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Instituto Politécnico de Viana do Castelo
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de Viana do Castelo

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DAY 1

9:00 - Biases and Beliefs about Motor Development and Health: The Mountain to Climb

David Stodden
University of South Carolina, USA; College of Education, Department of Physical Education

ABSTRACT:

A wealth of literature noting the relationship between motor development and health has emerged over the last decade. The initial work on this topic has led to increasingly diverse research in the area, specifically as it is integrated within other academic domains. Collectively, this work is still in its infancy and there are many limitations and barriers to address in order to fully understand the importance that developing motor competence has on multiple facets of an individual's physical, psychological and social-emotional development across the lifespan. Examples of limitations and barriers that will be discussed include issues with a) the measurement (and its interpretation) of not only motor competence, but also physical activity, perceived competence, and social-emotional variables; b) how measurement issues are linked to intervention effectiveness and their proposed impact on outcome variables and c) biases and inaccurate perceptions of what the study of motor development really encompasses and how it impacts the capability to attain funding. As world-wide interest in our work continues to increase, this initial foundation of research will serve as a catalyst that will promote not only a broad integration of motor development principles in other disciplines, but also more specific and focused motor development research.

10:00 - Curvilinear relationship between BMI physical fitness and motor coordination in children and adolescents

Vitor P. Lopes, & Luis Paulo Rodrigues
CIDESD; Instituto Politécnico de Bragança, Instituto Politécnico de Viana do Castelo, Portugal

ABSTRACT:

High levels of body fat in childhood and youth may have a negative impact on physical fitness and motor competence. In general, excess body fat has a negative influence on physical fitness levels, especially for activities in which the entire body must be displaced (Malina et al., 2004) BMI is largely used as a surrogate fat measure because it's a practical measure and less intrusive than more direct measures such as skinfolds. Most existing studies postulate a linear relationship between BMI and fitness using linear regression and/or Person correlation methods in their analyses. Indeed, most of the studies show a linear negative relationship between BMI and fitness, particularly when dealing with overweight/obese persons. As such, these studies are not examining the full BMI variability spectrum. Obesity and malnutrition represent opposite extremities of the spectrum of weight status, and both are routinely quantified in terms of weight and height relative to the child's age. The main reason may be because the majority of studies were using samples from populations with a high prevalence of overweight and obesity. Few studies used samples with a wider distribution of BMI when dealing with the relationship between BMI and fitness, and/or tested a nonlinear relationship. Hence, the purpose of this presentation is to show some studies results, that we were authors, that had show that the relationship between BMI and physical fitness and motor competence is curvilinear.

10:15 - Comparison of Children's Motor Coordination between Southern, Central and Northern European Countries

Arto Laukkanen(1), Arja Sääkslahti(1), Donna Niemistö(1), Taija Finni (1), Tommi Vasankari(2), Pauliina Husu(2), Vitor Lopes(3), Farid Bardid(4), Matthieu Lenoir(4)

1 Faculty of Sport and Health Sciences, University of Jyväskylä, Finland

2 The UKK institute, Centre for Health Promotion Research, Finland

3 Instituto Politécnico de Bragança, School of Education, Department of Sports Sciences and Physical Education, Bragança, Portugal

4 Department of Movement and Sports Sciences, Chent University, Gent, Belgium

ABSTRACT:

The main aim of this study is to compare the level of motor coordination in children living in geographically and culturally differing European countries. Data will be pooled regarding motor coordination (Körperkoordinationstest für Kinder, KTK) and anthropometrics (body height and weight) measured in 6-14-year-olds in Southern Europe (Portugal, n ~ 2300), Central Europe (Belgium, n ~ 2400) and Northern Europe (Finland, n ~ 800) during the last decade. Descriptive statistics for KTK scores, anthropometrics (height, weight, BMI), and and the effect of country, age, sex, and BMI on KTK scores will be examined. Cultural differences and possible mechanisms behind the differences in motor coordination across the Europe are discussed.

10:30 - Motor competence in preschoolers from Greece and Belgium: a critical look at potential gender differences on the BOT-2 SF

Fotini Venetsanou(1), Eva D'Hondt(2), Antonis Kambas(3), Matthieu Lenoir(4)

1 School of Physical Education and Sport Science, National and Kapodistrian University of Athens, Greece

2 Department of Movement and Sports Sciences, Faculty of Physical Education and Physiotherapy, Vrije Universiteit Brussel, Belgium

3 School of Physical Education & Sport Science, Democritus University of Thrace, Greece

4 Department of Movement and Sports Sciences, Faculty of Medicine and Health Sciences, Ghent University, Belgium

ABSTRACT:

The purpose of this study was to examine motor competence in children aged 5-6 years living in Greece (N=246) and Belgium (N=325), focusing on potential gender differences on the Bruininks-Oseretsky Test of Motor Proficiency, 2nd edition, Short Form (BOT-2SF). (M)ANCOVA analyses were run on the BOT-2 SF test scores, with country and/or age being included as covariate(s). Statistically significant differences were revealed for the raw scores of 10 out of 14 items (girls surpassed boys in 7 items), as well as the total point and standard score (based on combined norms). However, none of these differences was of practical importance ($\eta 2<0.14$), indicating that motor competence of preschool boys and girls is more similar than different. Comparing the present findings with those of previous studies, it was revealed that gender-specific differences on the BOT-2 SF are often generated from its norms misuse. BOT-2 gender-specific norms should be thoughtfully utilized in preschoolers.

10:45 - Developmental pathways in motor development in children: the pitfall of 'the average child'

Matthieu Lenoir, Dept of Movement and Sports Sciences, Ghent University
David Stooden, Department of Physical Education and Athletic Training, University of South Carolina

ABSTRACT:
In the past decades, the developmental trajectory of motor competence in children has been extensively documented. Typically, outcomes are presented as a series of age-related means featured by a year-by-year increase. Rodrigues, Stodden, and Lopes (2016) were one of the first to explicitly show that a significant number of children does however not follow this positive developmental trajectory. In their paper the focus is on measures of physical fitness and motor competence items appealing to a significant extent on fitness. In the current study, motor coordination of 700 children was evaluated twice with a one-year interval. Analysis of data from the Körperkoördinationstest für Kinder (Kiphard & Schilling, 2007) revealed that, depending on the test item analysed, between 35% and 80% of the children develop at a much slower rate than expected from the age-related reference values, and about 10% do not make progress at all. In spite of the many studies reporting positive effects of interventions, these results call for more intensified efforts to support the motor development of these children.

11:15 - Associations between motor competence, physical fitness and physical activity in children.

Monika Haga
Norwegian University of Science and Technology, Norway; Faculty of Medicine and Health Sciences, Department of Neuromedicine and Movement Science

ABSTRACT:
We do not fully understand the complex interactions between a variety of factors and mechanisms that determine participation in physical activity and thereby a sufficient fitness level in childhood. In this respect, motor competence is suggested as one possible determinant of children's physical activity behavior and physical fitness. A variety of constructs and methods are used to measure motor competence, physical activity and physical fitness. This presentation discusses how theoretical perspectives and measurement issues influence our understanding of these associations in children.

12:15 - Physical fitness mediates the relationship between physical activity and childhood motor competence

Mourão-Carvalhal, I. CIDESD, University Trás-os-Montes e Alto Douro, Portugal;
Coelho, E. CIDESD, University Trás-os-Montes e Alto Douro, Portugal

ABSTRACT:
The purpose of this study was to investigate whether perceived competence and physical fitness mediate the relationship between physical activity and childhood motor competence.
Methods: This was a school base study involving 242 Brazilian children (89 girls 153 boys) aged between 7and 9 years. The next variables were assessed: Perceived competence (PEGS); Physical Activity (questionnaire); cardio respiratory fitness (6 minutes run); motor competence (MABC-

2). Based on the conceptual framework proposed by Stodden we used three structural equation models to analyze the possible mediation effects of : (i)-perceived competence; (ii)-physical fitness ; and (iii)-perceived competence +physical fitness on their relationships with motor competence.
Results: Positive significant correlations between physical activity and 6 minutes run (p=0,043) and between MABC and 6 minutes run (p=0,045) were found. Only the de second model has a good fit to the observed data, with the physical fitness model accounting for 50% (R 2 = 0,50) of motor competence variance.
Conclusion: Developing a high physical fitness, mainly cardio respiratory fitness in childhood seems to be very important to improve motor competence.

12:30 - Kindergarteners' types of physical activity during free play while outdoors in the spring

Livonen, S. (1), Niemistö, D. (2), Itkonen, J. (3) and Sääkslahti, A. (2)
(1) Department of Teacher Education, Rauma, University of Turku (2) Faculty of Sport and Health Sciences, University of Jyväskylä (3) Faculty of Information technology, University of Jyväskylä, Finland

ABSTRACT:
We observed twelve kindergarten children during outdoor free play to determine how much time they spent on eight types of physical activity that involve different fundamental motor skills. Children were individually videotaped for 60 minutes in a kindergarten yard during free play in the spring in Finland. Software for coding time durations (1) used to code each child's behaviour into activity types. A mean inter-observer agreement rate of 89 percent across the eight activity types ensured the reliability of the observations.
The average times the children spent in (1) lying down, (2) sitting, (3) standing, (4) walking, (5) running, (6) light physical activities and games, (7) moderate-to-vigorous activities and games and (8) swinging will be presented.

12:45 - The task of raising from supine position to the upright standing position as a measure of motor competence on the life span

Maria Teresa Cattuzzo
Universidade de Pernambuco, ESEF, Recife, Brazil

ABSTRACT:
The study of human development in the life span provides a framework to study how and why individual changes occur throughout life. In this perspective, some motor actions can be considered developmental milestones and indicators of the health status of individuals. This is the case of the task "raising the supine position to the upright standing position", or just Supine to Stand task (STS). The STS task beyond uncover various aspects of physical independence and health, can also be a measure of human motor competence, which is a global term that includes all tasks directed to a goal, involving coordination and control of the human body. Scholars of human motor behavior have ratified the importance of the potential role of motor competence promoting positive or negative trajectories of physical activity throughout the life cycle. Considering the importance of active and healthy development and the systemic nature of

motor behavior, the assessment techniques in this domain should cover both process and product oriented measures of movement. In the case of STS task, some studies have used the oriented-process measurement, by observing the movement patterns / body components, and other oriented- product measurement, as the movement time; is also remarkable variety in the pattern expected on STS task with advancing age, and physical activity and physical fitness appear to be associated with such variations. Therefore, data on performance on STS task is still limited both the type of measure used to assess the task (process or product), and the phases of development investigated, and the need to know the influences of lifestyle variables, such as the level of physical activity and physical fitness components in the performance of STS task. Thus, whereas the STS task can be useful and practical to assess motor skills throughout the life cycle, but that all behavior of a system is subject to contextual contingencies of energy and information, the main problem to be addressed in this research asks how the performance of the STS task can be described in various life stages, i.e., questions the existence of a developmental sequence STS task, and if such performance is associated with lifestyle variables.

13:00 - Testing the general motor ability hypothesis in middle childhood: An item response theory perspective on motor competence

Bardid, Farid
University of Strathclyde, Ghent University; Utesch, Till, University of Munster; Lenoir, Matthieu, Ghent University

ABSTRACT:

Objectives: Motor assessments generally produce a single motor competence score based on the general motor ability hypothesis, which states that motor competence is a one-dimensional trait underlying a wide range of motor skills. Yet, it is unclear if the general motor ability hypothesis holds true in middle childhood, which is marked by an increased participation in sports and other types of physical activities. The study therefore evaluated the structure of motor competence in middle childhood using a large item set.

Design: A cross-sectional design was used to collect motor competence data of 2,538 children aged 6-11 years.

Methods: Participants completed the Bruininks-Oseretsky Test of Motor Proficiency – 2nd Edition Short Form (BOT-2 SF), which consists of 14 skill items and covers different motor domains. In accordance with the BOT-2 SF manual, point scores were computed for each item. Polytomous Rasch analyses (i.e., general partial credit model) were carried out to investigate the construct of motor competence.

Results: Rasch analyses revealed different items with unordered threshold parameters, due to ceiling effects. However, after empirically rescaling the category width for each item, follow-up analyses revealed a one-dimensional structure with 12 items.

Conclusions: The study provides some evidence of a one-dimensional construct (i.e., motor competence) underlying motor assessment in middle childhood. Continued efforts should be made to ensure that valid composite scores are used in motor assessment and to better understand the development of motor competence across age.

14:30 - Investigating variability in gross motor coordination: challenges, headaches and perfumes

José Maia
University of Porto, Faculty of Sport, CIFI2D Research Center on Development, Intervention and Innovation in Sport

ABSTRACT:

This talk will address issues related to gross motor coordination (GMC) research specifically done in the Kinanthropometry Lab of the Faculty of Sport, University of Porto, Portugal:

1. Challenges are linked with two difficulties: first, the struggle to identify a clear cut GMC definition as well as its operational structure expressed in test batteries; second, the apparent absence of a wide reaching GMC research program, nationally and internationally recognized, with ample implications in children education.

2. Headaches are of different kinds: first, the implementation of cross-sectional studies, model based, with information gathered from different sources and wrapped together within the multilevel modeling analytical strategies; second, the scarcity of longitudinal/mixed-longitudinal research, also model based, with time-invariant as well as time-varying predictors that better illuminate children motor development; third, the struggle to use the many analytical strategies, now widely available in software, to investigate old and new GMC questions through different lens.

3. Perfumes are of altered essences: first, the continuous "presence" of my academic mentor, the late Professor Gaston Beunen, in all that I think and do; second, the PhD students I had the privilege to supervise that assisted me to work on different Motor Development "terrains"; third, the considerable data bases we have now, especially their manifold bouquets and fragrances, which I will present.

Finally, and given the time constraints I have for this talk, I will "fly" across it mostly hoping that its perfumes will surprise some, make others smile, and still others use them. I am sure they will be pleased.

16:30 - Assessment of motor competence in childhood: analysis of two quantitative instruments

Carlos Luz(1,2), Rita Cordovil(3), Ana Quitério(4,5) &, Luis P. Rodrigues(6, 7)
1 Escola Superior de Educação de Lisboa, Instituto Politécnico de Lisboa, Lisboa, Portugal
2 Centro Interdisciplinar de Estudos Educacionais, Lisboa, Portugal
3 Laboratory of Motor Behavior, CIPER, Faculdade de Motricidade Humana, Universidade de Lisboa, Lisboa, Portugal
4 Laboratório de Pedagogia, Faculdade de Motricidade Humana, Universidade de Lisboa
5 Unidade de Investigação e Desenvolvimento em Educação e Formação, Instituto de Educação, Universidade de Lisboa, Lisboa, Portugal
6 Instituto Politécnico de Viana do Castelo, Escola Superior Desporto e Lazer, Melgaço, Portugal
7 Research Center in Sports Sciences Health Sciences and Human Development (CIDESD), Portugal

ABSTRACT:

Objective: This study aims to analyse two quantitative instruments for the evaluation of motor competence in childhood and puberty. Methods: A sample of 546 children (278 boys, mean = 10.77) divided in 4 age groups (7-8, 9-10, 11-12, 13-14 years old) were evaluated with Korperkoordinationtest fur Kinder (KTK) and the motor competence assessment (MCA). Results:

moderate to strong correlations (.61 - .70) were found between the two instruments across the age groups. Paired samples analysis of standardized values grouped by sex and age groups showed significant differences between the rankings resulting from the two instruments. Additionally, the two-way ANOVA performed for each instrument found some significant differences in the results. The Bland and Altman method established that the two instruments have a fixed and proportional bias showing differences between them.
Conclusion: Although there are similarities between the instruments, it seems that different aspects of motor competence may be represented.

16:45 - Diagnosis and modelling of basic motor competencies and their development

Herrmann, C. (University of Basel, CH); Heim, C. (Goethe-University Frankfurt, D); Ennigkeit, F. (Goethe-University Frankfurt, D); Seelig, H. (University of Basel, CH)

ABSTRACT:

Basic motor competencies (MOBAK) ensure that children can participate in sports and exercise. This longitudinal study explored the development of the MOBAKs over one school year and examined potential influence factors. Within the SKIB-project, N=1031 first graders (54% boys, M=6.83 years, SD=0.44) were tested in October and in June using the MOBAK-test instrument (Herrmann, Gerlach, & Seelig, 2015). Additionally endogenous (sex, BMI, age) and exogenous factors (sports club participation) were measured to test potential influences on the changes in the competencies. The MOBAKs clearly improved over one school year. Structural equation models revealed that boys showed bigger development in object control, whereas the development in locomotion was stronger for girls. Children with a high BMI showed less increase in competencies compared to children with a low BMI. Engagement in team sports positively influenced the development of object-control. Engagement in individual sport had a positive influence on the changes of locomotion.

17:00 - Basic motor competences assessment in primary aged school children

Ana Quitério, João Costa, João Martins, Marcos Onofre
Laboratório de Pedagogia, Faculdade de Motricidade Humana, Universidade de Lisboa, portugal

ABSTRACT:

This study explored basic motor competences (BMC) in primary school children and discusses BMC assessment within Physical Education (PE).
204 primary pupils (age=6,7±0,3) were assessed in their object movement (OM) and self-movement (SM) BMC using MOBAK.
Independent sample T-tests revealed that boys presented higher OM BMC than girls (mean±sd for boys and girls respectively:5.7±1.8;4.0±1.7;$p<0.001$), while girls were more proficient among SM skills (mean±sd for girls and boys respectively:5.3±1.8;4.3±1.7; $p<0.01$). The distributions as percentages in OM BMC indicated that 40.4% of girls reached success (>4 points), comparing with 72.7% of boys. “Throwing”, “Bouncing” and “Dribbling” were the worst tests for girls. For SM skills, 63.6% of girls and 52.7% of boys obtained success (>4 points), with “Jumping” being the worst test for boys.
These results reinforce the need of considering MOBAK instrument to assess BMC and highlighted gender differences among BMC and the need of PE pedagogical strategies to face it.

17:15 - Validity of upper body strength endurance testing: diminished strength or overweight?

Matos, Rui1; Morouço, Pedro1,2; Barroso, Marisa1; Cruz, João1; Matos, Sara3; Amaro, Nuno1; Coelho, Luís1
1Life Quality Research Centre (CIEQV); ESECS-IPL
2CDRSP
3Mestranda de Desporto e Saúde para Crianças e Jovens, ESECS-IPL

ABSTRACT:

For years, the scientific community have been debating validity and ecology of upper body strength endurance testing. Due to their low capacity of differentiation between performers (some boys and many girls fail to perform even one valid execution of pull-up tests) or by the high (negative) interference of body weight, there are clear reasons to question its applicability. The latter aspect surely lead to higher inaccuracy of the external load value, thus, inducing a bias between the obtained results and subjects' strength levels. Therefore, other tests have been proposed, such as the modified pull-up test. This approach seems suitable to partially solve the first highlighted aspect, but it has not proved to be able to eliminate the second. Bench-press test presents itself as an alternative to pull-up tests (modified or not) or even to the push-up tests, removing the body weight component acting as resistant force, enhancing results validity. In this communication, we propose to discuss these issues on testing for children and youth.

DAY 2

9:00 - A Bioecological Approach for the Study of Motor Development

Carl Gabbard
Texas A&M University, USA; College of Education and Human Development, Department of Health and Kinesiology

ABSTRACT:

This presentation addresses the importance of the environment in understanding change in motor behavior across the lifespan. Supportive theories will be presented with specific emphasis on Bronfenbrenner's Bioecological framework and its use in studying our field (motor development). This model has been used successfully in recent years to study two of the most pressing issues in the US: obesity and declining physical activity levels – both of which play a role in motor development. To illustrate, research will be shown describing how aspects of the home environment (microsystem) and availability of motor affordances can play a significant role in child development. The primary goal of this presentation is to stimulate thinking about how we can use the bioecological framework to better understand change in one's specific area of motor development interest.

10:00 - Physical activity levels, perceived competence, body mass index, engagement and motor competence: the relationship among school-age children

Nadia Cristina Valentini, Mariele Santayanna de Sousa, Glauber Carvalho Nobre
Universidade Federal do Rio Grande do Sul, Porto Alegre, Rio Grande do Sul, Brazil

ABSTRACT:

Background: The literature supports that physical activity is a protective factor against health issues and that motor competence is important to be an active child. Furthermore, to be motor competent a child need to engage and persist in motor tasks. The objective of this study was to investigate the relationship among motor performance, physical activity levels, perceived competence, BMI (Body Mass Index) and engagement during physical education classes in children. Methods: participated in the study 251 children (6 to 10 years-old) from public schools in southern Brazil. Children were assessed using Test of Gross Motor Development-Second Edition, the Pictorial Scale of Perceived Competence and Acceptance for Young Children and the Self-Perception Profile for Children. BMI, children physical activity levels and engagement in physical education classes were also assessed. The levels of physical activity were assessed using pedometers and enduring physical education sessions. A network analysis was conducted using R-program. The network was estimated by Gaussian Graphic Model gLASSO with correlation partial matrix for the analysis. We used three centrality measures (betweenness, closeness and strength). Physical activity levels and motor competence were the variable that remains centrally in the models (greatest closeness and betweenness). Children motor competence is important for increase the levels of physical activity.

10:15 - Autonomous motivation moderates the relationship between motor competence and physical activity

An De Meester (Ghent University), Johan Pion (HAN University of Applied Sciences), Farid Bardid (University of Stratchclyde), Bart Soenens (Ghent University), Matthieu Lenoir (Ghent University), Leen Haerens (Ghent University)

ABSTRACT:

The aim of the current study was to examine whether autonomous sports-motivation moderates the relationship between children's actual and perceived motor competence (AMC/PMC) and organized sports participation.

627 children (51.67% boys, age=10.40±1.15y) completed validated questionnaires to assess sports participation (FPAQ), PMC (SPPC), and sports-motivation (BREQ). AMC was assessed with the KTK. Regression analyses and SEM analyses were conducted to examine the research question.

Autonomous motivation was a significant moderator in the relationship between AMC and sports participation (B=.125, p<.001) but not in the relationship between PMC and sports participation (B=0.038, p=.297). Lowly motivated children's AMC is a significant yet weaker predictor of sports participation than highly motivated children's.

The results suggest that, among children in middle and late childhood, autonomous sports-motivation reinforces the relationship between AMC and sports participation. AMC and autonomous sports-motivation thus seem to have a synergistic effect in relation to children's participation in organized sports.

10:30 - Sex differences in actual and perceived lifelong physical activity skill competence

Ryan M. Hulteen (Australian Catholic University), Lisa M. Barnett (Deakin University), Philip J. Morgan (University of Newcastle), Leah E. Robinson (University of Michigan), Christian J. Barton (LaTrobe University), Brian H. Wrotniak (D'Youville College)

ABSTRACT:

This study examined potential sex differences for actual and perceived competence in lifelong physical activity skills. Adolescents (N=109, M age= 15.8 years) completed the Lifelong Physical Activity Skills Battery and a perceived competence questionnaire. Independent sample t-tests assessed sex differences in actual and perceived competence. Linear regression models, determined the association between motor competence and physical activity in boys and girls. For actual competence, there were significant group differences ($p < 0.01$) for composite scores, push-up, tennis forehand and the golf swing. Boys performed better in all skills. For perceived competence, significant differences were found for the jog ($p < 0.01$), upward dog ($p < 0.01$), warrior one ($p < 0.05$), push-up ($p < 0.01$), tennis forehand ($p < 0.05$) and golf swing ($p < 0.05$). Motor competence was more strongly associated with girl's physical activity ($B = 0.23$) than boys ($B = 0.12$). Targeted instruction or intervention may be needed to improve skill deficiencies.

10:45 - Perceived motor competence in young children. Considerations for analysis

Isaac Estevan (University of Valencia, Spain) & Lisa M. Barnett (Deakin University, Australia)

ABSTRACT:

An array of terms are used to describe perceived motor competence (PMC) and these terms do not always align well with instrumentation. Our aim is to clarify the concept of PMC in terms of theoretical frameworks. Within the physical self-perception domain, perceived sports competence (PSC) usually encompasses competence in sports and games. However, as many children under 8 years of age are not formally engaged in sport, PSC is arguably not the only construct to be considered. Based on the multifactorial and hierarchical structure of self-perception, PMC in children might instead be considered as the broader concept, incorporating both PSC and active play competence. This perspective might particularly relate to young children, in that it allows for 'sport' not being a developmentally applicable construct for this age group. More research is needed on how to situate PMC within a multifactorial structure of self-perception and how child development influences this structure.

11:15 - Capitalizing on the cognitive "side effects" of movement to promote motor and cognitive development jointly: from neurosciences to policies

Caterina Pesce
University Foro Italico of Rome, Italy; Department of Movement, Human and Health Sciences

ABSTRACT:

In this presentation, I start summarizing key evidence on the functional, structural and biological changes in children's brain related to physical activity (PA) to go beyond the common discourse about getting children moved merely linked to the overweight epidemic. To this aim, I focus on intriguing intersections and commonalities linking the research areas of motor skill development and learning to that of exercise and cognition and developmental neurosciences, which are

proposed to shed light on how qualitative exercise characteristics may be used to meet with one deed two needs: motor and cognitive development promotion.
To transition theory into practice, I suggest what are the characteristics of designed motor learning experiences that can impact brain plasticity and cognitive development. Novelty, diversity, effort, and successfulness, as well as a balanced relation between repetition and change in PA and an adequate trade-off set-point between costs and benefits of stability and flexibility seem essential ingredients to render learning experiences meaningful to this aim. I discuss how variability of practice can impact cognitive and particularly executive function development and reframe variability of practice into emerging models of embodied cognition.
I conclude proposing a holistic perspective on healthy child development that links the advocacy for quality PA to the provision of the child's right to play and be physically active as a health determinant. I discuss how multisectoral strategies involving urban planning, transport, health, sport, and education sectors, and public-private partnerships involving corporate social responsibility commitments may effectively converge on rendering the environment more conducive to active play, physical education 'thoughtful' and classroom learning 'moved'.

12:15 - Motor skills and executive functions: Overlapping constructs in preschool children?

Suzanne Houwen, Gerda van der Veer, Erica Kamphorst, & Marja Cantell
University of Groningen, Faculty of Behavioural and Social Sciences, Special Needs Education and Youth Care Unit, The Netherlands

ABSTRACT:
This paper aims to contribute to the discussion about the relationship between motor performance and executive functioning in preschool children. Specifically, the linkages between motor skills and executive functions were examined during the preschool years with a six-month follow-up investigation. This paper stems from our MELLE project which focuses on the developmental trajectories of motor skills, executive functions, and language in preschool children. A diverse sample of 3- to 5-year old at-developmental risk and typically developing children was recruited. Comprehensive age-appropriate performance-based measures of motor skills and executive functions were administered. Several possible background variables (e.g., age, gender, socioeconomic status, ADHD symptomatology) were accounted for. The results will be presented at the ICoMDR III and discussed in light of the role of motor proficiency for healthy child development.

12:30 - The acute effects of two physical exercise interventions on inhibition and lapses of attention in 8-10 year old children

I.M.J. van der Fels, J. Smith, C. Visscher, E. Hartman. Center for Human Movement Sciences, University Medical Center Groningen, University of Groningen, The Netherlands

ABSTRACT:
The aim of this study was to investigate acute effects of two forms of physical exercise (aerobic exercise and cognitively engaging exercise) on inhibition and lapses of attention. Eighty-nine children participated (aged 8-10 years, 52.8% boys) in a cluster randomized controlled trial. The stop signal task (SST) was used to measure inhibition and lapses of attention. Two intervention groups performed the SST immediately after either aerobic exercise or cognitively engaging

exercise. The control group performed the SST after a seated classroom lesson. Results showed no significant differences on inhibition and lapses of attention between the three groups. Detailed results related to characteristics of the children (high vs low fit) and implementation measures of the interventions (high vs low physical load) will be presented. This will provide important information for further development of school-based physical exercise interventions.

12:45 - Breaking sitting time with a cognitive stimulating motor task: a feasibility study.

Emiliano Mazzoli[1], Jo Salmon[2], Wei-Peng Teo[2], Caterina Pesce[3], Harriet Koorts[2], Nicole Rinehart[4], Tamara May[4], Tal Dotal Ben-Soussan[5], Lisa M. Barnett[1]

[1]Deakin University, Geelong, Australia, School of Health and Social Development, Faculty of Health; [2]Deakin University, Geelong, Australia, Institute for Physical Activity and Nutrition, Faculty of Health; [3]Italian University of Sport and Movement, Rome, Italy, Department of Movement, Human and Health Sciences; [4]Deakin University, Geelong, Australia, School of Psychology, Faculty of Health; [5]Patrizio Paoletti Foundation, Assisi, Italy, Research Institute for Neuroscience, Education and Didactics, Cognitive Neurophysiology Laboratory

ABSTRACT:

Children spend much of the day sitting. Classroom-based active breaks can benefit children's physical health, but may also improve their focus and cognitive functions. Although teachers' and pupils' opinion plays a crucial role in the successful introduction of these strategies into the school curriculum, it is not always considered.

In the current project, we aim to assess the feasibility of introducing a cognitively stimulating motor task to break sitting time in primary schools. Four teachers will attend a 1-hour training session and conduct a one-week trial in their classrooms. Their opinion will be collected before and after the trial with one-on-one interviews. The execution will be directly observed. Children's opinion will also be collected with semi-structured group interviews.

Based on the outcome of feasibility study, a following pilot study will examine the effects of an adapted version of the motor task on children's cognition, sitting time, on-task behaviour and enjoyment.

13:00 - A novel to scaffold children during learning of motor tasks.

TORTELLA PATRIZIA, Center for research in Child Motor Development, University of Verona, Italy; GUIDO FUMAGALLI, Center for research in Child Motor Development, University of Verona, Italy.

ABSTRACT:

Introduction Learning a motor task requires capacity to stay focused, pay attention and activation of working memory. Can dramatization with a novel improve the learning and the execution of a motor task in 4-5 y old children?

Methods One class of 4-5 y old children was given instructions usually provided to 7-10 y old children to execute a motor task (Sigmundsson et al. 2016, walking, running in slope); in another class the task was dramatized with a fantastic situation.

Results: Both groups understood the task but children scaffolded with the story executed the task more accurately and faster than children that received only standardized instructions.

Conclusions: For 4-5 y old children inserting a motor task in a fantasy novel improves understanding and remembering of the task resulting in more accurate and rapid execution of the task.

14:00 – POSTER PRESENTATION

Working Memory May Not Correlate with Motor Sequence Learning

Jennifer VanEtten, B.S., Brockport SUNY, Cynthia Duke, B.S., Our Lady of Lake University, Yu Due, Ph.D., University of Maryland, Jane Clark, Ph.D., University of Maryland

ABSTRACT:

Working memory (WM) is an important cognitive function for learning new motor skills. The effect of WM, however, on implicit motor sequence learning remains unclear. Participants (n=42) were split into high and low WM groups based on their WM scores as measured by the N-back task, administered to 160 college-age students. The high and low WM groups were assigned to learn a serial reaction time task presented as either an implicit, fixed or probabilistic, sequence. We found that high WM yielded better performance overall, but WM status did not influence sequence learning nor its underlying processes despite the implicit nature of the task. This study serves as a foundation for an identical future study that will be conducted with typically developing children.

Fine and Gross Motor Proficiency in Children with Autism Spectrum Disorder

Ting Liu & Michelle Hamilton, Texas State University, USA

ABSTRACT:

Research shows that children with autism spectrum disorder (ASD) are behind their typically developing peers in motor skill development. However, limited studies have examined both fine and gross motor proficiency in children with ASD. The purpose of this study was to comprehensively assess the fine and gross motor performance of children with ASD. Fifty-three children with ASD (7 to 14 years) was assessed using Bruininks-Oseretsky Test of Motor Proficiency-2 (BOT-2). The results of this study suggested that children with ASD were significantly delayed in all fine motor subtests (i.e. fine motor precision, fine motor integration, manual dexterity) and all gross motor subtests (i.e., upper-limb coordination, bilateral coordination, balance, running speed, and strength and agility) when compared to the normative data. It was concluded that children with ASD were impaired on fine and gross motor proficiency, as they all scored in the well below average category of the BOT-2.

The associations of perceived motor competence, actual motor competence, and physical activity: differences across disability, age, and gender

Sally Taunton, Ali Brian, David Stodden
University of South Carolina, USA

ABSTRACT:

The purpose of this study was to examine associations among perceived (PMC) and actual motor competence (MC), BMI, sedentary time and physical activity (PA) for boys and girls with and without disabilities. Participants (N=88) attended a socioeconomically disadvantaged preschool center in the southeastern United States. Significant associations were found for light (rs=.278, p< .005), moderate (rs= .315,p<.001) , and vigorous (rs=.284, p<.005) PA . Most notability, BMI and object control skills moderately associated (girls (rs=.482, p<.005), boys (rs=.5.16, p<.005)

for 4-year-old children. PMC moderately associated with time in moderate (rs=.590, p<.005) PA for 5-year-old girls only. Disability significantly associated moderate (rs=.315, p<.001), and vigorous PA (rs=.284, p<.005) as well as sedentary time. Furthermore, PMC was a significantly associated with light (rs=.588, p<.005) and moderate (rs=.590, p<.005) PA levels for 5-year-old girls only. This study demonstrates PMC and MC influence BMI and PA levels of preschool children with and without disabilities.

Do you see what I see? Visual attention to instructional supports in ASD.

J. Megan Irwin, Keith R. Lohse, Mary E. Rudisill, and Melissa M. Pangelinan
Auburn University

ABSTRACT:

Autism Spectrum Disorders (ASD) impacts 1 in 68 children in the United States. In addition to the core social-communication and behavioral deficits, children and adolescents with ASD display widespread motor deficits and have consistently demonstrated poor performance on commonly used clinical and standardized motor assessments. These motor deficits may be due to impairments in visual attention, which would impact skill instruction and assessment administration. The present study addressed this knowledge gap by quantifying differences in visual attention using eye tracking, while examining two visual supports (videos/static images) for motor skill instruction in children and adolescents with and without ASD. Ten males with ASD (mean age: 10.90 years) and 10 age-matched controls completed eye tracking, motor assessments, and cognitive assessments. Results will be discussed with respect to potential mediators and moderators of eye gaze behavior and implications for motor skill instruction and assessment administration.

Movement skills of children with visual impairment in Latvia and U.S.

Aija Klavina, Latvian Academy of Sport Education (Latvia), Ali Brian, Adam Pennell, Sally Taunton, University of South Carolina (U.S.) Lauren Lieberman, Pamela Haibach-Beach, College at Brockport (U.S.)

ABSTRACT:

Children/adolescents with visual impairments/blindness (CWVI) from the US often reveal low levels of physical activity (PA), motor competence, perceived motor competence, and overweight/obese body weight status. Little is known regarding PA for CWVI from Eastern European countries such as Latvia. Perceived and actual motor competence, particularly balls skills, often predict physical activity; but ball skills may be a culturally bias factor. Thus, it is important to understand what factors predict PA for CWVI from countries such as Latvia and if differences exist cross-culturally. Stepwise regression results for CWVI (N=35) from Latvia (n=18) and US (n=17) show that only country and perceived motor competence significantly predicted PA (p<.05) with emergent significance for ball skills (p<.10). CWVI from Latvia showed significantly lower (p<.001) ball skills and PA than the US sample. Future intervention work is needed to improve the perceived and actual motor competence for CVWI from Latvia.

Can we use the subscales for MABC-2 and BOT-2?

Paola Matiko Martins Okuda. Department of Psychiatry and Medical Psychology, Federal University of Sao Paulo.
Melissa Pangelinan. School of Kinesiology, Auburn University.
George B. Ploubidis. Department of Social Science. Institute of Education. University College London.
Simone Aparecida CApellini. Speech and Hearing Sciences Department, São Paulo State University "Júlio de Mesquita Filho" – UNESP.
Hugo Cogo-Moreira. Department of Psychiatry and Medical Psychology, Federal University of Sao Paulo.

ABSTRACT:

The BOT-2 and MABC-2 are commonly utilized assessments, however the construct validity for their subscales has not been studied, and clinically it is important because has a direct effect on how motor assessments scores are conducted and subscales are interpreted. Objectives: to evaluate the general and specific contributions of the subscales for the BOT-2 and MABC-2. Methods: Confirmatory factor analysis (CFA) under bifactor model were conducted on BOT-2 data from 187 elementary school students (grades 1–6) and on MABC-2 data from 127 elementary school students (grade 1). Results: Good fit indexes were obtained for both tests, but the bifactor model showed that the unviability and unreliability of their subscales. Conclusions: Both the tests exhibited factorial validity with multidimensional structures for the studied samples. However, most of the reliable variance came from a general motor factor, therefore the scoring and reporting of subscale scores was not justified for both tests.

Content validity of Portuguse version of Children's Assessment of Participation and Enjoyment

Fabio Vila Nova; Raul Oliveira; Rita Cordovil
Laboratory of Motor Behavior, CIPER, Faculdade de Motricidade Humana, Universidade de Lisboa, Portugal

ABSTRACT:

INTRODUCTION: Participation in everyday activities is considered a vital part of children's development. The Children's Assessment of Participation and Enjoyment (CAPE) is a 55-item questionnaire that examines how children and youth participate in extracurricular activities (recreational, active-physical, social, skill-based, and self-improvement). This assessment is critical for children with neuromotor impairments, who benefit from participation to foster motor, cognitive and psychosocial development. AIM: To assess the content validity of CAPE Portuguese version (CAPE-PT). METHODS: CAPE-PT was appraised by an expert panel and a parent of a child with cerebral palsy (n=9). Participants were asked to score each item according to relevance using a 4-point Likert scale, ranging from "high relevant" (score 4) to "not relevant" (score 1). Content validity was determined by the Overall (S-CVI/Ave) and Item-level (I-CVI) index. Participants were instructed to express opinions about item description and suitability to the construct. RESULTS: The S-CVI/Ave was 0.93 (Excellent), and the I-CVI was higher than 0.78 (Excellent) in 92% of items (n=51). Suggestions were made to keep remaining items in this version. CONCLUSION: CAPE-PT demonstrates adequate content validity to assess Portuguese population.

Would a child with better motor skills be more entrepreneurial?

Inês Silva, Beatriz Pereira, Aurora Teixeira
Universidade do minho, Portugal

ABSTRACT:

Objective: To analyze the relation between children's motor skills levels and their entrepreneurial traits.

Methods: Exploratory case study using mixed methodologies. 37 students participated in this study, 18 of the 1st grade and 19 of the 3rd grade.

Instruments: To determine the children's motor skills it was used TGMD-2; To determine entrepreneurial traits in children we observed them in enriched recess. The observation was based on a script built according to the literature review.

Results: Children with better motor skills throughout total raw scores and subtest raw scores for object control skills tend to be in the 3rd grade and show the lowest propensity to opposite behavior of "Self-Confidence" and "Resilience to failure" and also, children with better subtest raw scores for locomotor skills are also those who show positive behavior of "Risk taking" such as calculated risks before acting or not to be afraid to fail.

Association of body image with internalizing symptoms and bullying in adolescents

José Marmeleira (1, 2)
Daniela Palma (1)
Guida Veiga (1, 2)
(1) Department of Sport and Health, School of Sciences and Technology, University of Évora, Portugal
(2) Research Centre in Sports Sciences, Health Sciences and Human Development (CIDESD), Portug

ABSTRACT:

The aim of this study was to examine the association between adolescents' body image and internalizing symptoms and bullying. Forty-four portuguese adolescents (19 boys and 25 girls, aged 12-16 years old) completed the Collins' Child Figure Drawings, the Preoccupation with Body Appearance questionnaire, the Children's Depression Inventory, the Preoccupation/Rumination questionnaire, the Social Anxiety Scale for Adolescents, the Self-report Behaviors during Bullying Episodes and the Florence Cyberbullying-Cybervictimization Scales. Higher preoccupation with body appearance was moderately associated ($p<.05$) with higher negative humor, negative self-esteem, preoccupation/rumination, fear of social negative evaluation, and victimization during bullying episodes. Higher dissatisfaction with body image (assessed by Collins' Child Figure Drawings) was moderately associated ($p<.05$) with higher interpersonal problems, victimization during bullying episodes and cyberbullying victimization. These findings suggest that negative self-evaluation of body image may have major implications for adolescents' psychological well-being, and that it is important to determine whether there is a causal relationship.

The transition from crawling to walking on infant's avoidance of drop-offs: insights from a new paradigm

Burnay, C., Edith Cowan University, WA
Cordovil, R., Faculdade de Motricidade Humana, Lisboa
Button, C., University of Otago, Dunedin, New Zealand
Croft, J., Anderson, D., Edith Cowan University, WA

ABSTRACT:

The role of crawling experience is well established among researchers: through weeks of crawling experience infants start avoiding situations that pose risks for falling. However, the role of walking experience and the specific effect of the transition between crawling and walking remains controversial. Joseph Campos and colleagues, using the classical "Visual Cliff" paradigm, finding that infants avoided the deep side of the apparatus even more consistently when tested in a new walking posture than when tested as experienced crawlers. Karen Adolph's group tested infants in a real cliff paradigm and reported that while experienced crawlers avoided the 90cm height, new walkers tended to walk over impossible heights and experienced walkers coped with dangerous height using alternative methods to descend. Using a Real-Cliff / Water-Cliff paradigm, we tested crawlers and walkers on a 75cm height platform and tub of water. Our results confirmed the role of crawling experience in the avoidance of both the real and the water cliff. However, inconsistent with previous studies, walking experience had no influence on the infants' avoidance of the cliffs.

These results may show that in the beginning of their locomotor journey, infants need locomotor experience to understand the possibilities of action on the world. However, when they learn what is safe or not and become aware of the dangers of a drop-off, other factors like personality influence their decision-making. Once infants perceive the environment, they can be more cautious or bolder, it may be a matter of temperament.

A test for the functionality of the elderly: the task of getting from the lying position to the standing position

Frederico Santos de Santana
UNIEURO/UnB, Brasília, Brasil

ABSTRACT:

From the gerontological point of view, there is a functional level that classifies the elderly in incapacitated, that is, the same is not able to perform basic activities of daily life, such as moving, dressing, cleaning and preparing their own food . A thin line that defines the elderly as independent or not. However, a precise and objective definition of the threshold of functional disability is still a challenge. As it is human movement, an analysis of the physical performance of a motor action should more appropriately point out this moment of transition of the functional level. Moreover, in terms of specificity, it must be a common motor action, that is, it is already part of the natural repertoire of movements, since a new movement that requires learning would provoke a departure from reality (low external validity). It should also be noted that the determination of this action needs to take into account the role of motor tasks compatible with the basic activities of daily living. Thus, the action to be chosen to test the functionality of the elderly should be a prerequisite for the execution of more complex ones and that is comprehensive enough to represent or manifest, even partially, the various physical

aptitudes, in a simple and unique, task-summary of the functionality of the elderly. So we have proposed that the task of getting up from the ground from the supine position in English, Supine To Stand (STS), is able to identify the functional incapacity threshold of the elderly. For this, the description and evaluation of this motor task have been performed through film analysis. Thus, one of the first steps is to verify the consistency of the measures collected and, therefore, the main intention to be investigated in this study is to verify the levels of intra and inter-rater reproducibility that lead to the execution of the STS task in the elderly and that decode the videos, in a perspective of developmental analysis of movement, from product measurement, that is, the time necessary for the execution of the complete motor action.

15:00 - Learning to reach in infancy: New insights from eye-tracking studies

Daniela Corbetta
University of Tennessee, Knoxville, USA ; Department of Psychology

ABSTRACT:

For decades, learning to reach in infancy has been assumed to be visually-guided, but in the mid 90s some studies have begun questioning the role of vision in infants early reaching attempts. In this talk, I will present findings in which we used eye-tracking in the context of infant reaching to determine how vision was used by the infants during the process of learning to reach. So far, evidence suggest that early reaching attempts are not visually-guided, but are more likely the product of a proprioceptive, embodied process, where infants learn to map vision on their action rather than the reverse.

16:45 - Investigating Pre-schoolers perception of step affordances

Correia, V. (1,2) Pereira, E. (1), Carvalho, J. (1,2), Silva, S. (1), Correia, A. (1), Martins, A. (1), Cordovil, R. (2,3) - 1) School of Education and Communication, University of Algarve; 2) CIPER - Interdisciplinary Centre for the Study of Human Perfor

ABSTRACT:

This communication presents three experiments focused on the perception of stepping affordances of pre-school children. The common experimental task consisted of a game played in pairs in which one child had to cross, as fast as possible, a 6th meter path stepping only on marks placed on the floor by the partner. On experiment 1: the pre-schoolers performed the task with each other. On experiment 2: the pre-schoolers performed the task with adults with different levels of child-care experience. On experiment 3: the pre-schoolers performed the task with adults in three different observation conditions. Anthropometric and functional data were obtained from the participating children. Data on the experimental task itself were collected using video recording and later analysed. We verified that both children and adults exhibit a diversity of action strategies and different spatial-temporal behavioural dynamics in this task as a function of their age, of adults' experience and on the task observation condition. Preliminary results suggest that older children have a more adjusted perceptual judgment of the partner's affordances, experience in dealing with children helps to estimate children's stepping ability, and adults perceive better child's ability to step when they are present and performing the task.

17:00 - Summer Success: A Pilot Program to Promote School Readiness in Preschoolers from an Urban, Disadvantaged Environment

Goodway, J. D., Famelia, R., Tsuda, E., & Wainwright, N
The Ohio State University, Columbus, OH, USA
Wales Instituite for Physical Literacy, University of Wales, UK

ABSTRACT:

Many young children from disadvantaged environments enter kindergarten without the prerequisite skills to be successful in school, setting them on a negative educational trajectory. Such children have often had no access to organized child care, have been raised in homes by parents with low educational outcomes, and thus lack the necessary school readiness skills. This pilot study examined the impact of an innovative month-long summer program called "Summer Success" on the readiness skills (reading/math/physical literacy & socio-emotional skills) of disadvantaged preschoolers who had no prior preschool experience and were going to kindergarten in the Fall. This presentation focuses on the physical literacy (actual and perceived motor skill competence) part of the program. Participants were 45 preschoolers recruited from a low-income neighborhood (M=61 mo., SD=5.3). As part of the Summer Success Program, preschoolers received the SKIP fundamental motor skill program for 30 mins, 12 sessions over 4 weeks (270 min). Preschoolers were pre and posttested on: 1) Test of Gross Motor Development-2 (locomotor [LOC] and object control [OC] subscales, and 2) PMC: Physical Competence subscale of the PSPCSA (Harter & Pike, 1984) and the PSPMSC (Barnett et al., 2015). At the pretest children were developmentally delayed in fundamental motor skills (GMQ% M=11.83%). Two factor (Time X Gender) split plot ANOVAs (locomotor, OC) analyzed pre-to post changes in raw scores of LOC/OC skills and PMC and gender effects. Children improved significantly ($p<.001$) from pre-to-posttest on LOC skills with a large effect size (eta squared=.46) with no main effect for gender ($p=.99$) or interaction effect ($p=.80$). There were also significant ($p<.001$) pre-post improvements in OC skills with a large effect size (eta squared=.40). However, for OC skills there was a main effect of gender ($p=.04$, eta squared=.19[a medium effect]), but no interaction effect ($p=.26$). No significant improvement was observed in perceived motor competence (PSPCSA $p=.19$, PSPMSC $p=.11$). The findings from this study demonstrate the feasibility of the SKIP program to impact vulnerable children's fundamental motor skills in a relatively short period of time, but did not appear long enough for changes in perceived motor competence. Overall, these data provide evidence for a future larger scale evaluation of the Summer Success program.

17:15 - Imagery Ability in Children and Adolescents with Visual Impairment

Melanie Perreault and Pamela Beach (The College at Brockport, State University of New York)

ABSTRACT:

Research has long supported the effectiveness of imagery for learning and performing a variety of motor skills (e.g., Feltz & Landers, 1983). A major contributing factor to the effectiveness of imagery is one's imagery ability wherein individuals with high imagery ability benefit more from imagery use. However, little is known about the imagery ability of individuals with visual impairment (VI). Thus, the purpose of this study was to examine imagery ability in this population. Sixty-one boys (n=35) and girls (n=26) ages 9-17 with VI (B1-B4) completed the Movement Imagery Questionnaire for Children (Martini, Carter, Yoxon, Cumming, & Ste-Marie, 2016) in small groups. Results indicated that participants' imagery ability was equivalent across

all three subscales: internal visual (M=5.55), external visual (M=5.55), and kinesthetic (M=5.16). There were no differences in imagery ability based on age, gender, or VI status. The results suggest that individuals with VI may benefit from imagery use.

17:30 - Motor skills, balance, and physical activity in Children with CHARGE Syndrome

Pamela Haibach-Beach (SUNY College at Brockport), Lauren Lieberman (SUNY College at Brockport), Melanie Perreault (SUNY College at Brockport), Beth Foster (California State Polytechnic University)

ABSTRACT:

Children with CHARGE syndrome (CWCS) experience considerable delays in their motor development due to vestibular dysfunction, truncal hypotonia with ligamentous laxity, and visual and hearing impairments. However, there is very little research assessing motor skills in CWCS which has a large impact upon their future career prospects and even their functionality. The purpose of this research was to further understand motor skills and balance in (CWCS) and the effect of physical activity upon the CWCS' motor development.

This study consisted of 37 CWCS between the ages of 4 and 14 who were able to independently walk. Participants performed motor skills and balance activities and their parents completed a physical activity questionnaire. Preliminary results indicated high variability across the CWCS's motor skill competence and balance scores, with very low mean performances. These scores were correlated with their physical activity participation indicating the importance of increased physical activity performance in CWCS.

17:45 - Development of gap-crossing ability in children aged 6-12 years old: Examining the relationship between perception and action

Smith Joanne Smith, Center for Human Movement Sciences, University Medical Center Groningen, University of Groningen, The Netherlands

ABSTRACT:

As children grow, their physical, cognitive and social skills develop and their action capabilities change. By interacting with their surrounding environment, they are able to explore the range of opportunities available for action, given their new capabilities. That is, they learn the actions afforded by their environment relative to their new capabilities. For instance, when faced with a gap in the pavement that needs to be crossed, are they able to step or jump across, or do they need to walk around it?

A large mismatch between their action capabilities and their perception of the opportunities afforded by their environment can lead to increased likelihood of accident and injury, or alternatively a decrease in participation and withdrawal.

In this presentation data on gap-crossing behaviour of children aged 6-12 years old will be used to examine how action capabilities and perception of environment are aligned and integrated during motor development.

DAY 3

9:00 - New perspectives on learning and motor skill development: the specificity of skill learning

Hermundur Sigmundsson
Norwegian University of Science and Technology, Norway; Department of Psycholog

ABSTRACT:
Knowledge about developmental theories is important for experts or specialists working with children following normal development and children who have various kinds of dysfunction, in order to better understand what happens with processes associated with motor behavior. In this lecture, the focus will be on how theories of development and learning can be used to understand processes associated with motor behavior. A probabilistic perspective emphasizes that the changes taking place in the development is a result of interaction: structural changes in the nervous system leading to changes in function and behavior and opposite, functional changes resulting in changes in structure. This bidirectional interaction between biological and experiential aspects is a continuous process which cannot be reduced to either organism or environment.
Dynamical systems theory (DST) emphasizes that it is the interaction between the person, the environment, and the task that changes how our movements are, also in terms of how we develop and learn new movements. The interplay between these factors will, over time, lead to changes in motor development. The importance of experience is central to Edelman's theory of neuronal group selection (NGST). Activation of the nervous system increases the connections between certain areas of the brain, and the selection processes in the brain are a result of enhancement of neural connections involved in a "successful" motion. The central nervous system adapts its structure and function in response to internal and external influences, and hence neural plasticity is a prerequisite for learning and development. In the lecture I will argue that Edelman's approach supports the theory of specificity of learning. From the perspectives of probabilistic epigenesis, DST, and NGST, it is possible to argue that that being physically active and having the opportunity to get different movement experiences are of great significance for promoting motor development and learning.

10:00 - A preliminary examination of the effectiveness of intervention strategies on the locomotor skills and perceived motor competence of children with visual impairments

Ali Brian, University of South Carolina; Laura Bostick, Louisiana Tech University; Sally Taunton, University of South Carolina; Adam Pennell, University of South Carolina; Lauren Lieberman, State University of New York's College at Brockport

ABSTRACT:
Children with visual impairments (VI) often present low levels of perceived (PMC) and actual motor competence warranting the need for intervention. Thus, we examined the effectiveness of two, concurrent, six-week interventions on the locomotor skills and PMC of children with VI (N=47). Intervention one was online with parents (n=9) and their children (n=13) with VI. Intervention two featured a physical education teacher and his students with VI (n=13). Both strategies were contrasted against control children (n=21). Pretest/posttest results revealed that physical education students showed significantly ($p<.001$) greater improvements than children

who participated in the online intervention as well as control children for locomotor skills. For PMC, all children's scores remained relatively constant (p=446). Children with VI possess a relatively low-incidence disability. Alternative strategies need to be considered when providing intervention. Future research should continue to improve online strategies.

10:15 - Review of three questionnaires to detect risk for motor problems in 3 to 5 year old children

Marja Cantell
University of Groningen, The Netherlands

ABSTRACT:
Psychometrically strong screening tools for detecting 3 to 5 year old children at risk for motor problems are needed. This paper evaluates three questionnaires: the Ages and Stages Questionnaire-Third Edition (ASQ-3) motor scales, the Early Years Movement Skills Checklist (EYMSC) and the Little Developmental Coordination Disorder Questionnaire (Little DCDQ). In a Canadian sample (King-Dowling et al., 2016), the ASQ-3 correlated moderately with a motor test. The sensitivity was low and specificity high. In a Dutch sample, the correlation between the Little DCDQ and motor test was also moderate and became stronger as a function of age (Cantell, Houwen, & Schoemaker, 2017). The EYMSC revealed relatively higher motor competence in a Norwegian sample compared to British sample (Moser, & Reikerås, 2016). In sum, the questionnaires vary in their concurrent and discriminant validity and no single instrument can be recommended. Research is facing challenges due to differences in early childhood practices between cultures.

10:30 - Manual dexterity asymmetry after a music and basketball training programs

Rodrigues, Paula1,2; Martins, Marta3; Castro, São Luís3 and Vasconcelos, Olga1
1: Motor Control and Learning Laboratory, CIFI2D, Faculty of Sport, University of Porto; 2: RECI - Research in Education and Community Intervention - Instituto Piaget; 3: Centre for Psychology at University of Porto

ABSTRACT:
Asymmetries on manual movement tasks are dramatically modulated by task-specific training. However, the effects of different practices on manual asymmetry remain poorly explored. Children (N=74), aged from 7 to 9 years old (mean=8,31±0,35 years) were pseudorandomly allocated to Music training (M), Basketball training (B) and Control (C) groups. Manual dexterity was evaluated with the Purdue Pegboard Test (PPT) and with the Grooved Pegboard Test (GPT) on preferred and non-preferred hand. On both tasks an advantage of the preferred hand and an improvement over time of manual dexterity was observed. Concerning performance on the PPT the M group presented an advantage over the other groups. When manual asymmetry was evaluated on both tasks, the lowest asymmetrical behaviour was found for boys in the B group and for girls in the C group. No sex differences were found for the M group. These findings unveil differential training effects on manual asymmetry.

10:45 - Bilateral Transfer of Learning in Children. A Study in Classical Ballet

Catarina Oliveira, Paula Rodrigues., Olga Vasconcelos
University of Porto, Faculty of Sport, Motor Control and Learning Laboratory, Center of Research, Education, Innovation and Intervention in Sport

ABSTRACT:

The conventional teaching methodology for dance classes postulates movement demonstration on the right side, usually the dominant one. After learning and practice, the students must transfer to the non-dominant side. This experiment tested the effects of the practice condition and age in bilateral transfer of learning. Subjects were 34 right-handed and right-footed pre-pubertal females, from 6 to 10 years old, divided into two groups according to age and according two transfer conditions (initiating the task with preferred members or with non-preferred members). The task consisted in learning two exercises from the former Royal Academy of Dance's syllabus, which are adapted to the age and experience of the students. ANOVA yielded significant main effects for direction of transfer from the non-preferred to preferred side, and for age - the younger dancers obtained lower performance scores that the older ones. It would be interesting to study children with left lateral preference.

12:30 - Effect of CHAMP on Motor Skills, Physical Activity, and Delay of Gratification: A Pilot Study

Leah E. Robinson, University of Michigan - Ann Arbor
Kara K. Palmer, University of Michigan - Ann Arbor
Katherine M. Chinn, University of Michigan - Ann Arbor

ABSTRACT:

Emerging evidence supports the link between motor skills, physical activity, and self-regulation. This pilot study examined the effect of the Children's Health Activity Motor Program (CHAMP), a mastery-based motor skill intervention that is theoretically grounded in Achievement Goal Theory on motor skill performance, physical activity, and delay of gratification in Head Start preschoolers. The Test of Gross Motor Development-2nd Edition was used to assess motor skills, actigraphy was used to measure physical activity, and Delay of Gratification Snack Task was used to assess self-regulation. CHAMP participants engaged in 15, 40-min sessions that focused on the development of motor skills over a 5 week period while control participants engaged in their normal outdoor recess period. Currently, results are being processed and analyzed but findings could help shape early childhood curricula by integrating mastery-based movement programs, like CHAMP, in early learning centers to promote both motor skills and school readiness.

12:45 - Fundamental motor skills and screen-time behaviors in preschoolers: Pause and Play results from Year 1

E. Kipling Webster, Ph.D.1, Amanda E. Staiano, Ph.D.2 & Corby K. Martin, Ph.D.2
1 Louisiana State University, Baton Rouge, LA
2 Pennington Biomedical Research Center, Baton Rouge, LA

ABSTRACT:
Screen-based activity has become a ubiquitous aspect of today's society. The American Academy of Pediatrics has recommended children between the ages of two and five be limited to less than one hour of screen time daily. The current project, Pause and Play, examined screen-time usage, physical activity/sedentary behaviors and fundamental motor skill competency in preschool-age children. Measures included screen-time usage inside and outside of childcare centers (via proxy and direct observation), fundamental motor skill competency with the TGMD-3 and MABC-2, accelerometry across seven days, and anthropometrics. 103 preschoolers (Mage = 3.34 ± 0.52 years; 49.1% male) were included in this analysis from 10 stratified preschools in the Southeastern region of the United States. The relationship between screen-time activities, fundamental motor skills, and physical activity/ sedentary time will be discussed, as well as future directions for this longitudinal study and screen-time health implications for preschool-age children.

13:00 - Putting the 'development' back in to motor development research

Nancy Getchell, University of Delaware

ABSTRACT:
Motor development research can be described as examining changes in motor behavior across the lifespan and the factors that underline change. Three critical aspects of developmental research are inherent: The description of past, present and future behaviors. Developmentalists may examine behaviors at one point in the lifespan; however, to be truly developmental, the researchers contextualize by relating the present to both past and future behaviors. As Roberton (1988) succinctly stated "Present behavior is only 'interesting' as a way station or temporary pause in the process of change". In this talk, I will discuss essential elements of developmental research in terms of specific aims, experimental design, methodologies and measures, and distinguish between studies of motor development (e.g. how individuals move at different points in time) and movement competency (e.g. how closely individuals come to stated goals at different points in time).