0.35) the full PMSC (ICC = 0.79, 95% CI 0.64, 0.88) and the FMS items had acceptable consistency (ICC = 0.68, 95% CI 0.47, 0.81). The PMSC app was consistent with the interviewer version for the FMS items (ICC = 0.86, 95% CI 0.76, 0.92). Conclusion: The PMSC app is suitable to use in the field.

Keywords: fundamental movement skill, app development, physical self-perception, perceived competence

"Development of an app to assess young children’s perceptions of movement competence"

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Assessing Basic Motor Competencies in Primary School – an International Comparative Study in Europe

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**Introduction**

A central aim of primary physical education is the promotion of motor competencies as a prerequisite to be able to participate in the culture of movement. We defined basic motor competencies (BMC) as physical performance dispositions, which evolved from task-specific requirements in the culture of movement.

**Methods**

We developed the MOBAK-1 test instrument for the assessment of BMC in first graders. A first study in Switzerland focused on the factorial validity of the instrument (1). Between spring 2015 and summer 2016, the MOBAK-1 test instrument was implemented in seven further European countries:

- Switzerland (N = 317; girls = 55%; age: M = 7.04 years [SD = .37])
- Belgium (N = 166; girls = 45%; age: M = 7.23 years [SD = .64])
- Czech Republic (N = 153; girls = 55%; age: M = 7.37 years [SD = .62])
- Germany (N = 1091; girls = 45%; age: M = 6.80 years [SD = .89])
- Italy (N = 85; girls = 45%; age: M = 7.24 years [SD = .30])
- Lithuania (N = 120; girls = 48%; age: M = 7.76 years [SD = .33])
- Luxembourg (N = 150; girls = 47%; age: M = 6.74 years [SD = .34])
- Slovakia (N = 241; girls = 56%; age: M = 7.06 years [SD = .57])

**Results**

In the initial validation study in Switzerland, two factors consisting of four items each were found (“Locomotion”; “Object-control”). The related EFA (CFI = .98; RMSEA = .024) and CFA (CFI = .95; RMSEA = .044) revealed good model fit indices. This structure was confirmed on the total sample of all the participating countries (N = 2336; CFI = .97; RMSEA = .035). Furthermore, differences between the results in the different countries were identified.

**Conclusions**

The developed MOBAK test instrument meets psychometric validity demands and allows to identify differences in BMC between different student populations.

**Keywords:** cultural participation, motor competencies, motor testing, test development

**References**

Identification of barriers and facilitators related to physical activity and sedentary behaviours – results of focus group interviews with parents from elementary school children within the Feel4Diabetes study.

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Introduction: We aimed to study barriers and facilitators of physical activity (PA) and sedentary behaviour (SB) in young families from low socio-economic areas. The study provides insight into opinions of parents regarding their children’s PA and SB, and PA and sedentary activities parents do together with their children.

Methods: Data were obtained from focus groups among parents across 6 European countries (i.e. Belgium, Bulgaria, Finland, Greece, Hungary, Spain), participating in the Feel4Diabetes-study. In each country, three focus group interviews with parents were conducted. Barriers and facilitators of parents’ and children’s PA and SB were discussed. Focus groups were analyzed using the qualitative data analysis software NVIVO.

Results: Some parents across the countries reported they do not participate in PA together with their children although they stated that they would like to increase their children’s PA-levels. Lack of time, lack of facilities in the neighborhood and children who are tired are perceived barriers to enhance children’s and families’ PA-levels. On the other hand, many facilitators were mentioned (e.g. limit children’s homework, more organized physical activities (for children or for the whole family) and more low-cost facilities in the neighborhood). Furthermore, most of the parents would like to reduce children’s sitting time, although they reported that they engage in sitting activities together with their children. Facilitators to reduce SB are comparable with facilitators to enhance PA, for example reducing children’s homework and providing more facilities in the neighborhood.

Conclusion: Low-SES parents perceived many barriers for sufficient PA and limited SB in their families and reported different facilitators to enhance PA and reduce SB. Knowledge of these barriers and facilitators will help to develop more effective programs to enhance PA and reduce SB in young children and their families from low socio-economic areas.

Keywords: “parent-child” “parental perception” “physical activity” “sedentary behaviour”
What is Being Healthy within UK Primary School setting?

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This paper explores the focus of ‘Be Healthy’ not only on being overweight or obese but also on maintaining high physical activity levels. A success indicator of the Be Healthy outcome (of the ECM agenda, Article 2) is a reduction in under the 11s’ obesity levels, yet there are no regularly measured statistics of this target. The research within this project focused on the amount of high physical activity levels that was possible within primary school.

Data were collected within a case study setting in one school over one school year, 20 children wore Actigraph accelerometers to record physical activity intensity levels through the school day (9am until 3.10pm). A repeated measures 3 factor ANOVA was used to analyse the effects of factors – including: type of day (days including a Physical Education lesson (PE days) and those that did not (Non PE days); year group (infants / juniors); and gender (male / female). P values of <0.05 were taken as the value for statistical significance ± one standard deviation. Statistical analysis was completed using SPSS 17.0.

The findings reveal that on average children completed 53 ± 19 minutes of high physical activity levels on PE days and on Non PE days, the children completed, on average, 43 ± 15 minutes of high physical activity levels within the school day. Further data will be presented according to age and also gender to show that although there are worrying predictions for the rates of obese and overweight children, such as Article 1 who predict that by 2050 it is suggested that 25% of children will be obese and 30% will be overweight. However data from this case study school found that it is possible for primary schools to support high levels of physical activity and these predictions are challenged.

*Keywords: Being Healthy; Physical Activity

References
Ability of measures of physical fitness and adiposity to identify children with increased cardiometabolic risk – the PANIC Study

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This study aimed to evaluate ability of measures of physical fitness and adiposity to identify children with increased cardiometabolic risk.

Participants were 187 boys and 182 girls 6–8-years-of-age. Physical fitness was measured with maximal cycle ergometer (maximal workload/body weight and lean mass), 50-meter shuttle run, 15-meter sprint, standing long jump, static balance, manual dexterity, sit-and-reach, sit-up, and hand grip strength tests. We used waist circumference, body mass index-standard deviation score (BMI-SDS), and DXA derived body fat percentage as the measures of adiposity. We computed a population specific continuous cardiometabolic risk score as the sum of Z-scores of waist circumference, insulin, glucose, triglycerides, HDL cholesterol (inverse), and the mean of systolic and diastolic blood pressure. The score was also calculated without waist circumference. Increased cardiometabolic risk was determined as at or above 1SD. The data were analyzed using Receiver Operating Characteristic Curve analyses.

In boys and girls, a lower workload achieved in the cycle ergometer test per body weight (Area under the curve (AUC)=0.781, 95% confidence interval (CI)=0.715 to 0.838, P<0.001 for boys; AUC=0.654, 95% CI=0.580 to 0.720, P=0.005 for girls) and all measures of adiposity (AUC=0.857 to 0.871, 95% CI=0.798 to 0.916, P<0.001 for boys; AUC=0.786 to 0.800, 95% CI=0.719 to 0.856, P<0.001 for girls) were able to identify children with increased cardiometabolic risk. Adiposity remained the strongest determinant of increased cardiometabolic risk when we used cardiometabolic risk score without waist circumference. Poorer 50-meter shuttle run test (AUC=0.664, 95% CI=0.592 to 0.732, P=0.012), 15-meter sprint (AUC=0.720, 95% CI=0.649 to 0.783, P<0.001), and standing long jump (AUC=0.683, 95% CI=0.611 to 0.749, P=0.003) test performance also identified boys with increased cardiometabolic risk.

Our findings suggest that the measures of adiposity and some measures of physical fitness could be used as simple tools to identify 6–8-year-old children with increased cardiometabolic risk.

Keywords: children, Health, Fitness, adiposity

*Presenting author
Bone density in young children

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Introduction

Physical activity in early childhood is beneficial on a person’s bone health. To our knowledge no studies were conducted looking at the association between PA and BMD in infants and toddlers. In this context, the aim of this study is to explore the associations between physical activity and bone mineral density (BMD) in children aged 11 to 29 months.

Methods

This study comprised 265 toddlers (128 girls), aged 19.79±4.18 months from the GET-UP! Study, NSW, Australia. Physical activity was assessed with accelerometers (Actigraph GT3X+) and expressed as percentage of time spent in total physical activity. Trost et al. (2012) accelerometers cut-points were considered. BMD will be assessed using a portable ultrasound bone sonometer (Pediatric Sunlight MiniOmni) as expressed as speed of Sound (SOS). Linear regression analysis was performed to predict BMD from physical activity, adjusted for body mass index, age and sex.

Results

Participants spent on average 53.18±7.92% of their waking time in physical activity. SOS was on average 3321.31±118.37 m/s. Percentage of time spent in physical activity was a significant predictor of BMD after adjustments for the above-mentioned cofounders (946; = 0.087, p = 0.915). Our results do not confirm previous findings from studies with older children.

Conclusion

In conclusion, in our study the percentage time spent in physical activity was not a significant predictor of BMD independently of age, sex and BMI in children aged 11 to 29 months, but more studies with toddlers are necessary in order to confirm or rule out our findings.

Keywords: Physical Activity, Bone Mineral Density, toddlers

*Presenting author
The DASH-Study: Disease, Activity and Schoolchildren’s Health in Township Communities in Port Elizabeth, South Africa: Baseline results

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Purpose:
In marginalized South African communities, both communicable and non-communicable diseases affect population health. The DASH study assessed this double burden and its impact on the physical fitness, cognitive performance and psychosocial health of primary schoolchildren in disadvantaged communities in Port Elizabeth. This abstract reports on selected baseline health parameters: the prevalence of soil-transmitted helminth (STH), anaemia, stunting and wasting, and the effect on cardio-respiratory fitness.

Methods:
The study was conducted among 1,009 children, aged 9-12 years, at eight schools. Physical fitness was determined by conducting a modified Eurofit fitness testing battery. Stool samples were assessed regarding to STHs and intestinal protozoa infections. Haemoglobin (Hb) levels were measured using finger prick blood samples. Anthropometric indicators were determined using standard techniques.

Results/findings:
Complete data were available for 934 children (92%). In two schools, high STH prevalences were found. For boys and girls co-infected with A. lumbricoides and T. trichiura (n = 155) the maximal oxygen uptake (VO2 max) was estimated to be 50.1 and 47.2 ml kg-1 min-1, compared to 51.5 and 47.4 ml kg-1 min-1 for their non-infected peers (n = 278), respectively. Non-infected children were heavier, taller, less stunted and less wasted (P >0.05) with a higher body mass index (BMI) than peers showing single or dual species infections (P >0.05). The overall mean Hb level was 122.2 g l-1.

Conclusion and recommendations:
The study confirmed the importance of monitoring parasitological, anthropometric and physical fitness indicators in children deriving from disadvantaged communities. Biannual mass deworming against STH, according to international treatment guidelines, is also recommended at schools with a high prevalence of STH.

www.dash-sa.com


Keywords: South Africa, health, School PE, townships

*Presenting author
Papilio-programme in promoting children’s play in Finnish day care centres through ”Toys-go-on-holiday day”

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Papilio is a developmentally focused intervention program developed in Germany (1) targeting primary prevention of different behavioral problems in children’s development and enhancing children’s social-emotional competence. The ability to recognize one’s own and others’ emotions, regulate emotionally-grounded behaviors, and to understand the ways of social interaction are challenging skills, in the learning of which the child needs adult’s support. In this study we explore the implementation of Papilio-program in the Finnish context of ECE.

In Papilio project our broader scope is to discover the transformation occurring in the day care centres culture and activities through introducing Papilio measures to kindergarten teachers and children. In this present paper the focus is on evaluating the outcomes of particular Papilio measure: “Toys-go-on-holiday day” from the perspective of play. Once in a week all the toys in the day care centre have a day off. The purpose is to encourage children in thinking alternative ways of playing together without regularly used toys, to support children’s social interactions, inclusion in the group, help them to resolve conflicts, and initiate new relationships.

The data of the study consists of teachers’ narrative diaries of “Toys-go-on-holiday day”, interviews, observations, video-recordings and photographs. We analyzed our data by qualitative content analysis. Our preliminary results suggest “Toys-go-on-holiday day” has influenced the activities in the day care centres many ways, e.g. altered teachers’ and children’s roles, ways of utilizing the affordances in the learning environment, and children’s play activities. In teacher’s accounts play without regularly used toys has increased children’s use of imagination and especially physically active play. Furthermore, children have played in larger play groups and more long-term play. Thus, this Papilio measure has resulted in rather significant changes in children’s play. In this presentation these changes will be addressed in detail.

Keywords: Papilio, social-emotional competence, play

References

How important is play competence perception to physical activity?

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Background: Possessing positive physical perceived competence is important for physical activity in older children. Young children are primarily physically active through play-based behavior rather than through organized sports and activities, so understanding how play perceptions might influence physical activity behavior is important. The purpose of this study was to assess if perceived active play competence is associated with young children’s physical activity. Methods: This paper uses two different samples drawn from the same Australian city, both collected in 2013. The first sample included 152 children (49% boys) aged 4-5 years (M = 4.7, SD = 0.47), the second sample included 78 children (55% boys) aged 5-8 years (M = 6.6, SD = 0.93). The Pictorial Scale of Perceived Movement Skill Competence was used to assess children’s perceived competence in six skill-related play activities (i.e. cycling, swimming, climbing, board paddling, scootering, skating/blading). Moderate- to vigorous-intensity physical activity (MVPA) was assessed for 8 consecutive days via accelerometers. A general linear model with the mean minutes in MVPA per day as the outcome, perceived play competence as the independent variable and adjusting for relevant confounders was performed in each sample. Results: Perceived active play competence was not related to MVPA mins/day (B = 0.44, p = 0.323) in the younger sample, but was in the older sample (B = 1.53, p = 0.026), explaining 24% of adjusted variance. Conclusion: Positive findings in the older sample show school-aged children need exposure to play based activities in order to develop the positive self-perception needed to engage in MVPA every day.

Keywords: Movement Skill, Physical Activity, Perceived Competence, Physical Self-Perception

*Presenting author
Kindergarteners’ types of physical activity during free play while outdoors in the winter

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Introduction: Few studies have been undertaken to observe physical activity among young children in natural conditions (1). However, the literature suggests that children may engage in more moderate-to-vigorous physical activity and more movements involving different fundamental motor skills during free play than during organized activity (2). Because physical activity in young children is marked by short bursts of different movements interspersed with varying intervals of light and vigorous intensity, it is difficult to assess and quantify (3). Direct observation is considered the most accurate methodology for assessing physical activity in young children (3). This study’s objective was to observe kindergarten children during outdoor free play to determine how much time (min.ss) they spent on eight types of physical activity that involve different fundamental motor skills.

Methods: Twelve children were individually videotaped for 60 minutes in a kindergarten yard during morning free play in the wintertime in Finland. Software for coding time durations (4) was used to code each child’s behaviour into physical activity types. A mean inter-observer agreement rate of 89 percent across the eight activity types ensured the reliability of the observations.

Results: The average times (min.ss) the children spent in different types of physical activity during the 60 minute, 17 second observations were lying down: 0.17, sitting: 7.29, standing: 7.24, walking: 0.49, running: 0.33, light physical activities and games: 4.26, moderate-to-vigorous physical activities and games: 3.22 and swinging: 0.0.

Conclusions: Although the kindergarteners’ physical activities during free play clearly involved mostly light activities and games, there was considerable variation in the use of different motor skills within each child and between children. Also, light activity can involve both fine motor activity with little gross motor movement and gross motor activity such in ball games. This study confirms that assessing physical activity in young children is difficult.

Keywords: Physical activity, Play, Observation

References
**How well do children perceive their aquatic competence?**

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Introduction: Children with more aquatic experience would be more capable of adjusting their perceptions to the reality of their aquatic competence[1], which itself should inhibit a drowning accident. However, before the age of eight, the self-perceived motor competence is not specific[2]. The purpose of this study was to analyse the relationship between perceived and real aquatic competence in 6- to 10-years old children in skills identified as relevant for surviving an aquatic accident.

Methods: The study sample consisted of 105 children (8.2 + 1.3 years old) with a minimal entry standard for swimming ability (12.5m autonomous swimming). Two age groups with similar aquatic experience were examined separately [G1, 6 to 7 yrs. (n= 53); G2, 8 to 10 yrs. (n=52)]. All children were evaluated twice for their aquatic competence in skills linked to the risk of drowning[3]: firstly using a common swimsuit (normal condition) and secondly wearing a t-shirt in addition (abnormal condition). The aquatic perceived competence for the same aquatic skills was assessed by questionnaire-interview (with images). Pearson correlation coefficients, pairwise and independent t-test comparisons were performed with a significance level of 5%.

Results: Similar levels of aquatic perceived competence were found among both age-groups for all measured skills, excepted for breath control during swimming (p<0.05). However, perceived aquatic competence differs significantly (p<0.001) from real aquatic competence (in normal and abnormal conditions) only in G1. Correlations between perceived and real aquatic competence were modest for all measured skills in both age-groups. Significant differences were found between real aquatic competence in normal and abnormal conditions in both groups (p<0.01).

Conclusions: Age together with aquatic experience contributes to a higher aquatic perceived competence in skills related to the risk of drowning.

**Keywords: Perceived competence, Children, Water safety, Aquatic competence**

**References**


*Presenting author*
Physical activity and liking school in primary school students

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Positive school experiences, such as liking school, are linked to the health and well-being in schoolchildren [1]. Self-reported physical activity (PA) at recess has also been connected to positive social experiences in schools [2]. We investigated the associations of all day PA and school time PA with liking school in primary school students.

The data were obtained from the ‘Finnish Schools on the Move programme’ in spring 2013 and students in grades 4 to 6 (mean age 11.6±0.9 years) participated to the study. PA was both objectively measured and self-reported. Moderate-to-vigorous-intensity PA (MVPA) was assessed objectively using a hip-worn ActiGraph accelerometer for a school week (n=511). MVPA was analysed for all day and for school time. The participants also answered an online survey focusing on habitual MVPA (number of days with at least 60 minutes of MVPA during a regular week)[1], PA at school recess (walking, physically active play and games, ball games, participation in instructed physical activities, and being peer instructor for physical activities)[3] and liking school [1] (n=538). The data were analysed using Pearson’s correlation coefficients separately for boys and girls.

Self-reported PA at recess was positively associated with liking school both in boys (r=.150, p=.016) and girls (r=.182, p=.002). Self-reported habitual MVPA or objectively measured MVPA for all day and for school time were not associated with liking school.

Self-reported participation in PA at recess was positively associated with liking school both in boys and girls. The self-reported measure provides a variety of different physical activities for recess time and could thereby better identify the context of positive school experiences than the objective PA measurements. PA during the school recess could foster liking school, and on the other hand, experiencing the school as a positive matter can encourage schoolchildren to participate in PA during recess times.

Keywords: primary school, liking school, physical activity, recess

References
Putting theory into practice: Developing increased physical literacy in children through CrossFit and Strength and Conditioning activities

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While there is much research evidence to support the claims that increased physical activity is beneficial to health (1) there still remains a gap in terms of translating this apparent 'knowledge' into an everyday aspect of a significant proportion of people’s lives.

There are many social factors that are often cited which create barriers to participation (2) but even when measures are introduced to remove them it is not always the case that continued engagement is guaranteed. Consequently, there still remain bridges between the shared ‘beliefs’ about the benefits of physical activity held by academic and health educator communities and the awareness of this embodied knowledge and its application among the ‘everyday’ population.

Bearing the above in mind, this presentation aims to provide an opportunity to reflect upon ways in which we can attempt to promote increased physical literacy in children through activities that encourage recognition of an embodied self (3). The presentation will draw upon our experiences during the early stages of an on-going research project exploring the benefits of a CrossFit Kids programme for primary school aged children in England. We will also reflect upon the theoretical claims of physical literacy, CrossFit and Strength and Conditioning along with our practical considerations while we have been developing a programme for the children to take part in. Throughout, the researchers draw upon their expertise in a range of disciplines, including Sociology, Physical Education, Physiology and Sports Coaching.

Keywords: CrossFit, physical activity, physical literacy, health

References

*Presenting author
School Physical Education (PE) programs are important elements in enhancing physically active lifestyle. Studies based on Self-Determination Theory (1) have shown, that support of autonomy, competence and relatedness can improve students’ intrinsic motivation in PE, which in turn has been associated with enjoyment. The purpose of this study was to analyse associations between basic psychological needs, behavioural regulations and enjoyment among Finnish students. Participants of the study were grade 5 boys (n=130) and girls (n=130). In the measurements, we used the Basic Psychological Needs in Physical Education (2) –, the Revised Perceived Locus of Causality (3) – and the Sport Commitment Questionnaire-2 (4) –scales. We conducted confirmatory factor analyses and used Cronbach alpha coefficients to examine the validity and reliability of the scales. Structural equation modelling with multigroup method was used to study the associations between study variables among boys and girls. Results indicated that the model fitted the data well \[x^2 (48) = 48.35, p = 0.46; CFI = 1.00; TLI = 1.00; RMSEA = 0.01\]. Squared multiple correlations showed that significant variables explained enjoyment, 83% for the boys and 82% for the girls. Boys and girls displayed statistically equal paths from autonomy to enjoyment \[.37 (.06)\] and from intrinsic motivation to enjoyment \[.60 (.05)\]. Boys demonstrated paths from autonomy to amotivation \[-.33 (.11)\], external regulation \[-.45 (.09)\] and intrinsic regulation \[.59 (.09)\] and from introjected regulation to enjoyment \[-.26 (.10)\]. Among girls, there were paths from relatedness to amotivation \[-.53 (.10)\], external regulation \[-.29 (.10)\] and intrinsic regulation \[.65 (.08)\]. Results of this study enforce previous findings and indicate that basic psychological needs as well as behavioural regulations are associated with enjoyment in PE. When planning and conducting PE classes, practitioners can emphasize enjoyment by supporting basic psychological need fulfilment; especially autonomy for boys and relatedness for girls.

Keywords: motivation, enjoyment, physical education

References


*Presenting author
Assessment of basic motor competences in primary school aged Portuguese children – the Gender Issue

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Introduction: Basic Motor Competences (BMC) are central in Physical Education (PE), and gender differences in skills proficiency have been reported 1, with girls performing object control skills poorly than boys. Since MOBAK instrument is considered a valid method for BMC assessment within PE 2, this study presents preliminary results of a Portuguese sample within the MOBAK international study, namely regarding the gender differences of BMC.

Methods: 136 first year pupils (age=6.6±0.4) were assessed for BMC through MOBAK test. Children were recruited from two primary schools and evaluated in their respective PE gymnasiums. MOBAK protocol assesses eight BMC, which can be assigned to two BMC areas: object movement (OM): “throwing,” “catching,” “bouncing,” and “dribbling”; and self-movement (SM): “balancing,” “rolling,” ”jumping,” and ”moving sideways”. A total of two and eight points can be reached respectively in each test and in each area. Total BMC was obtain by summing OM and SM scores (16 points).

Results: Boys presented higher OM BMC than girls (mean±sd for girls and boys respectively: 3.92±1.6; 5.56±1.8, p<0.001). Moreover, it seems that girls are more proficient in SM skills (mean±sd for girls and boys respectively: 5.30±1.8; 4.78±1.4, p<0.05). It was also observed gender differences of Total BMC (mean±sd for girls and boys respectively: 9.22±2.9; 10.34±2.6, p<0.05). Week associations between OM and SM BMC were observed (r=0.24; p<0.01) and both OM and SM areas were strongly associated with Total BMC (r respectively for OM and SM areas: 0.82 and 0.75, p<0.01).

Conclusions: Boys were more proficient than girls in OM skills, which is consistent with previous studies. Additionally, MOBAK instrument confirmed its structure, reinforcing its value for BMC assessment in first year school children, and its implementation should help to identify gender specific needs in PE.

Keywords: Children, Basic Motor Competences, Physical Education

References
Development and validation of a survey instrument for detecting basic motor qualifications in elementary school children

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Introduction
Basic motor qualifications (in German: Motorische Basisqualifikationen; MOBAQ) are contextual cultural tools formulated as a minimum standard that empower children of various ages to participate in the movement, play and sports culture in the sense of cultural participation (1). Consequently, the promotion of basic motor qualifications is a central goal of physical education, as they are essential prerequisites to participate in the human movement culture and to be able to develop a physically-active lifestyle. For the diagnosis of basic motor qualifications and to identify students with special needs, teachers need valid survey instruments that can help them to adapt their teaching on the basis of student information.

Methods
A test battery for the assessment of the basic motor qualifications of third graders was developed (MOBAQ-3) and subjected to empirical validation (N = 488; 49.2% female; M = 8.8 years, SD = 0.51). The test instrument was applied independently by the involved teachers in their regular physical education courses.

Results
A confirmatory factor analysis indicated a structure with four factors named “locomotion,” “object-control,” “moving in water,” and “riding” (CFI = .94; TLI = .92; RMSEA = .036; WRMR = .89). Furthermore, the test instrument allows to identify special needs of students in their basic motor qualifications.

Conclusion
The MOBAQ-3 test battery satisfies the requirements of test theory and is suitable for an analysis of basic motor qualifications and the identification of special needs in students in terms of a pedagogical diagnosis and educational monitoring.

Keywords: monitoring, pedagogical diagnosis, test development, Motor testing

References
A systematic review of determinants of sedentary behaviour in youth: a DEDIPAC-study

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Knowledge on the determinants of sedentary behaviour (SB) in youth is necessary to inform future interventions. A systematic review was conducted to identify determinants of SB in youth. Cross-sectional studies were excluded. 37 studies were selected out of 2654 identified papers. Most studies were conducted in Europe (n=13), USA (n=11), and Australia (n=10). The study quality was high (IQR: 74-91%). Few studies examined a comprehensive set of factors at different levels of influences. Evidence was found for age being positively associated with total SB, and weight status and baseline assessment of screen time being positively associated with screen time (at follow-up). A higher playground density and a higher availability of play and sports equipment at school were consistently related to an increased total SB, although these consistent findings come from single studies. Evidence was reported for the presence of safe places to cross roads and lengthening morning and lunch breaks being associated with less total SB. Future interventions to decrease SB levels should especially target children with overweight and should start at young age. However, since the relationship of many determinants with SB remains inconsistent, there is still a need for more longitudinal research on determinants of SB in youth.

Keywords: children, adolescents, sitting

References
Preschool children’s and their mothers’ objectively measured sedentary time, physical activity, and effect of movement-to-music video program: a randomized controlled trial

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Introduction: Measured objectively, less than a quarter of adults¹ and under half of preschool children² in Finland meet the physical activity recommendations. Moreover, higher sedentary time among parents (such as watching television) is associated with higher sedentary time of their children³. The study introduces an intervention based on reducing sedentary behavior among mothers and their children. It utilizes a combination of music and exercise via a motivation-targeting movement-to-music video program in the home environment⁴.

Methods: Mother–child pairs (n=228, child age: 4–7 years) were randomized to the intervention and control groups. Both groups used a tri-axial accelerometer (Hooke AM20) during waking hours and completed physical activity diaries for two weeks at the beginning and one week at the end of the eight-week intervention. In addition, the intervention group was instructed to use the movement-to-music video program from the beginning of the week two to the end of the week eight. The primary outcomes (sedentary behavior and physical activity) of the study will be analyzed on the basis of a linear mixed effects model.

Results and Conclusions: Set against this background, the presentation will discuss the preliminary findings of the current study. In our previous pilot study was found that the mothers and children who used movement-to-music video program (i.e., intervention group) showed less sedentary time during the second week compared to the first (baseline) week, when at the same time the opposite was true in the control group⁵. Differences between the intervention and control groups are expected in sedentary time (i.e., lying down and sitting), standing still, and time spent in light and moderate to vigorous physical activity between weeks 1 (baseline), 2 and 8. Further, the study provides valuable information about the use of the motivational music in exercise context with families in the home environment.

Keywords: sedentary behavior, accelerometer, physical activity, movement-to-music

References
Physical Activity and Motor Competence in 4-8-Year-Old Children: Results of a Family-Based Cluster-Randomized Controlled Physical Activity Trial

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This dissertation research addressed the following research questions: 1) what are the intensities of physical activities that are typically considered to develop motor competence (MC) in children, 2) how is accelerometer-derived physical activity (PA) associated with MC, 3) what is the effect of family-based PA counseling on children’s PA and MC, and 4) does initial parental support of a child’s PA moderate the counseling effect on the child’s PA? Participants consisted of a total of 126 children aged 4 to 8. PA was measured with tri-axial accelerometers, MC with the Körperkoordinationstest für Kinder (KTK) test and a throw-and-catch a ball test, and parental support with a self-report questionnaire. Correlations were calculated and effects of intervention on study outcomes were tested by means of a linear mixed-effects model fit by REML and by a Mann-Whitney U test. As a result, typical indoor physical activities were found to cover the whole spectrum of accelerometer-derived PA intensities, from sedentary to vigorous. PA and MC were associated in both sexes, and a unique association was found between high neuromuscular PA impacts and MC in girls. Tailored counseling was found to decrease the moderate-to-vigorous PA in the intervention children in comparison to the control children. However, a significant positive intervention effect was found on PA in children with low initial level of PA supportive parenting during the 6-month counseling period. Counseling during an inactive season provided a significant effect on the development of children’s KTK performance. In conclusion, the methodological shortages in accelerometer data recording and interpretation may make it difficult to detect PA behavior changes meaningful for motor development in children. Regarding PA counseling, screening and counseling parents who provide low support for their children’s PA could offer a feasible and efficient PA enhancement strategy.

Keywords: parent, Children, physical activity, motor skills

References
Context specific objectively measured physical activity and sedentary time among preschool children

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Introduction: Little is known about preschool children’s objectively measured moderate-to-vigorous-physical activity (MVPA) and sedentary time (ST) at preschool and at home, and whether there are gender differences in MVPA and ST. This study examines MVPA and ST among 3-6-year-old Finnish children at different times of the week and whether possible gender differences in different age groups exist.

Methods: In total, 892 children participated in the DAGIS cross sectional survey between autumn 2015 and spring 2016 in Southern Finland and Ostrobotnia. Children wore Actigraph wGT3X-BT accelerometers for seven days, 24 hours per day. Five context variables for both MVPA and ST were formed: Whole MVPA/ST, preschool MVPA/ST, home MVPA/ST on preschool days, weekend MVPA/ST, and non-preschool-weekday MVPA/ST. Variables were divided by wearing hours and multiplied by 60 minutes to illustrate an average hour in different contexts. Kruskal-Wallis tests and Univariate analysis of Variance stratified with age were used to test gender differences in MVPA and ST levels.

Results: The whole time consisted of 28 minutes of ST and 5,5 minutes of MVPA per hour. Respective figures were as follows: 26 minutes of ST and 6,5 minutes of MVPA for preschool; 30 minutes of ST and 5 minutes of MVPA for home time on preschool days; 28 minutes of ST and 5 minutes of MVPA for weekends; 29 minutes of ST and (about) 5 minutes of MVPA for non-preschool-weekdays. Boys were more active than girls in most age groups in total time, preschool time, home time on preschool days and at weekends.

Conclusions: The children were sedentary almost half of the time in all contexts. Similarly to earlier findings boys were more active than girls. Further research should study the contextual determinants of MVPA and ST separately for boys and girls.

Keywords: context, preschoolers, sedentary time, moderate-to-vigorous physical activity

*Presenting author
Can break times (recess) help children’s physical activity levels?

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This paper explores children’s physical activity levels within break times (recess). Break times are within primary school unstructured opportunities for children to engage in physical activity opportunities (Article 1). Article 3 suggested that girls and boys have the same opportunities to be physically active. Article 2 stated that “playtime can contribute to between 4 and 40% of the recommended daily physical activity levels when no interventions have been utilised” (p.359).

Data were collected within a case study setting in one school, over one school year. 20 children wore Actigraph accelerometers to record physical activity intensity levels throughout the school day (9am until 3.10pm). A repeated measures 3 factor ANOVA was used to analyse the effects of factors – including: type of day (days including a Physical Education lesson (PE days) and those that did not (Non PE days); year group (infants / juniors); and gender (male / female). P values of <0.05 were taken as the value for statistical significance ± one standard deviation. Statistical analysis was completed using SPSS 17.0.

The findings reveal that on average break times contributed to 29 minutes of moderate to vigorous physical activity (MVPA) on PE days and 28 minutes of MVPA on Non PE days (higher results than proposed in Article 2. The results also showed that boys completed significantly more MVPA than girls and that the younger age group completed significantly more MVPA. It is suggested that the children effectively utilise break times.

Keywords: Break times, Physical activity

References

*Presenting author
Always on the move? Measured physical activity of 3-year-old preschool children

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Previous studies in early childhood have drawn attention to the fact that levels of physical activity (PA) are typically low and sedentary behaviour (SB) high, and currently many children do not achieve the levels of daily PA proposed in global guidelines (e.g., Hinkley et al. 2012).

The main aims were to measure what PA intensity levels and patterns exist among Finnish 3-year-old preschool children, and define are there variations between Finland and the Netherlands or between Finland and Australia in children’s PA behaviours.

In Finland, 14 childcare centres participated in the study. Data were gathered on 96 three-year-old preschool children in autumn 2010, and on 94 children in winter 2011. Data were also gathered on 97 three-year-olds from nine childcare centres in the Netherlands, and on 64 three-year-olds from 13 childcare centres in Australia.

Children’s PA intensity levels and sedentary time on five consecutive days, was assessed with ActiGraph GT3X accelerometers. The OSRAC-P of Brown et al. (2006) was used to obtain descriptive information on the context of PA behaviours in childcare settings.

Appropriate statistical analyses were performed. The 3-year-old children spent the major part of their time engaged in sedentary-level activities. During childcare attendance, only 2% of all observations were recorded as moderate to vigorous PA (MVPA). The Finnish children spent significantly more time in sedentary-level activities and less time in MVPA than the Dutch children, whereas, during childcare days the Finnish children spent more time in light PA than the Australian children.

The childcare setting itself plays an important part in promoting more intensive PA behaviour during early childhood. Throughout the year, children should be encouraged to spend a greater amount of their time playing outdoors, engaged in MVPA-level activities, and to minimize the time spent sitting or engaged in sedentary-level activities.

Keywords: childcare centre, sedentary time, physical activity

References
MC=MVPA: New Insight for Activity Intensity Relativity

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Introduction: To examine the metabolic cost (METs) and rate of perceived exertion (RPE) of performing object projection skills at three different practice trial intervals (6, 12 and 30 second intervals). Methods: 20 men (age m=23.9) and 20 women (age m=24.0) participated in a within-subjects design with three nine-minute experimental sessions where participants performed throwing, striking and kicking (in a serial blocked schedule) at three different trial intervals (i.e., 6s, 12s and 30s trial intervals). Participants were instructed to perform at maximum effort and to report their RPE1. The average metabolic response (METs) during minutes 4-8 of each nine-minute session were calculated using a COSMED k4b2 gas analyzer. Results: Two 3 (interval condition) X2 (sex) ANOVAs were conducted to examine differences in metabolic cost (METs) and RPE across groups and sex. Data indicated a main effect for interval condition (df = 2, 33, F=177.17, p<.001, 951;2=0.915) with decreased interval times between performance trials yielding significantly higher metabolitter expenditure across conditions [30 sec = 3.41(±.44) METs, 12 sec = 5.62 (±1.05), 6 sec = 8.11 (±1.45)]. There also was a main effect for sex (df = 2, 32, F = 2.15.77, p< .001 eta =0.931) with men demonstrating higher METs at each performance trial interval. RPE analysis determined a main effect for each interval (F=97.74, p<.001) with no difference in gender at each interval. The average RPE for each interval 6, 12 and 30 respectively were 13.4 (±2.32), 11.1(±2.02) and 9.20(±1.67) Conclusions: Results demonstrate skill practice at 30 second intervals resulted in moderate PA and 12 and 6 second intervals demonstrated vigorous PA. Although men and women demonstrated equivalent RPE, women’s MET levels were consistently lower than men’s MET levels. These data may significantly impact physical activity intervention strategies by informing curricular content of interventions attempting to promote moderate to vigorous PA.

Keywords: RPE, MVP A, METs

References

*Presenting author
Getting Kids Moving – How do UK children spend their leisure time? Recommendations for helping children and families to be more physically active.

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Introduction:
Despite recent efforts to increase physical activity levels in children, only 21% of boys and 16% of girls in England are meeting current recommendations for physical activity (1). There is an urgent need to find ways to support children and families to be more active.

The study aimed to explore how children from England and Wales spend their leisure time, and to develop recommendations for supporting children and families to become more physically active.

Methods:
133 children (aged 7-11 years) from 7 schools in England and Wales took part in 22 focus group discussions. Children were asked questions about physical activity and lifestyles. Data were analysed by thematic analysis.

Results:
Very few children were aware of the physical activity recommendations. The main barriers to physical activity were family time pressures, weather, and screens. Parents are important role models for children, and can positively or negatively influence children’s behaviours. Children were generally positive about PE in school, but expressed a desire for more variety of activities, and to have a say in what activities are on offer.

Screen time dominates leisure time for children, and many children recognise the addictive nature of screen time. Few children had family rules to limit their screen use.

Conclusions:
The pressures of busy, modern lifestyles means that many families struggle to find the time to be active. More information and support is needed for children and families about physical activity guidelines, and ways to build activity into their lives. Screen time is a real challenge that is constantly growing as children have access to more screen options. Parents need help in limiting screen time, providing alternatives, and encouraging physical activity. Practical recommendations for supporting children and families to become more active, and the implications for public health and health promotion, will be presented.

Keywords: Physical activity recommendations, Physical activity, Children, Screen time

References
Active Healthy Kids Belgium 2016 Report Card on Physical Activity for Children and Youth

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Introduction: This 2016 Belgium Report Card on Physical Activity for Children and Youth is the first systematic evaluation of physical activity behaviors, related health behaviors, health outcomes, and influences thereon, using the Active Healthy Kids Canada grading framework(1).

Methods: A research working group as well as policy experts from both Flanders and Wallonia collaborated to determine the indicators to be graded, data sources to be used, and factors to be taken into account during the grading process. Grades were assigned based on examination of the current data and literature for each indicator against a benchmark or optimal scenario: A (81-100%) = We are succeeding with a large majority of children; B (61 – 80%) = We are succeeding with well over half of children; C (41 – 60%) = We are succeeding with about half of children; D (21 – 40%) = We are succeeding with less than half, but some, children; F (00 – 20%) = We are succeeding with very few children; INC = there is no or insufficient evidence to assign a grade. In addition to an overall grade, an indicator could be assigned a plus sign or minus sign based on the presence or absence, respectively, of substantial social inequalities, according to age, region, gender, or socioeconomic status.

Results: Eleven indicators were selected and assigned the following grades: overall physical activity (F+), organized sport participation (C-), active play (C+), active transportation (C-), sedentary behaviors (D-), school (B-), government strategies and investment (C+), and weight status (D). Incomplete grades were assigned to family and peers, community and the built environment, and dietary behaviors due to a lack of nationally representative data.

Conclusions: Despite moderately positive social and environmental influences, physical activity levels of Belgian children and youth are low while levels of sedentary behaviors are high.

Keywords: Children, Physical Activity, Nutrition, Sedentary Behaviour

References

*Presenting author
What Makes ‘Fun’ Fun? Children’s Insights into Physical Activity

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“Fun” is considered to be a critical factor in the physical activity (PA) participation choices of children. Few in-depth investigations, however, have been undertaken to determine what children actually mean when they say an activity is “fun.” Scanlan and Lewthwaite’s Sport Enjoyment Model (1986) guided this inquiry into what children find enjoyable and not enjoyable in the contexts of Physical Education, organized youth, and recreational PA. This descriptive, mixed-methods study involved a convenience sample of 98 children aged nine to twelve from three schools in the United States. Data collection methods included focus groups, duo-interviews, a quantitative measure, and an activity-related drawing. Qualitative data was inductively analyzed using comparative analysis techniques with triangulation occurring across all data sources. Findings suggest that the construct of fun is nonmonolithic in nature, with children finding PA to be enjoyable and non-enjoyable for numerous and varied reasons. Because children find some of these reasons to be more salient than others, there is a resulting idiomatic tendency of fun – i.e., what each individual child perceives to be fun or not about PA is specific to the experiences and characteristics of that particular child. Contextual factors strongly influence children’s enjoyment of PA such that these appear to have a stronger influence on the activity’s enjoyability more so than the activity itself. In addition, children of differing skill levels appear to have vastly differing interest in, value, and enjoyment of PA. Taken together, results suggest that the reasons why any given child will find PA to be fun or not are numerous, complex, interwoven, highly individualistic, and greatly dependent upon a number of contextual factors. Results can aid key players in developing and utilizing policies, programs, and methods which increase children’s enjoyment of PA while perhaps just as importantly, concurrently decrease their non-enjoyment of PA.

Keywords: Physical Activity, Children, Enjoyment, Qualitative

References
Motor competence model assessment. Performance of manipulative skills over the growing years.

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Introduction: Motor competence has been widely recognized in literature as a key point to healthy life styles. Recently, Luz, Rodrigues, Almeida and Cordovil¹ presented a quantitative model to evaluate motor competence from childhood to the adult age, applicable in research, education, and clinical contexts. This model is composed by three major components representing locomotor, stability, and manipulative skills, and has to be able to be used by children, adolescents, adults, and senior citizens, if we want to understand motor competence throughout the life span.

Throwing and kicking velocity were two of the proposed tests in the model regarding the manipulative or object control skills. Since information about these tests and their developmental trajectories is scarce, the aim of the study was to explore these two tests proficiency along the age span, with a special emphasis in childhood.

Methods: Nine hundred seventy nine participants from 7 years-of-age to adulthood were tested. Ball velocity was measured with the Stalker ATS-II radar, on the best value of three valid attempts. Results were explored using ANOVA and regression models.

Results: A general effect of age was found on the two tests (F Throw age (803,8)=105.6, p<.001; F Kick age (803,8)=143.6, p<.001), but with different trajectories between sexes (F Throw sex*age (803,8)=661.7, p<.001; F Kick sex*age(803,8)=587.9, p<.001). Quadratic regression models showed a reasonable explanation of the dependent variable (36%-50% girls, 58%-62% boys).

Conclusion: The results show that performance was homogeneous across age groups. As predicted by the model, these two tests were able to differentiate amongst children’s manipulative skills proficiency, and this assumption extended to adult age. In conclusion, this specific part of the motor competence model related to manipulative skills, show optimistic expectations to be used over the life span without a ceiling effect, and maintaining the same test conditions.

Keywords: Motor Test, Ball Throwing, Ball Kicking, Motor Competence

References
Gross motor skills and Physical Activity in Toddlers.

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Introduction: Gross motor skills are seen as the building blocks of movement and advanced motor behaviour and are an important component of a child’s health and development (1). Better developed motor skills might contribute to more physical activity and therefore reducing the risk of overweight. Research has shown there is a relationship between gross motor skills and physical activity in school-aged children and adolescents (2, 3), however studies in younger children are scarce. The aim of this study was to examine the association between gross motor skills and physical activity in children aged 11 to 29 months.

Methods: 276 toddlers (Mage = 19.74 ± 4.15 months, 133 girls) were recruited through childcare services in NSW, Australia. Gross motor skills were assessed using the Peabody Developmental Motor Scales Second Edition (PDMS-2). The percentile scores were used for analysis. Physical activity was measured using accelerometers (Actigraph GT3X+) and expressed as a percentage of time spent in total physical activity (4). Linear regression analysis was computed to assess the association between gross motor skills and physical activity.

Results: Participants had an average gross motor skill percentile score of 42.52 ± 20.34 and the percentage of waking time spent in total physical activity was 53.18 ± 8.12%. We found a significant association between gross motor skills and physical activity while adjusting for sex, age and BMI (F(5,268) = 5.580, p < .001). This finding is in line with the literature in older children and adolescents.

Conclusions: A positive association was found between gross motor skills and physical activity. This association could be important for a child’s health and development, in particular when preventing obesity.

Keywords: Gross motor skills, Toddlers, Physical Activity

References
Can early motor milestones predict later development?

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Introduction: Motor skills are at the core of children’s’ everyday (inter)actions and overall development.1 Hence, motor milestones may be important developmental markers, not only for later motor performance but also for cognitive development.2 The aim of the current study was to examine whether the age of sitting, crawling, standing, and walking were related to motor performance and executive functioning (EF) at preschool age.

Method: The sample consisted of 136 children 3-to-5 years of age (mean age = 4 years 6 months, SD = 10 months; n= 68 boys). Their current motor performance was assessed with the Movement Assessment Battery for Children-2 (MABC-2),3 and parents provided retrospective information regarding the achieved milestones (in months): sitting without support, crawling on hands and knees, standing alone, and walking alone. EF was reported by parents by means of the Behavior Rating Inventory of Executive Function-Preschool (BRIEF-P).4 Partial correlations were conducted between age of motor milestone attainment, MABC-2 scores, and BRIEF-P scores controlling for four covariates age, sex, maternal education (a proxy for socioeconomic status), and ADHD symptomatology.

Results: At preschool age, MABC-2 scores were significantly associated with sitting without support (r = -.31, p < .001), crawling (r = -.30, p=.001), standing alone (r = -.29, p = .001), and walking alone (r = -.41, p <.001). Two out of the five EF scales of the BRIEF-P (Working Memory and Plan/Organize) had significant relationships with the motor milestones (ranging from .19 to .42).

Conclusion: The results suggest that preschool age children who achieved their motor milestones earlier were more likely to have better motor performance and EF. Identification of children with atypical or slower motor development already in infancy might allow targeting early interventions to improve motor skills, and thereby support various aspects of later child development.

Keywords: executive functioning, motor development, preschool age

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*Presenting author
Dealing with risk along development: Are we wrapping our children in cotton wool?

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Introduction: During the quest for autonomy children need to deal with risk. The risk-aversion attitude that exists in modern societies might be limiting our children’s full development. Two studies are presented to illustrate this issue in different stages of lifespan. Study 1 investigated the importance of infant’s crawling experience in risk environments, and Study 2 addressed the issue of independent mobility during childhood and adolescence. Methods: In Study 1, the avoidance behavior of 31 infants between 8 and 14 months of age (with different amounts of crawling experience) was tested in a real and a water cliff. In Study 2, 1099 Portuguese children (8 to 15 year-olds) and their parents completed a Child Independent Mobility (CIM) questionnaire. CIM levels were compared in an international study with the results of 15 other countries (Policy Studies Institute Survey). Results: In Study 1 greater crawling experience was associated with a greater likelihood of avoiding both the real and the water cliff. These results underline the importance of allowing infants and children to freely explore the environment in order to gain experience that will allow them to have adaptive behaviors in risk situations. However, the levels of independent mobility of the Portuguese children (Study 2) indicate that most of them are not allowed to freely explore the environment, hindering the possibilities of dealing with risk. Only 21% of primary school children and 45% of secondary schoolchildren come home from school actively and independently, and Portugal ranked in 14th place in the international ranking of CIM (16 countries). Conclusions: Progressive levels of autonomy should be given to children as they learn to move about in different environments. The culture of risk-aversion needs to be counterbalanced by the idea that children need to learn how to embrace risk in order to reach their full potential.

Keywords: motor development, risk perception, independent mobility

References
WHAT ARE THE BIOSOCIAL DETERMINANTS ASSOCIATED WITH LOW GROSS MOTOR COMPETENCE IN PRESCHOOL CHILDREN?

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Introduction. The acquisition of motor competence during early childhood is of paramount relevance for child’s overall development (Borstein & Lamb, 2011; Piek, Hands, & Licari, 2012). Nevertheless, research shows that not all healthy children achieve the same level of motor proficiency along this period of life. The purpose of this study was to identify the biosocial determinants associated with low gross motor competence of preschool children.

Methods. The sample included 366 children (171 boys and 195 girls) aged from 36 to 71 months of age (M = 52.99 ± 9.6). The gross motor competence was assessed using the PDMS-2. Children with 1SD below the average were classified as having lower motor competence. Biosocial variables related to the child’s characteristics, the family and preschool environments were explored. For each sex, a multiple logistic regression analysis was performed to find out the biosocial determinants associated with low motor competence.

Results. Boys who were never breastfed (OR=5.92; CI= 1.62; 21.63) and who had less than 1 hour per day of unstructured physical activity (OR=3.03; CI= 1.29; 7.11) were more likely to have low motor competence. In turn, girls who do not play actively with the father (OR=3.46; CI= 1.34; 8.95), and that have less than 1 hour per week of structured physical activity (OR=3.81; CI=1.07; 13.90) were more likely to have low motor competence.

Conclusion. These findings support clearly the assumption that opportunities for structured and unstructured physical activity are essential to promote an optimal motor development of preschool children.

Keywords: biosocial determinants, low motor competence, preschool children

References

*Presenting author
Organised sports activities for pre-schoolers in the Netherlands: an exploratory study

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In today’s Western society, children are becoming less physically active and more overweight.[1,2] To turn the tide, more and more sports activities seem to be organised, even for children younger than 6 years (pre-schoolers).[3,4] However, little insight exists in these organised sports activities for pre-schoolers. Therefore, the main objective was to describe the type and extent of sports activities organised for pre-schoolers, in (sub)urban areas in the Utrecht region, the Netherlands. An additional objective was to explore why sports clubs organise activities for pre-schoolers and why parents choose for organised sports for their young child.

An online inventory was conducted among sports clubs in the city of Utrecht and suburbs. Locations, activities, and young participants’ ages were identified, providing an impression of sports for pre-schoolers. Subsequently, semi-structured interviews were performed among board-members of sports clubs and among parents of young children.

A total of 117 sports clubs (48% urban, 52% suburban) completed the inventory. Of all the responding clubs, 62% organised sports activities for pre-schoolers. These activities were more reported by clubs in suburban areas (72%) than in the urban area (52%). The activities mostly offered were: gymnastics/dance (25%, mean starting-age 2.9 yrs); soccer (25%, mean starting-age 4.5 yrs); and martial arts (15%, mean starting-age 4.0 yrs). On average, activities were offered during 38 weeks per year, once a week, and 54 minutes per session. Interviews with sports clubs and parents are currently analysed. These additional results will be available at the conference.

To conclude: in a specific region in the Netherlands, various sports activities are organised for pre-schoolers. This seems to be an emerging phenomenon, also on a larger scale. Future longitudinal research should give insight in the various effects that sports activities at a very young age may have on the long run.

Keywords: Parents, Pre-schoolers, Sports activities, Sports clubs

References
Analysis of Kids’ Athletics implementation in Wallonia

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Since decades in Wallonia (French speaking part of Belgium), athletics competitions for children are miniaturized versions of adults’ competitions. Despite the fact that it has been pointed out that such kind of approach, based on performance, is not appropriated for motor learning and could result in an increased rate of dropout (1), no change has occurred since years. The International Association of Athletic Federation has developed and promoted a more appropriate model of competition for children under 10 years old: ‘Kids’Athletics’ (KA)(2). While this model is well known, it has not been selected by the Wallonian federation as the gold standard yet. This study aimed to analyze the perceived interest of a group of experts about KA, and to identify the strategies that could be considered for KA implementation in Wallonia.

Semi-structured interviews were conducted with 14 athletics or marketing experts (demographic presentation; knowledge about KA and personal experience with KA; opinion about KA model in comparison with the traditional one, and; strategies that could be helpful to implement KA in Wallonia).

Findings showed that 12 experts knew the KA concept while 9 have experimented it in their own club. None mentioned an official competition between clubs. A list of KA’s advantages and disadvantages has been identified (organization, children needs, and development). All experts considered that KA was more adapted to children than traditional competition. Based on subjects’ proposals, a progressive strategy for KA implementation is suggested. It includes the support of the federation and recommends to start with the more convinced clubs.

This study confirms that KA should be implemented in Wallonia. In order to optimize the chances of success, it would be appropriate to multiply actions, taking into account the potential barriers identified by the experts. 

Keywords: sport, children, competition, athletics

References
Use of sports to demystify Science

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Introduction

The final goal of this project is to offer to children from a disadvantaged environment a new practical vision of Science through the practice of their favorite sport.

Expected impacts:

- Appropriation of Science for improving children’s health and physical performance
- Demystification of Science and its applications
- Reconsideration of the interest of Science in the children’s present and future studies.

Implemented project:

September:

- Each child between 10-14 years old will perform an exercise cardiorespiratory assessment of his physical skills.
- A specific training program will be offered and adapted to the child’s individual performance and development. The different steps of the new training program and the link with the scientific fields will be explained.

October to may:

- Training with specific coaching.

January:

- Workshops “jobs in sports” will bring together; the children and professionals in different fields of sport.

May – June 2017:

- Repeating the exercise cardiorespiratory assessment will allow children to observe their progress after performing the adapted training program.

Critical analysis:

Through this project, children will realize that sports performance and Science have important links. They will demystify Science. But a real impact in their scholarship with a revalorization of sciences classes will require the implication of the school science’s teacher.

Conclusions:

Thanks to a Belgian grant, this project allows children to demystify and increase their interested in Science through sports.

Keywords: training, children, science, sports

References


*Presenting author
The salutogenetic model (1), balancing risks and resources to achieve a healthy lifestyle is a common approach in health enhancing physical activity (see e.g. Thematic Group on Salutogenesis of the International Union for Health Promotion and Education – IUHPE; Monica Eriksson in Helsinki). This presentation will show that it is possible to use the approach of salutogenesis even in apparatus gymnastics (2)(3), being part of physical education lessons in primary schools in Germany.

Positive emotions – an important factor regarding a healthy lifestyle – are particularly fostered through individual success and external praise. In apparatus gymnastics children learn certain elements at apparatus constructed for grown ups. From a biomechanical point of view that is expecting too much of the kids, because e.g. they do not have enough weight to bend the spring board, they need more physical strength than adults to lean on the parallel bars, because the bars are much further apart than the width of the children’s shoulders. To follow the model of salutogenesis teachers should create special situations to lighten the learning of basic physical movements and should create apparatus’ adapted to the resources of their pupil without taking away the experience of risk(competence). Examples will be shown. The following success will teach pupils how to cope with their bodies individually. Furthermore the teachers should mark the basic physical movements instead of the perfection of the element – e.g. standing on hands instead of handstand. Because external praise – as one resource of education to sport – is shown in marking also.

Keywords: apparatus gymnastics, salutogenetic model, center of gravity, individual learning

References
Motor assessment of children at school: pupils’ opinion about MOBAK-1

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School is a privileged place for evaluating children’s physical and motor competencies. Tests are often used for educational and/or research purposes. Adults collect the data but do not verify how children experience these evaluations that can be perceived as difficult moments(1). Even if they are supposed to motivate pupils, they can decrease the self-perception and limit the participation(2). Several test batteries have been developed in order to measure motor development of young children (M-ABC, KTK, TGMD ). They are based on the assessment of performances. On the other hand, MOBAK-1 has been developed in order to verify if some motor competencies are mastered or not(3). To our knowledge, no study tried to determine how the pupils passing these tests feel about their experience. This study focused on that original topic.

Seven primary school PE teachers administrated the MOBAK-1 tests to their classes (149 1st and 2nd grades – 6-8 year-old). After the tests, pupils fulfilled an adapted questionnaire based on pictograms designed to facilitate pupils’ understanding.

The most important finding is that 80.5% of the pupils answered that they loved doing the tests. Only 3 pupils expressed a negative opinion. As pointed out by the correlation between the real achievement mean scores and the perceived competence mean score for each test (r= 0.90), pupil’s self-assessment seemed appropriate. The correlation between the perceived competence and appraisal of the tests is lower (r=0.59). The gamelike status of some tests would be more determinant for their appraisal by the pupils than their level of achievement: balancing is definitely the most appreciated test (35.6% of the pupils selected it). In the same way, even if the achievement level is not high, throwing is relatively well appreciated. Trying to touch a target with a ball is funny. Jumping and bouncing were ‘less’ appreciated.

Keywords: MOBAK, Evaluation, Pupils’ perceptions, Motor competencies

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*Presenting author
Involvement of physical education teachers in motor testing. A pilot study with the MOBAK-1

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Fundamental motor patterns are prerequisites to specific motor/sports skills and a determinant of the involvement in physical activity. Several tools have been developed in order to measure motor development in children. Each test battery presents its own characteristics. MOBAK-1 focuses on two categories of basic motor competencies in order to record the effects of physical education (PE) at the elementary school level. That tool proposed 8 tests. For each of them, pupils receive point scores (0–2 points) according to the quality of their performance. MOBAK-1 is supposed to be used by PE teachers but there is still a lack of data about this, justifying the present study.

We trained 7 PE teachers (P1-P7 – 4 males) and analysed the way they implemented the tests in their classes (1st and 2nd grades – 6-8 year-old pupils). The training comprised a description of the tests with video examples of the expected movements and common errors, and an analysis of the reliability of the teachers evaluating pupils’ performances showed on video (at least 10 trials). A participating observation and a short interview were planned to analyse the evaluation process of each PE teacher.

Catching and Rolling reached the reliability requirements within the first 10 trials while 15 to 16 videos were necessary for the six other tests. Two teachers seemed to have more difficulties that could be related to their lack of experience (P1) or a potential lower interest (P7). Before implementing the test with their classes, all teachers read again the guidelines. The majority was really satisfied by the information provided by the researchers (3.86/4) and confident about how to manage the evaluation (3.57/4). Five teachers worked alone and 4 were able to evaluate one class/lesson. All teachers developed specific strategies in order to save time. Several practical recommendations have been proposed.

Keywords: Teacher, MOBAK, Physical education, Motor competencies

References

*Presenting author
Measuring children motor skills with MOBACK-1: descriptive data and critical analysis.

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Introduction.
The development of motor skills competencies is critical during childhood and should be considered as the central learning outcome in physical education. Assessing motor competencies of the children makes sense for teachers, trainers and researchers. The MOBAK-1 testing battery has been recently developed with the aim of assessing a wide panel of motor skills in relationship with locomotion and object-control abilities (1). This battery is complete and easy to use but presents a scoring system that is only based on the success or the failure of the task. The aim of the study was to collect descriptive data from Belgian children with MOBAK-1, and to do a critical analysis of the scoring system through the analysis of the failure reasons in the tests.

Methods.
The MOBAK-1 testing battery (1) was addressed to 166 primary school pupils (7.2 ± 0.6 YO) coming from the French speaking part of Belgium. For each test, children received a score from 0 to 2, according to the number of success and fails in the task. Additionally, the evaluator took notes of the failure reasons when it occurs.

Results.
Results from our population were in accordance with a previous study (1) for all tests except rolling and jumping tasks. The analysis of the failure reasons revealed that some criteria were too severe as some children failed while they were almost able to do the test correctly. This appeared especially in the rolling and jumping tests where the score did not really reflect the level of the children.

Conclusion.
MOBACK-1 testing battery was successful to assess children motor skills for 6 out of 8 tests. Critical analysis of children failures in the tests revealed that some criteria seemed to be severe. Scoring system should be improved in order to inform about the children level in each test.

Keywords: MOBAK, testing battery, children, motor skills

References
Toward a movement-centred view on development: Interrelations between skilled and creative moving and higher-level cognitive functioning in typical/atypical developing children

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Introduction. The close interrelation in developing motor abilities/skills, higher-level cognitive functions, and creativity in thinking and moving may be argued from several evidences in typical/atypical developing children1-2. This pilot study has two aims: (1) to investigate the interrelations of gross-motor skills, creativity, and executive functions in typically developing children; (2) to evaluate whether motor creativity is impaired in ADHD children and if this condition is related to low-efficient executive function3 and/or motor coordination4.

Methods. A sample of 57 male (35) and female (22) children aged 7-10 years was recruited and divided in two subsamples: ADHD (n = 4) and typically developing (n = 53).

The following tests were administered: (a) Random Number Generation Task; (b) Pictorial Scale of Perceived Movement Skill Competence for Young Children; (c) Torrance Test of Creative Thinking (d) Bertsch Test of motor creativity.

Results. In typically developing children, the originality dimension of motor creativity was positively correlated with working memory updating (r=-.44, p=.001) and all dimensions of motor creativity were correlated with elaboration of creative thinking (motor fluency, flexibility, and originality: r=.37, .40, and .39, respectively, p=.0017).

In ADHD children, there are significant associations only between the fluency dimension of motor creativity and the dimension of elaboration in creative thinking (r =-.29 p = .701) and between the quantitative dimensions of motor creativity and locomotor skills (fluency r=.92 p=.039; flexibility r=.94 p=.031).

Conclusions. Children affected by ADHD are less able to generate creative movements. Typically developing children seem to rely on elaboration of creative thoughts to generate creative movements, and on working memory updating to ensure originality. ADHD children seem to rely on locomotor prerequisites to creatively produce a variety of motor solutions.

Keywords: ADHD, Creative thinking, Executive function, Motor creativity

References
MOVING AND THINKING CREATIVELY: Inhibition of cognitive routines? Age and gender differences

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Introduction. Creativity is considered by the WHO1 as one of the foundational life-skills that should be developed during childhood and adolescence to ensure healthy personal and social development and prevent maladaptive and addictive behaviors. Dietrich and Kanso2 suggest that different mental prerequisites underlie creativity performances in different domains, since different types of creativity can be meaningfully associated with specific neurocognitive processes. The aim is to investigate (1) the interrelations of motor creativity, creative thinking and executive functions; (2) gender and age difference in these interrelations.

Methods. A sample of 67 male (n=41) and female (n=26) children aged 5-8yrs was recruited. The following tests were administered: (a) Random Number Generation Task; (b) Cognitive Assessment System (CAS); (c) Torrance Test of Creative Thinking; (d) Bertsch Test of Motor Creativity.

Results. Analysis showed moderate but significant positive correlation between fluencies and flexibilities (r=.451, .489; p=.005, .003 respectively), but an absence of significant correlation between originalities (r=.088, p=.320). The same computed separately for gender and age showed that in 5 year-old children, there was positive correlation between originality in thinking and moving (males only, r=-.559, p=.019), but in 7-8 year-old children between fluencies (males r=.397, p=.048; females r=.557, p=.030) and between flexibilities (males only, r=.534, p=.009). Fluency in Creative Thinking significantly predicted fluency of motor creativity performances only in the older age group (R2=.21). Moreover, inhibition indices positively predicted females motor fluency (R2=.13), and males motor originality (R2=.11). Further analysis of a subgroup (n=8; 5yrs) revealed a positive correlation of all dimensions of Creative Thinking with executive attention (r=.776, .812, .743; p=.012, .007, .017, respectively).

Conclusions. The different dimensions of motor creativity and creative thinking have an age-specific multifaceted pattern of interrelations in childhood and seem to rely on different prerequisites of higher-level cognition in males and females.

Keywords: executive attention, executive function, motor creativity, creative thinking

References
Detection and evaluation of movement characteristics in students with dyslexia

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Dyslexia is a specific learning disability characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities1. A growing body of research has shown high rates of co-occurrence of reading difficulties and motor coordination problems in children with dyslexia2, 3.

This study compared the performance of Greek students with and without dyslexia on cognitive abilities and motor skills. Participants included (n1=50) students, 8-10:11 years old (924; = 9.00, SD = 0.90), (n2=25) with dyslexia and (n2=25) age and sex-matched typically developing students.

Multiple analysis of variance indicated that the dyslexic group performed significantly lower than the control group on cognitive processes: 1) planning (F1,48 = 162.348, p<.001) and 2) attention (F1,48 = 82.899, p<.001) as well as in motor subtests: 1) manual dexterity (F1,48 = 127.667, p<.001), 2) aiming and catching (F1,48 = 49.073, p<.001), 3) balance (F1,48 = 424.551, p<.001) and 4) total score MABC-2 (t = -33.431, p<.001).

Furthermore, there was no statistical significance among boys’ and girls’ performances with dyslexia, both in cognitive abilities and motor skills.

On the other hand, we found significant differences between the younger (8:0-8:11 yrs) and older (10:0-10:11yrs) children with dyslexia on cognitive processes: attention (F1, 23 = 3.957, p=.034, n2p = .265).

These results suggest that students with dyslexia are a very heterogeneous group with difficulties in cognitive and motor areas of development. The performance of students with dyslexia was inferior to the control that of their peers in both cognitive and movement tests. The study’s results highlight the importance of a motor screening and cognitive performance assessment as contributors to children's learning and school achievement.

Further research with longitudinal studies is needed to better define the relation between cognitive abilities and motor skills.

Keywords: visual-motor coordination, dyslexia, cognitive abilities, motor skills

References

*Presenting author
The cross-sectional associations of physical activity, sedentary behaviors and academic achievement are mediated by fitness and bedtime

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Introduction. Scholastic performance is affected not only by complex psychosocial factors but also by environmental factors. During past decades, a technologically driven way of life has led to increasingly sedentary lifestyles, raising concerns about the effects of a physically inactive lifestyle on children’s physical health and, recently, on children’s learning. To support optimal learning, it is important to understand how key determinants of physically active lifestyle are associated with learning outcomes. This study aimed to determine the associations of physical activity, sedentary behavior, bedtime, fitness, and obesity with academic achievement in one comprehensive model. Methods. 970 4–7 graders (52% girls) from nine schools throughout Finland participated in the study in 2013. Education services provided the register-based academic achievement (grade point average, GPA). Self-reported and accelerometer-measured physical activity, and sedentary behavior were measured. Aerobic fitness was assessed with a maximal shuttle run test, body composition with bioimpedance analysis and bedtime with a questionnaire. Structural equation modeling was applied to examine the associations, adjusting for gender, age, mother’s education, and children’s learning difficulties. Results. Self-reported physical activity had a direct positive (B = 0.084, P < 0.001) and an indirect positive association with GPA through higher aerobic fitness (B = 0.061, P < 0.001). Accelerometer-based physical activity was not associated with GPA. Self-reported screen time had an indirect negative association with GPA through later bedtime (B = -0.071, P < 0.001) and lower aerobic fitness (B = -0.039, P < 0.001). Non-screen sedentary time had a direct positive (B = 0.193, P < 0.001) and an indirect negative association with GPA through lower aerobic fitness (B = -0.040, P = 0.001). Body fat percentage did not mediate the associations. Conclusion. The results suggest that physically active lifestyle, including more physical activity, less screen time, and earlier bedtimes, may benefit academic achievement.

Keywords: academic performance, sedentary time, physical activity
Perceived volume and intensity of physical activity among 10-year-old children

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Regular participation in physical activity among children contributes to the enhancement of health and well-being. It also has been shown to have a positive effect on children’s cognitive functions and learning. (1) However, in the past couple of years, sedentary lifestyle of children has been under discussion and received a great deal of attention.

The purpose of this study was to investigate volume and intensity of physical activity children perform according to their subjective perception. The secondary aim of the study was to clarify if there are differences between genders in the perceived volume and intensity of physical activity. The participants of this study were Finnish school children (n=507) aged 10 years. Children were recruited from the cities of Jyväskylä, Tampere, Lahti and Mikkeli. All children filled a self-report diary for seven days to report volume and intensity of physical activity.

Preliminary descriptive results show that according to self-report data, children performed average of 505 minutes of moderate to vigorous intensity physical activity per week. Girls (n=249) reported an average of 459 minutes of moderate to vigorous intensity physical activity per week, while boys (n=258) reported an average of 550 minutes. Comparing the present results to the Finnish recommendations of physical activity (2) (moderate to vigorous activity > 60 minutes per day) girls met the recommendations of physical activity on average 3,4 days per week and boys on average 4,0 days per week. Statistical analyses will be applied to verify results.

The present study suggest that the participant children did not meet the recommendations of physical activity on a daily basis. Self-reported results should be treated with caution because subjective perception can often cause bias to results. Results will be verified with objective measurements in the future.

Keywords: mVPA, self-report, recommendations, sport for children

References

*Presenting author
Factors associated with objectively measured physical activity and sedentary time of 5-6-year-old children in the STEPS Study

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Introduction: The factors associated with preschool-aged children’s physical activity (PA) remains unclear. The aim of this cross-sectional study was to examine how gender, age, body mass index (BMI, kg/m2), season, having siblings, attendance in day care, attendance in organized PA, parents’ education or parents’ PA are associated with preschool-age children’s objectively measured PA and sedentary time.

Methods: The study population consisted of 5-6-year-old children (n=140) and their parents (n=138) from the STEPS Study¹, in Turku in Southwest Finland in 2013-2014. PA and sedentary time were measured objectively by hip-worn Actigraph accelerometers (GT3X) from children and parents. BMI was measured with the Tanita scale and stadiometer; background information was collected through questionnaires; and linear models were used in analysis.

Results: A child’s moderate-to-vigorous PA (MVPA) was positively associated with mother’s MVPA, father’s MVPA among highly educated fathers, day care attendance, and BMI among children who regularly attended organized PA. Clear associations with sedentary time were remained unidentified.

Conclusion: Maternal PA was associated with children’s PA. Children who attended day care were significantly more physically active than children who did not. Parental role modelling is essential in developing child’s physically active lifestyle; with sedentary time, however, the parental role modelling is unimportant.²

Keywords: children, physical activity, sedentary time

References

*Presenting author
Physical activity of 4-6-year old children in German child care

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Introduction:
Kindergarten counts as significant field of socialization where physical activity-related potentials of child care complement experiences made in family/ at home. Adequate physical activity (PA) is essential for children’s health development, but little is known about the amount of moderate- to vigorous-intensity physical activity (MVPA, VPA) and inactivity (SED) during daily kindergarten attendance. The study aimed at describing heart-rate-based PA levels of Saxon children in child care, on weekdays with vs. without a physical education-unit (PE).

Methods:
Heart rate data (Polar S725X, 5 sec. record) was collected from 100 children from 5 kindergartens in winter, spring and summer 2008. Included data of 58 children (52% male, age 5.9±0.5; average days HRM 4.9±1.3; average hours/day 11.1±0.5) was transferred and analyzed by SPSS 21. SED was categorized as <120bpm, VPA as >160bpm, and MVPA as 140-160bpm.

Results:
While attending kindergarten (8am to 3pm) children were active on average 12±5.6% in MVPA, 4.2±2.5% in VPA and 66.9±11.4% in SED. Boys were more active than girls in VPA (ZVPA = -2.054; p = .040; n = 58), including a PE-unit in child care MVPA and VPA levels increased (TMVPA= 5.120; p< .001; ZVPA= -3.377; p= .001; n= 25), and inactivity level decreased (TSED= -4.680; p< .001, n= 25). Considering the small statistical power gender differences in VPA declined on days with an integrated PE-unit (p= .243; ß= .68), whereas no gender differences in MVPA (p= .374; ß= .47) and SED (p= .470; ß= .46) were generated by PE-unit.

Conclusions:
Physical activity during kindergarten attendance in Saxony is low, just as described in other internationally published studies. Integrating a PE-unit in child day care seems to increase physical activity, decrease inactivity, and reduce gender differences. In further research gender- and activity-related chances of PE-units in kindergarten should be focused on more intensive.

Keywords: child care, physical inactivity, gender, physical activity

References
Weekday-weekend patterns of physical activity and screen time in parents and their pre-schoolers

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Introduction: This study focuses on the comparison of weekday/weekend parent-child step count (SC) and screen time (ST) and answers the question of whether achieving the recommendations for daily SC (10,000)(1) in parents also helps their preschool children achieve the recommended daily SC (11,500)(2).

Methods: The participants (278 parents and their 194 children aged 4–7) were randomly recruited from 10 Czech public kindergartens. The participants recorded SC (pedometer Yamax)(3) and ST duration (proxy-report)(3) for seven consecutive days (more than 8 h/day)(3).

Results: Only the mothers were found to have a significantly lower SC at weekends than on weekdays (paired t-test). All of the participants showed significantly more ST at weekends than on weekdays (paired t-test). Children were significantly more likely to achieve daily SC recommendation if a) the SC on weekdays during the daily routine in kindergarten exceeded the median of kindergarten SC or b) at weekends if their mother (OR: 9.67, 95%CI: 3.57-26.23) exceeded 10,000(1) daily SC (logistic regression).

Conclusions: Especially at weekends, preschoolers have higher odds of meeting the recommended daily SC when their mother reaches 10,000(1) SC independent of the amount of parents’ ST. Moreover, physical activity in kindergarten helps preschool children meet the recommended SC on weekdays.

Keywords: weekends, kindergarten, Yamax pedometer, weekdays

References

*Presenting author
To increase physical activity and the joy of movement among pre-schoolers.

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- Early educators perceptions of the methods used in the campaign “Hoppa på”

Objectives: Feelings of joy and success are important determinants for being physically active. The aim was to evaluate which components in the physical activity (PA) campaign “Hoppa på” was perceived as those which increased PA and the joy of movement among children, and which methods sustained in the preschool environment eight months after the campaign.

Methods: The campaign was conducted in winter 2015 as collaboration between the Swedish speaking public broadcasting television and Folkhälsan. The target population was early educators at Swedish speaking preschools. The campaign included 10 weekly television program for children, half day training for early educators, 19 movement parties for preschools, and materials to preschool; a CD (song with dance movements), a poster and movement cards. A questionnaire, pre-answered and open ended questions, was sent electronically to all 464 Swedish speaking preschools in 2015.

Results: 298 early educators from 174 preschools answered the questionnaire. 181 of 264 reported that they still had “Hoppa på” activities in their preschool. The movement cards (217 of 245) and the song (172 of 245) were perceived as the most useful. The perception was that the campaign had increased the enjoyment of PA among children (201/235), increased children’s PA (120/235), and decreased sedentary behavior at preschool (83/235). How the campaign encouraged children to enjoy PA and in which way the campaign was still a part of the activities in preschool was reported as open ended answers by 167 early educators.

Conclusions: The evaluation increased knowledge about useful methods for increasing enjoyment of PA among children. The open answers about how the campaign material is used and what has sustained in the activities is valuable knowledge that can be further used in planning of PA interventions in a preschool setting.

Keywords: joy of movement, pre-school, physical activity

*Presenting author
COGNITIVE DEVELOPMENT AND PHYSICAL ACTIVITY IN TODDLERS

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Introduction: It has been long recognised that physical activity is positively associated with cognitive performance in school-aged children and across the lifespan. However data in infants and toddlers is scare. We aimed to verify the association between moderate to vigorous physical activity and cognitive development in children aged 11 to 29 months.

Methods: This study comprised 278 toddlers (133 girls), aged 19.76±4.19 months from the GET-UP! Study, NSW, Australia. Physical activity was assessed with accelerometers (Actigraph GT3X+) and expressed as percentage of time spent in moderate to vigorous physical activity. Trost et al. (2012) accelerometers cut-points were considered. Cognitive development was assessed with the cognitive sub-test from the Bayley Scales of Infant and Toddler Development, Third edition (Bayley-III) and expressed as scaled scores (ranging from 1 to 19 –higher scores mean a better performance). Regression analysis was performed to assess the associations between physical activity and cognitive development, with adjustments for age, gender and body mass index.

Results: Participants spent on average 30.62±7.66% of their waking time in moderate to vigorous physical activity. Cognitive development scaled scores were on average 11.43±3.08. Percentage of time spent in total physical activity was not associated with cognitive development (B=0.045; p=0.612) after adjustments for the above-mentioned confounders. Our results do not confirm previous findings with older children.

Conclusions: Percentage of time spent in moderate to vigorous physical activity was not associated with cognitive development in Australian toddlers.

Keywords: physical activity, toddlers, cognition

∗Presenting author
NUTRITIONAL STATUS, BODY COMPOSITION, FITNESS AND THE RELATIONSHIP BETWEEN THEM IN CHILEAN KINDERGARTEN TEACHERS

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Objective: To describe nutritional status, body composition, basal metabolic rate, physical condition and the relationship between them in Chilean kindergarten teachers. Methods: 46 teachers (age 39,5 ± 8,6) from the Bio Bio province (Chile) were weighed and heighted and their nutritional status was obtained by body mass index (BMI). In addition, fat mass, lean and bone percentages, basal metabolic rate, muscular strength and cardiorespiratory fitness were measured. Results: The teachers had an average BMI of overweight (26,7 ± 3,5) and a high fat percentage (35,1± 5,9) according to national reference values. 58,7% were overweight and moderately obese. When they were compared by the BMI, teachers with obesity had on average a higher percentage of fat mass (P = .000), less lean mass (P = .000), took more time to complete the UKK test (P = 035 ) and had a lower vo2max (P = .001) than normal weight teachers. BMI had a negative association in relation to scores of the physical performance test. Conclusions: the nutritional status of the teachers were in a risk condition. Overweight/obese teachers had more fat mass, reduced muscle mass and had worse results on fitness tests. Condition worrying thinking about the important role in modeling healthy habits to preschoolers.

*Keywords: nutritional status; body composition; physical fitness; faculty.*
Children’s engagement in physical education could be improved by stories and imagination

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Introduction: The development of fundamental motor skills is essential during childhood and should be a learning outcome in the physical education (PE). With the children between 3 to 6 years old it could be sometime difficult to get their attention and motivation during PE lessons. Teachers have to use a very adapted pedagogical approach in order to get all children’s engagement.

Experience: The CEReKi is a research center of the University of Liège (Belgium) that has developed adapted activities where preschools children are playing and at the same time developing perceptuals and fundamental motor skills. From our field experience one of the more efficient ways to get children attention and participation is to introduce the activities with stories and imagination. Teachers from CEReKi are using fantasy in order to invite children into a funny world where everything could become possible like the “the never-never land of Peter Pan”. The way of telling the story as well as the used characters (like the wolf) must be adapted to the age of the children.

Critical analysis: From our experience, using stories and imagination is effective in increasing children’s engagement during PE as it makes activities more fun and more enjoyable. Even if we don’t have any measurement on its effect, we are convinced that such approach improve children’s motor learning. However using stories and imagination with the children is neither a natural nor an easy thing for inexperienced teachers. The use of fantasy with the children should be introduces in the vocational training.

Conclusions: With more than twenty years of experience, we believe that stories and imagination are powerful factors that makes physical activities funny and enjoyable for the children. Such strategy may positively enchase young people’s attitudes towards physical education and ultimately, physical activity participation.

Keywords: engagement, children, imagination, fantasy
Exergames supporting physical activity self-efficacy of children: A systematic review

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Introduction: Because of the epidemic of physical inactivity among children, the promotion of physical activity (PA) is top priority. To achieve longer term changes in PA, theory-based interventions affecting psychological determinants for PA have shown to be the most effective. Evidence shows that exergames are effective in increasing energy expenditure and promoting light-to-moderate PA among children. But less is known about their elements affecting PA self-efficacy, which is one of the key determinants for PA engagement among children. This systematic review aimed exploring the elements in exergames affecting the PA self-efficacy of children and evaluating the effectiveness of these game interventions.

Methods: A systematic literature search was carried out in June 2016 from relevant databases (MEDLINE, CINAHL, PsychInfo, EMBASE and the Cochrane Library) by two independent reviewers according to the eligibility criteria: controlled trial, comparison of exergame intervention with no-game intervention control condition, children as participants (< 18 y) and reported statistical analyses of PA self-efficacy as outcome measure.

Results: The four studies included in the review were published 2012–2015, and all of them employed commercially available exergames. Three console games (Wii-exercise games) had positive effects on children’s PA self-efficacy, but one mobile game (Zombies Run) showed no intervention effects. The exergames included elements that fostered major sources of self-efficacy; mastery and vicarious experiences, and verbal persuasion. The games seemed to especially include elements fostering mastery experiences of children, such as having control over the gameplay by repeatedly practicing physical activities at own difficulty level. Vicarious experiences were fostered through role modelling the figures on the screen and verbal persuasion through simultaneous feedback and encouraging and motivating statements.

Conclusions: Exergames can be used as a supplementary method to promote PA among children. The results of this study may be utilized when developing game-based interventions.

Keywords: Exergame, Physical Activity, self-efficacy, Systematic review

References
BLOOD PRESSURE AND PHYSICAL ACTIVITY IN AUSTRALIAN TODDLERS

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Introduction: Insufficient levels of moderate to vigorous physical activity have been associated to elevated systolic blood pressure in pre-schoolers. Hypertensive children have an augmented risk for cardiovascular diseases in adulthood. We aimed to verify the association between physical activity and blood pressure in toddlers.

Methods: This study comprised 261 toddlers (121 girls), aged 19.98±4.13 months from the GET-UP! Study, NSW, Australia. Physical activity was assessed with accelerometers (Actigraph GT3X+) and expressed as percentage of time spent in total physical activity. Trost et al. (2011) accelerometers cut-points were considered. Blood pressure was obtained with a digital vital signs monitor using an appropriate size cuff, following standardized protocols. Regression analysis was performed to assess the associations between physical activity and blood pressure, with adjustments for height, age, gender and BMI.

Results: Participants spent on average 53.18±8.12% of their waking time in physical activity. Systolic blood pressure was on average 104.51±11.55 mmHg. Percentage of time spent in total physical activity was not associated with systolic blood pressure (B=0.045; p=0.612) after adjustments for the above-mentioned cofounders. Our results do not confirm previous findings in pre-scholers.

Conclusions: Percentage of time spent in total physical activity was not associated with systolic blood pressure in Australian toddlers.

Keywords: blood pressure, children, physical activity
**BLOOD PRESSURE, WAIST CIRCUMFERENCE, AND PHYSICAL ACTIVITY IN AUSTRALIAN TODDLERS**

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**Introduction:** High levels of blood pressure (BP) in early childhood may indicate increased cardiovascular risk in later life [1]. Existing evidence shows that waist circumference (WC), which is a simple and effective way to measure adiposity [2], associates with elevated systolic and diastolic BP in children aged 3-7 years [3-4]. Physical activity (PA), has also shown to be inversely associated with systolic BP in pre-schoolers [5], especially in those who are overweight or obese [6]. However, there is not much evidence on the relationship between BP, PA and WC in toddlers. This study aims to analyse the associations between systolic BP, PA and WC in Australian toddlers.

**Method:** The sample comprised of 261 toddlers (46.4% girls), aged 19.98±4.13 months. Systolic BP was measured with the electronic manometers (WelchAllyn PROBP 3400 series, Skaneateles Falls, NY: USA); WC was measured according to standard procedures; total PA was measured with the accelerometers (Actigraph GT3X+). Linear regression model was fitted to assess B and 95%CI predicting BP. The model included WC, age, PA, gender and height.

**Results:** Systolic BP of the participants was on average 104.51±11.55 mmHg, and their average WC was 47.76±4.29 cm. Participants spent on average 53.18±8.12% of their waking time in physical activity. WC and percentage of time spent in physical activity were not significantly associated with systolic BP (B=0.178; p=0.314 for WC and B=0.045; P=0.612 for physical activity).

**Discussion:** Inconsistent to previous findings in pre-schoolers, this study suggests that WC and total PA are not associated with systolic BP in toddlers, after adjusting for potential cofounders.

**Keywords:** blood pressure, waist circumference, toddler, physical activity

**References**

Family intervention in the selection of a first sport

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Introduction. The sport selected at an early age exerts an important influence on an individual’s subsequent sports training, and parents have been identified as agents of socialisation(1) in relation to school-age sport. The aim of this study was thus to analyse the role of parents in their children’s selection of a first sports discipline. Method. The sample comprised a total of 72 parents (n=72 – 78% female and 22% male-) with a mean age of 42.2 years. An ad hoc questionnaire designed expressly for this study was administered to collect data on the sport selected by a total of 72 children (63.8% female and 36.2% male) with a mean age of 8.7 years, from a range of disciplines: multiple sports (multisport proposal based on the development of motor skills in various physical activities and sports, without exclusive association with a sports discipline for children aged between 7 and 8 years old), handball, futsal and rhythmic gymnastics, offered on a sports public program for children of a Spanish city. Results. The most important findings were related to determining factors in the selection of a sport, starting age and the intervention of other social agents such as school or friends. We also found that gender stereotypes persisted, especially among parents of children participating in rhythmic gymnastics. Parents’ perceptions of the benefits of the selected sport were very diverse, although socialisation predominated, in line with other recent studies(2). Conclusion. Traditional and stereotypical perceptions of the most appropriate disciplines for each sex persist, and it is cause for concern that these are evident at such an early age. This highlights the need to implement intervention programmes with the families of younger athletes in order to raise their awareness about coeducation and equality in sport.

Keywords: parents, gender stereotypes, socialisation, School-age sport

References

*Presenting author
Impact of dynamic seating on child’s behavior and concentration in classroom

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Introduction
Ergonomics and dynamism in classroom seem to influence schoolchildren’s behavior and concentration [1-2]. This study aimed to evaluate the influence of using a triangular and dynamic cushion, added on traditional school furniture and associated with a postural education, on schoolchildren’s behavior and concentration in classroom.

Methods
Seventy-seven primary school children were divided into an experimental group (EG) (n=46, age=6.4, height=119.3cm, weight=23.2kg, body mass index=16.5) and a control group (CG) (n=31, age=6.5, height=119.6cm, weight=23.1kg, body mass index=16.1) and took part in this 2-school-year-follow-up cluster randomized controlled study including 4 phases of evaluation (E1 to E4) consisting of assessing the children’s behavior (sit or not / on task or not) from videos and their attention capacities with 2 different tests. In the first year, the EG was assessed before any intervention (E1), after having provided a triangular and dynamic cushion and 3 months of postural education (E2) and after 6 months using the cushion. In the second year, outcomes were assessed after 2 years using the cushion (E4). The CG had identical evaluation design but without any intervention.

Result
Compared with the CG, the children of the EG significantly improved their behavior at each step of the study. Actually, children’s spent proportionately more time sitting when ergonomic and dynamic seating was combined with postural education (p=0.04) and they had more “on task” behavior (p=0.001). Furthermore, the intervention tends to optimize the children’s attention (p<0.05).

Conclusion
The children’s behavior and concentration in the classroom was improved using ergonomic and dynamic furniture combined with a postural intervention. Further studies are needed to confirm those results. This study suggests that early prevention seems efficient to optimized schoolchildren’s behavior.

Keywords: Dynamic seating, Ergonomy, Behavior, Schoolchildren

References
Association between body mass index and gross motor development in toddlers

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Introduction:
Motor development is essential for children’s healthy growth and development. Evidence suggests that there is an inverse association between adiposity and gross motor development in children; however, little is known about this association in toddlers. Thus, the aim of this study was to investigate associations between body mass index and gross motor development in toddlers.

Methods:
This study comprised 335 (154 girls and 181 boys) toddlers aged 19.8 ± 4.1 months from the Get up! Study (NSW, Australia). Weight and height were measured according to standardized procedures and BMI was calculated. Physical activity was assessed with Actigraph GT3X+ accelerometers and expressed as percentage of time spent in total physical activity, considering the Trost et al. (2012) cut-points. Gross motor development was assessed by means of the Peabody Developmental Motor Scales, second edition. Linear regression analysis was performed to assess the associations between body mass index and gross motor development, with adjustments for physical activity, age and gender.

Results:
Participants had on average a BMI of 17.84 ± 1.69kg/m2 and Peabody gross motor quotient scores of 96.39 ± 10.0, and spent 53% of their waking time in physical activity. Regression analysis showed that body mass index was not associated with gross motor development after the adjustments for the above mentioned confounders (946; = 0.050 ; P = 0.893). Our results do not confirm previous findings from studies with older children.

Conclusion:
There were no association between BMI and gross motor development in toddlers.

Keywords: Peabody, Motor Coordination, Physical Activity, Actigraph

References

∗Presenting author
Main nutritional and motor skills outcomes of a pilot physical activity intervention for preschool children living in semi-rural sectors

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Objective: the aim of this study is to evaluate the results of a pilot intervention consisting in three 15-minute breaks conducted by educators and supervised by physical education teachers on motor skills and nutritional status in preschool children. Methods: sample was 70 preschool children (32 boys and 38 girls), age 4 ± 0.6 years. The physical activity classes were performed three times a week, 45 minutes daily, distributed in three 15 minutes breaks. The circuits were planned to have: jumps, sprints, carrying medicinal balls, gallops and crawling. Motor skill tests that were performed Standing long jump (SLJ) and Twelve meter run. Results: with the intervention no significant differences in nutritional status were found on mean Z score (boys p = 0.49, girls p = 0.77). An increment on weight and height was found after the intervention (p < 0.0001). Regarding the 12 meter run test, we found changes after the intervention when we normalize by weight only in boys (p = 0.002) and girls (p < 0.0001). Our results have shown that boys significantly increased their SLJ and SLJ normalized by weight (p < 0.0001); a similar result was found in girls after the intervention (p < 0.0001) suggesting the increment of power independent of weight gain. In conclusion, this pilot study found that an intervention with more intense activities in small breaks (15 minutes), and guided by the educators could improve essential motor skills (running and jumping) in preschool children of a semi-rural sector independent of nutritional status. This gaining in motor skills is the first step to increase physical activity levels in preschool children.

Keywords: motor skills, physical activity intervention, Preschool children

References
Motor skills development alterations of pre-school aged children in relation to qualification of educators

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The aim of this study was to investigate motor skills development of 5-6-year-aged children in relation to educator’s qualification.

The participants were 16 boys and 14 girls of the pre-school groups in the kindergarten. Two teachers (both females over 50 years of age) were giving their usual physical education (PE) lessons (45 min x twice a week) during the study period. Teacher of group 1 (G1; n=15) had a qualification of a general educator, and had other educational activities and duties with her group. Teacher of group 2 (G2; n=15) was a specialist of PE and had PE lessons for kids, only. The motor skills development was tested at baseline (T1) and repeated after six months (T2). To investigate children motor skill development, the battery of the Test of Gross Motor Development-2 (TGMD2) was used [1]. The testings were filmed using a digital camera for a later evaluation analysis. All testing and evaluation procedures were performed by the same exercise expert. The intra- and inter- group differences were performed using t-test where testing occasion (T1, T2) was considered as a dependent variable, and group (G1, G2) – as an independent variable. The percent analysis was used in evaluating the performance of motor skills development tasks.

Over the six month course significant and greater improvements were observed in running and object catching skills in children who had PE educator classes comparing to those who had PE classes of a general educator (p<0,05). A tendency of significant changes to be achieved in the skill such as kicking and throwing an object was also observed in G2 (p=0,06-0,07).

We may conclude that the impact of an educator, specialized in PE, on improvement of locomotive and non-locomotive motor skills development of children is greater than that of a general educator of kindergartners.

Keywords: educator qualification, locomotive skills, non-locomotive skills, TGMD2

References
Developmental trajectories of motor skills, executive functions, and language in preschool children with and without developmental risk: The MELLE-project

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Introduction: There is a growing body of literature relating motor functioning to executive functioning (EF) and language. However, we know less about the developmental changes in these domains in early childhood. The MELLE-project focuses on the developmental trajectories of motor skills, EF, and language in preschool children at developmental risk and typically developing children (TD) and the role individual and environmental factors play in these trajectories.

Method: The study uses a cross-sequential design. The study population consists of children aged 3 to 6 years at risk for developmental coordination disorder, and/or at risk for specific language impairment, and TD. The exclusion criteria are physical disabilities, neurological disorders, and sensory impairments. Every six months, children are examined with motor tests (M-ABC2-NL and ZNA 3-5); EF-tasks (inhibition, working memory, shifting); and language tasks (production, comprehension, rapid automatized naming). Parents/caregivers complete questionnaires on demographics, home environment, physical activity, therapy, motor functioning (Little DCDQ), temperament (CBQ), EF (BRIEF-P), and attention (SDQ and CBCL).

Results: During Phase 1 in April to July 2016 ninety seven children were tested (51 boys and 46 girls; M = 49.16 (SD = 9.91) months). The M-ABC2-NL total score (M= 49.03 SD= 29.46) and range (1-100) suggest that our sample includes children from a whole spectrum of motor skills. The second phase begins in October 2016 when the children of the Phase 1 are re-assessed, and new children recruited. In 2017 there will be two more data collection phases.

Conclusions: Understanding how signs of different disorders co-occur in the preschool years is critical to the development of causal models of developmental disorders and enables us to understand how co-occurrence of problems affect children’s developmental and learning outcomes. Increased knowledge of developmental trajectories can also support planning of early education programs and streamline services to children at developmental risk.

Keywords: executive functioning, motor development, language development, developmental trajectories
The Relationship between Motor Competence and Physical Fitness is Weaker in the 15–16 Yr. Adolescent Age Group than in Younger Age Groups (4–5 Yr. and 11–12 Yr.)

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Developing motor competence and physical fitness can affect the maintenance of a sufficient level of physical activity in children and adolescents. This study assesses the relationship between motor competence and physical fitness from childhood through early adolescence. A cross-sectional sample of 194 participants from 4 to 16 years of age were divided into three groups: 4–6yr. (n = 42, M age = 5.2, SD = 0.6), 11–12yr. (n = 58, M age = 12.4, SD = 0.3), and 15–16 yr. (n = 94, M age = 15.9, SD = 0.4). To assess motor competence, each child completed the Movement Assessment Battery for Children (MABC). To measure physical fitness, three tasks (strength, speed, and endurance) were selected from the Test of Physical Fitness (TPF). To analyze the significance of the difference between the correlation coefficient in the three age groups (samples) (4–6, 11–12, and 15–16yr.), Fischer r-to-z transformation was used. The correlation (Pearson’s) between motor competence and physical fitness in the age groups was statistically higher for the youngest age groups (4–6 and 11–12yr.) and the adolescent group (age 15–16). The differences between the two youngest age groups were not statistically significant. The results demonstrate that the correlation between motor competence and physical fitness decreases with age.

Keywords: Motor competence, Physical fitness
The acquisition of aquatic skills in preschool children: deep vs shallow water swimming lessons

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Introduction: There are several variables involved in the swimming teaching-learning process, most of them related to the particular characteristics of the water environment. One of the key factors seems to be the variation of water’s depth. To our knowledge, any rigorous studies have already investigated with a controlled program how deep and shallow water may influence the development of preschooler’s aquatic skills.

Methods: Twenty-one Portuguese school-aged children (4.70 ± 0.51yr), inexperienced in aquatic programs, participated in this study. The children were divided into two groups performing a similar aquatic program but on a different water depth: shallow water (n=10) and deep water (n=11). Each participant was evaluated twice for their aquatic readiness using an observation check list of 17 aquatic motor skills: during the first session and after six months of practice. The aquatic proficiency on each skill was compared between the groups and a stepwise discriminant analysis was conducted to predict the conditions with higher or lower aquatic competence.

Results: Results suggested that swimming practice improved several basic aquatic skills in both groups. Though, the results showed that shallow water group managed to acquire a higher degree of aquatic competence particularly in five basic aquatic skills (p<0.05): breath control – face immersion and eye opening; horizontal buoyancy; body position at ventral gliding; body position at dorsal gliding; leg kick with breath control at ventral body position, without any flutter device. The discriminant function revealed a significant association between both groups and four included factors (aquatic skills) (p<0.001). The body position at ventral gliding was the main relevant predictor (r=0.535).

Conclusion: Shallow water swimming lessons seemed to allow greater aquatic competence in preschool children after a period of 6 months of practice.

Keywords: depth, children, aquatic skills, teaching methods

*Presenting author
Elaboration of a water familiarization testing battery adapted for young children

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Introduction: According to many authors, the degree of development required to learn a swimming style is not reached before the age of five or six years old ¹,². However, before that age, aquatic environment has to be discovered in order to develop specific skills like entering into the water, immersion, floatation, breathing and propulsion ¹,³. Between three to eight years old, measuring the level of these different skills should be interesting for pedagogical applications. Since 2010, we are working on such a testing battery. The aim of this paper is to present the different steps of its elaboration.

Methods: In the initial version of the testing battery, children had to achieve up to 20 testing activities that were presented to them with a “frog story” in order to assess water familiarization. Year after year, the critical analysis permitted to change progressively and improve the testing battery.

Results: The first study showed that very well familiarized children obtained nearly maximal scores, so it was decided to add swimming style assessment. The second version was composed of 23 items and was too much time-consuming. Moreover, it required time video analysis. A "biplot analysis" was used to simplify it and select the 10 most relevant tests. Simplifying the testing battery was successful and the tests execution time was reduced to 15 minutes for five children. The last version is better adapted to the field conditions as it is very short and it could be done without any video recording.

Conclusion: The purpose of our studies was to make evolve a water familiarization testing battery in order to have one which is successful and also as adapted to the field reality as possible. Experts are now analysing this final version of battery to make it validated.

Keywords: testing battery elaboration, Aquatic skills

References

*Presenting author
The "Circulation-Volleyball": A case study in Primary School

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Introduction

Volleyball is considered one of the team sports transmitting higher educational values. However, due to its characteristics, it is one of the more difficult sports in the initiation stages. Traditionally, initiation stages were based on the technical learning to control of the ball even before playing the game. This analytical methodology involves a large number of withdrawals due to a lack of motivation and positive experiences.

Experience

In a case study in Primary Schools (8 – 14 years old) in León (Spain), there was a decrease of the number of children that played Volleyball and an increase of the number of children practicing other team sports.

In order to reverse this situation, some Primary Schools started to introduce a new youth volleyball development model, "Circulation-Volleyball". This methodology is based in a program with 6 levels, from 6 to 12 years old. Each level provides an specific learning adapted to the characteristics of the children, starting with throwing & catching the ball and finishing with mini-volleyball games.

This provides a global learning and allows the children to use the ball from the first contact with the sport, achieving more positive experiences and also learn in a more significant way from the beginning.

Critical Analysis

The experience has reflected an increase in the number of participants in volleyball (around 40%), thanks to the attractiveness and ease of the proposed activities which were based on the learning they have in their PE lessons.

At the same time, from the first session, children showed a high interest in the activity and they were really motivated to learn volleyball skills, what has provided an improvement in the level of play.

Conclusions

In conclusion, the methodologies we use in the sports initiation must be based on the innate interest of the children for the game.

Keywords: children, methodology, volleyball, initiation
Socio-environmental factors of motor performance

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Introduction:
Physically active children show a significant better motor performance than inactive children (1). In this context a sports club membership, participation in competitions and effort in physical education can positively act on motor performance. The aim of the study is to determine, how these factors influence the motor performance of pupils.

Methods:
During 2008/2009 school year 623 pupils (312 girls) of primary schools of Trier (6.35+/-.52 year old) participated to the study. The motor performance was tested with the German Motor-Test 6-18 (DMT 6-18)(2). This test battery includes 8 tests (20-Meter Sprint, Standing long jump, Push-ups, Sit-ups, Balancing backwards, Jumping sideways, Stand and reach, 6-Minutes run) for analyses of main motor abilities. Level of physical activity was assessed by an activity questionnaire (3). Analysis of variance was applied to analyze effects of sports club membership, participation in competition and perceived effort in physical education on motor performance.

Results:
Boys and girls who engage in sports clubs (boys=151; girls=113) or in competitions (boys=80; girls=23) achieved better than their counterparts without additional sports activities. Boys showed higher effects (.570<F<9.718).

Considering the effort in physical education, results are inconsistent. Significant differences were only found in boys for 20-Meter Sprint (F=3.550; p=.030) and Push-ups (F=3.944; p=.020).

The perceived effort in physical education does not influence the motor performance like sports club membership or participation in competitions. In future studies frequency and duration of physical education should be considered to analyze its potential impact on motor performance.

Conclusions:
In conclusion, a positive relationship between physical activity and motor performance in the study of Trier was confirmed. Sports Club membership and participation in competitions influence the motor performance more than the perceived effort in physical education.

Keywords: Physical activity, DMT, motor performance

References

*Presenting author
Does sport club participation contribute to physical activity among children and adolescents in Finland – Sports Club for Health project

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Sports Club for Health (SCforH) is an EU-funded project that aims to promote physical activity through sports participation. SCforH has 6 different work packages, of which one is focusing on strengthening the scientific evidence base for the SCforH programs. In this work package, the aim is to compare the physical activity of youth who participate to sport club activities and those who don’t in different European countries. This abstract represents the Finnish data as an example.

The Finnish is the National physical activity behaviour of children and adolescents (LIITU 2014) study. The nationally representative data was gathered through an internet survey in the spring 2014. In total 3071 children and adolescents aged 11yr (n=916), 13yr (n=935) and 15yr (n=951) provided responses for LIITU 2014. The variables measured were sport club (SC) participation and moderate to vigorous physical activity (MVPA).

60 percent of Finnish youth participate to SC activities, with no differences between genders. 28 percent of youth in Finland met the PA recommendation of at least 60 minutes MVPA daily during last seven days. 34 percent of boys and 23 percent of girls met the recommendation (p<0.001). SC participants met the recommendation of MVPA more often than non-participants (p<0.001): 35 percent of those youth who did participate to SC activities and 18 percent of non-participants met the recommendation. The differences occurred also among genders: 41 percent of SC participating boys met the recommendation, whereas 22 percent of non-participating boys did the same (p<0.001). Among girls the percentages were lower; 29 percent of SC participants and 15 percent of non-participants met the recommendation over past seven days (p<0.001).

SC participants had higher percentages of meeting the MVPA guideline than non-participants. This highlights the role of sports clubs on recruiting different youth, preventing the drop-out and promoting the PA among adolescents.

Keywords: “Sports club”, “adolescent”, “physical activity”
Observational screening tools for teachers for early identification of children with DCD

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Introduction:
According to recent recommendations (APA, 2013; EACD, 2011) early identification of children with Developmental Coordination Disorder (DCD) is essential. In order to measure movement competence, to use a wider range of test batteries and a multilevel approach for testing in different environments is suggested. An observational questionnaire, in the first step screening is warranted. The purpose of this study was to systematically review the literature of observational tools for children with DCD and to examine: (1) what are the studied questionnaires for teachers and (2) what are the psychometric properties of the questionnaires?

Methods:
A systematic review of the literature was conducted to synthesize all the data on observational screening tools for school-aged children (5–12 years) with DCD from five electronic databases. The approved studies meeting our inclusion criteria were analyzed to assess psychometric properties of the measures.

Results:
Literature search retrieved 1486 hits. Additional search identified eight tools intended for teachers use. The age range varied between 3 to 15.6 years. All questionnaires included information on motor competence, general gross motor skills and some also on fine motor skills. None of the questionnaires were valid for population based screening, because of the sensitivity and / or specificity were too low according to criteria (APA, 1985).

Conclusion:
There are many challenges in using initial screening tools to identify children with DCD. There is no accepted “gold standard” for motor skill testing, which may explain the low concurrent and predictive validity results between tests and observational tools, albeit they are measuring different aspects of motor function. A majority of the questionnaires would require more accurate reliability studies. Notwithstanding the limitations, there are many promising questionnaires under development. Those can be recommended to provide information on functional skills and limitations across a variety of tasks and settings in daily living.

Keywords: screening, DCD, psychometric properties

References

*Presenting author
Results From the Estonian 2016 Report Card on Physical Activity for Children and Youth

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Background: Physical activity (PA) has an indispensable role in the development of children physical, mental and social health. At the same time low PA levels of children are one of the greatest challenges in public health. The aim of the Estonian 2016 Report Card was to use the available research knowledge to describe and evaluate the PA of Estonian children and youth.

Methods: Research data for nine PA indicators were evaluated by national experts using the Active Healthy Kids Global Alliance grading system (1). The criteria for grades were based on the involvement rate of Estonian children and youth: A – most are involved (81–100%); B – more than half are involved (61–80%); C – approximately half are involved (41–60%); D – less than half are involved (21–40%); F – few are involved (0–20%). In the case of insufficient representative quality data, the indicator was marked as incomplete (INC). In addition, recommendations were provided for further actions to improve the grades.

Results: Grades were assigned as follows: 1) overall PA – F, 2) Organised sport participation – C, 3) Active play – incomplete data (INC), 4) Active transportation – INC, 5) Sedentary behaviours – F, 6) Family and peers – C, 7) School – C, 8) Community and built environment – B, 9) Government – C.

Conclusion: The physical activity levels of Estonian children are low, despite moderately supportive social, environmental, and regulatory factors. Systematic PA evaluation enables to make an agreement concerning the main goals and recommendations to increase the physical activity of children and youth and to reduce sedentary behaviour through driving social actions and policy changes.

Keywords: physical activity, report card

References

*Presenting author
**School day physical activity of students aged 7-13 years**

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**Background:** Physical activity (PA) has important role in disease and obesity prevention, also supporting mental health and academic achievement(1). According to the recommendations, children and youth should accumulate a minimum of 60 minutes of moderate and vigorous PA every day (MVPA)(2). The aim was to describe the PA of students compliant and non-compliant with PA recommendations during school days.

**Methods:** Students aged 7-13 years from 13 randomly selected schools in Estonia participated. PA was recorded with accelerometer ActiGraph GT3x for 5 school days, also the height and weight was measured. Evenson cut-points were used to calculate minutes spent in different PA intensities. Students with at least 10h PA data for a minimum of 4 school days were included into the analysis (n = 472).

**Results:** 24% of students met the PA recommendations, with higher proportion of students compliant with PA recommendations were in grades 1-2 (29.3%) compared to grades 4-5 (17.5%) (p = 0.003). Most MVPA minutes was accrued in afterschool segment – an average of 68.8 minutes by compliant students and 37.7 minutes by non-compliant students. In-school MVPA accounted for 21.8% of compliant and 27.2% of non-compliant students’ total daily MVPA on school days. 1.9% and 2.6% of class time and 10.2% and 15.8% of recess (non-complaint and compliant students, respectively) was spent in MVPA.

**Conclusions:** The PA of Estonian school children was low during school days and during in-school segment. The contribution of in-school PA to daily PA was greater in students non-compliant with PA recommendations. This study highlights the important role of schools supporting the PA levels of students and the need for intervention to increase in-school PA.

*Keywords: school day, moderate and vigorous physical activity, class time*

**References**
Finland’s 2016 Report Card on Physical Activity for Children and Youth

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Background: Finland’s 2016 Report Card on Physical Activity for Children and Youth gathers and translates research results and assesses the status and promotion of physical activity (PA) among Finnish children and youth less than 18 years of age. Report Card summarises the results and provides grades for nine indicators.

Methods: The Report Card working group included 20 specialists from different fields working with research, policy or practice related to PA among children and youth. The working group evaluated the evidence and assigned grades for nine PA indicators related to PA among Finnish children and youth. The working group assigned letter grades according to the following grading scheme (based on the proportion of children or institutes achieving the selected benchmark for each indicator: A = 81–100% (highest), B = 61–80%, C = 41–60%, D = 21–40%, F = 0–20% (lowest, failed)) using the Active Healthy Kids Canada Report Card development process.

Results: The grades varied in Finland as follows: 1) overall PA/fulfilment of recommendations = D, 2) organised sport participation = C, 3) active play = C, 4) active transportation = B, 5) sedentary behaviours = D, 6) family and peers = C, 7) school = B, 8) community and the built environment = B, 9) government = B.

Conclusions: Despite good policies and programmes to promote PA in Finland, children’s and youth’s overall PA levels are low, whereas their time spent sedentary is high. More effective interventions, operation models, means, concrete tools as well as environmental solutions are needed to support the work toward more physically active childhood and youth.

Keywords: adolescent, youth, physical activity, policy

*Presenting author
7-year-old children’s physical activity and motor skills measured with EMG-pants and accelerometer and the relationship between physical activity and the skills

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A Child has inborn drive to play and be physically active. Physical activity plays a role for motor skills, health and well-being.

The aim of this study was to compare 7-year old children’s (N=11) physical activity in structured activities measured with EMG-pants and accelerometer. The second aim was to examine which structured activity has the highest EMG-activity? The third aim was to examine how physical activity measured in structured physical activities differs in children with different levels of motor proficiency in KTK tests? Average values and standard deviations were used to analyse the data. Intensity categories (sedentary, light, moderate, vigorous) were analysed as well in structured activities.

Swinging, climbing, walking and balancing were classified as light activities. Moderate activities were crawling and climbing stairs. Playing a tag, trampoline jumping and running were vigorous activities. When considering intensity levels in each activity, the similarities with the methods were identified when children were running, climbing, balancing or playing a tag. EMG-pants gave interesting and useful information about the lower limb EMG activity. Accelerometer exaggerated the vigorous intensity level when children were crawling, climbing stairs or jumping on a trampoline. One of the reasons might be horizontal and vertical accelerations naturally included in these kinds of activities. A U-letter shape relationship was identified in swinging and walking. These tasks were mostly light activities when measured with EMG-pants. In contrast, accelerometer classified them mostly as moderate and vigorous activities. Regarding to investigating relationship between physical activity and motor skills? Proficiency and good coordination enabled economic use of lower limbs and bigger EMG activity when producing force and speed.

This study showed that there can be significant EMG-activity in muscles without significant acceleration. Light activities are important for children’s motor development as well. There should be more studies with EMG-pants and accelerometers in the future.

Keywords: accelerometer, physical activity, electromyography, motor skills

References

*Presenting author
Motor Fitness and Preschooler Children Obesity Status

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Aim: To examine the association between motor fitness (MF) and obesity status in preschool children. Methods: Sample comprised 467 children aged 3–6 years. Preschool children body mass index (BMI) was classified according to International Obesity Task Force (IOTF) and categorized into three levels, normal, overweight and obesity. Total physical activity (TPA) was assessed by accelerometer and MF test was assessed through two motor fitness tests 10X5 m shuttle run test (SRT) and a 7 m jumping distance on 2 feet test (J2F). Low MF was considered for motor fitness if SD above 1. A single variable with three categories was created: low MF, medium MF and high MF. Results: The prevalence of normal weight, overweight and obesity was 67.6%, 22.7% and 9.7%, respectively. The prevalence of SD> 1 for SRT was 13.7% and 14.4% for J2F, for single variable was 19.2%. Multinomial logistic regression analysis showed that obese preschoolers were more likely six times classified as having low MF level than their non-overweight counterparts (OR: 6.4; IC: 1.3-36.6). Conclusion: This study showed a considerable prevalence of overweight and obesity among preschoolers. Obesity has already been associated with lower motor fitness. Further longitudinal studies are needed to confirm this data.

Keywords: preschool children, obesity, motor skill

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"Cardiorespiratory Fitness is Associated with Inhibitory Functions in the Developing Brain."

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Physical Activity (PA) seems to produce benefits for some aspects of cognitive functions. These improvements have been shown to be selectively greater for processes requiring executive functions, especially inhibition. However, the neural mechanisms implicated are still unknown. The main goals of this study were: To determine whether cardiorespiratory fitness level is associated with inhibitory processes in the brain and to identify the neural mechanisms involved. We used whole-head magnetoencephalography (MEG) (Elekta Neuromag) to record neural responses during a visuospatial covert attention paradigm in a group of 22 high-fit and 26 moderate-to-low-fit teenagers (13-16 years old). Cardiorespiratory fitness was determined by 20 meters shuttle run test. Modulation of oscillatory activity at 10 Hz (alpha) has been linked with changes in attention/inhibition demands. We measured the modulation of alpha activity in parietal and occipital regions during anticipation of forthcoming visual information either to left or right visual fields. Preliminary results of this ongoing research showed main differences between the groups studied and significant correlations between behavioral and brain data. Inhibitory processes measured by the Modulation Index (MI) of alpha power were stronger in the ipsilateral hemisphere to the target for the higher-fit group. The behavioral analysis also showed significant differences between groups, with higher-fit group showing higher accuracy for targets and distractors. Furthermore, the suppression of alpha power in the contralateral hemisphere to the target between 600 – 1000 ms was correlated with the accuracy detecting the distractors. In conclusion, high cardiorespiratory fitness seems to be associated with inhibitory processes in the brain by means of a more efficient suppression of distractors in the ipsilateral hemisphere and release from inhibition in the contralateral one which results in a more effective performance in an inhibition task.

*Keywords: brain, executive functions, fitness, inhibition*

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Using basic biomechanics to support observation, assessment and progression of learning.

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This practical demonstration will explore how to use basic biomechanics to support observations, assessment and progression. The purpose of examining and exploring basic biomechanics is to enable everyone to be able to ‘see’ and to see more clearly.

The best way to explain observations is like a big game of ‘Pairs’. For those of you unfamiliar with the card game of Pairs, it is very simple children’s card game in which you can play individually or you can take turns to turn over cards and the idea is to find two identical objects as quickly as possible. With observing you’re essentially trying to compare the movement you’re seeing to the ‘pair’ on your criteria or listing of how the successful movement should be.

Observing human movement and unpicking how and what has just happened, if it meets the criteria of the movement and how to challenge and move the performer on, so they understand what they just did to help support their own evaluation and success is one of the most exciting and also most rewarding parts of human movement, physical activity, physical development, Physical Education and sport.

The practical demonstration will consider the big questions – ‘what to observe?’, ‘does it look right?’, ‘how do I know?’ It will consider how photographs, video can be used to support the observation and analysis process, as well as sharing structured observations for individuals as well as groups and consider how to plan for next steps within the learning. It will also observe equipment and share how observing equipment will support the movement analysis of individual children as well as groups. Within the practical demonstration a consideration of language will also be explored and how positive challenges can be used to support young children learning (Book 1).

Keywords: Observing movement; Biomechanics; Assessment; Progression

References
Introduction to Dance Movement Therapy: Embodied Play in Action

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Dance Movement Therapy (DMT; ADMP UK) can be defined as the psychotherapeutic use of movement and dance through which a person can engage creatively in a process to further their emotional, cognitive, physical and social integration. DMT is founded on the principle that movement reflects an individual’s patterns of thinking and feeling. Through acknowledging and supporting clients’ movements the therapist encourages development and integration of new adaptive movement patterns together with the emotional experiences that accompany such changes. DMT is practiced as individual and group therapy in health, education and social service settings and private practice. DMTs work with all ages and skill levels from children to elderly, from learning difficulties to physical, emotional and mental illness and individuals seeking means to personal growth. Recent randomized controlled trials (1-5) and systematic reviews (6-7) provide evidence base for the effectiveness of DMT in improving quality of life and somatic and psychological health in conditions and illnesses such as stress, depression, autism, schizophrenia and dementia.

The workshop is built on the circular structure of a DMT session. We begin with warm up (‘left brain’) activities, proceed to playing and moving with ‘not knowing and insights’ (‘right brain’) activities and finish with evaluation (‘left brain’). In the background of the workshop are concepts developed for movement observation in young children (8). Particularly, two embodied concepts, ‘Midline’ and ‘Weight Sensing’ will be explored in practice. By finding our own midline we are able to remain centered in a dynamic and flexible way. By giving into weight, we are allowing ourselves to be supported by the gravity, necessary for recovery. Both of these movement qualities are embodied ways to remain creatively interactive -be it in a pedagogical or therapy setting.

Keywords: Practice, Dance Movement Therapy, Evidence

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