



AIESEP Specialist Seminar 2022

Brixen-Bressanone, Italy, 28-30 September

Motor Competence Assessment in Educational Settings

ABSTRACT BOOKLET



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WELCOME TO BRIXEN



Dear Colleagues and Friends,

It is a real pleasure to have you in Brixen-Bressanone at the AIESEP Specialist Seminar 2022 *Motor Competence Assessment in Educational Settings*. The event is jointly organised by the Universities of Bozen-Bolzano, Hamburg, and Jyväskylä under the patronage of the AIESEP.

The aim of the Specialist Seminar is to bring together experts in motor skills and physical fitness assessment and monitoring, as well as related disciplines, to create a space for reflection and discussion on how to conduct, analyse, interpret, and use motor competence measures in educational settings while ensuring quality education at each level of schooling and in youth grassroots sport.

One of the outcomes of the seminar will be an AIESEP position statement on best practices in motor competence assessment. In addition, the seminar will provide a unique opportunity for experts to present the status of motor competence assessment in their countries/regions, to network, to explore possibilities for joint collaborations, and to plan common research agenda.

THE SCIENTIFIC COMMITTEE

Attilio Carraro

Professor, Free University of Bozen-Bolzano, Italy

Arja Sääkslahti

Professor, University of Jyväskylä, Finland

Erin Gerlach

Professor, University of Hamburg, Germany

THE ORGANISATIONAL COMMITTEE

Giampaolo Santi

Free University of Bozen-Bolzano, Italy

Katrin Lambacher

Free University of Bozen-Bolzano, Italy



KEYNOTE SPEAKERS AND WORKING GROUPS CHAIRS





David Stodden

Professor

*Director of Human Performance and Development Laboratory
Department of Physical Education, University of South Carolina*

Keynote speaker

Title of the presentation:

Exploring Current and New “Thoughts” on Motor Competence Assessment from a Holistic Perspective: Enhancing Predictive Utility for Executive Function, Behavioral, and Physical Health Outcomes

Dr Stodden is the Director of the Human Performance and Development Laboratory in the Department of Physical Education at the University of South Carolina. His research focuses on promoting the development of motor competence and its association to aspects of physical, (health-related physical fitness, physical activity, and obesity), psychological (perceived competence, self-efficacy) and cognitive health across the lifespan. Dr Stodden’s research emphasizes the need to address and understand developmental mechanisms and causal pathways that impact long-term trajectories of health and well-being. His work also addresses the need to examine assessment in motor competence to improve its predictive utility on various outcomes. To date, he has over 125 publications and has been cited over 9600 times. Dr Stodden’s research has been funded by the U.S. National Institutes of Health, the Duke Endowment Foundation and National Association for Sport and Physical Education.

Laura Alfrey

Senior Lecturer

*School of Curriculum, Teaching and Inclusion
Faculty of Education, Monash University*

Keynote speaker

Title of the presentation:

Youth Voice and the Co-design of Fitness Education and Assessment in Physical Education



Laura is a senior lecturer in the Faculty of Education, Monash University (Australia). Her work examines how, why and to what ends productive partnerships with young people, teachers and other stakeholders can support the co-creation of more educative and equitable Physical Education within and beyond schools. Laura works closely with the Australian Council for Health, Physical Education and Recreation, and has carried out research funded by the Department of Education and Training (Australia), VicHealth (Australia), Special Olympics Australia, Sport Taranaki (New Zealand) and the Youth Sport Trust (England).

Christian Herrmann

Professor, Dr. Phil. Habil.

*Chair of Didactics, Exercise and Sport, Physical Education Research Group
Zurich University of Teacher Education*



Keynote speaker

Title of the presentation:

Basic Motor Competences in Physical Education. Rationale, Assessment and Development

Christian Herrmann completed his doctoral thesis at the universities of Bayreuth, Mainz and Jena on the topic of “Psychosocial resources in youth sport”. During his post-doc phase, he worked at the Department of Sport, Exercise and Health (DSBG) at the University of Basel. He completed his habilitation (post-doctoral thesis) about “Basic Motor Competencies” at the Educational Sciences Unit of the University of Potsdam in Germany. Currently Christian Herrmann is Professor of Didactics Exercise and Sport at the Zurich University of Teacher Education. Within the framework of empirical educational research, his research focuses on test development, basic motor competencies and the quality of teaching and learning in Physical Education.



Gregor Jurak

Professor

Head of SLOfit Research Group

Faculty of Sport, University of Ljubljana

Keynote speaker

Title of the presentation:

Physical Fitness Monitoring in School Setting: Why and How?

Gregor Jurak is Full Professor on University of Ljubljana, Faculty of Sport, and Head of SLOfit research team, an enthusiastic and highly competitive international and interdisciplinary group of experienced and young researchers which investigate beneficial effects of physical fitness and 24-hour movement behaviour on individual and public health, especially on children and adolescents. He is engaged in introducing various strategical measures in Slovenian sport, education and health-care systems. Internationally, he is active in CEREPS, EUPEA, FIEP, AISEP, FitBack, NCD Risk Factor Collaboration, Active Healthy Kids Global Alliance and DE-PASS. He is principal investigator and co-worker in several international and national projects.

WORKING GROUPS CHAIRS

Working groups (WG) will focus on fitness and motor competence assessment as well as monitoring in different age groups and settings:

WG1 – Early childhood education and care

WG Chair:

Arja Sääkslahti

Professor, University of Jyväskylä

Arja Sääkslahti teaches Sport Pedagogy at the University of Jyväskylä, Finland. Her research work mostly focuses on motor skills acquisition and development, physical activity and well-being in early childhood education and care. She is currently Institutional Board Member of the AIESEP.



WG2 – Primary school

WG Chair:

Benjamin Niederkofler

Associate Professor, Free University of Bozen-Bolzano

Benjamin Niederkofler is Professor of Sport Pedagogy and PE teacher. Studied sports science at the Universities of Innsbruck, Austria and Basel, Switzerland. Doctorate in the field of sport science with emphasis on Sport Didactics at the University of Salzburg, Austria. Visiting professor of Sport Pedagogy at the University of Vienna, Austria in 2020. 2018-2022 post-doctoral research in the field of Sport Didactics on students' cognitions in PE and on diagnostic competence of PE teachers at the Salzburg University of Teacher Education, Austria. Teaching experience as a PE teacher in Italy, Switzerland and Austria. Since 2022 Head of the German Professorship of Sport Pedagogy at the Free University of Bozen-Bolzano, Italy.



WG3 – Secondary school

WG Chair:

Claude Scheuer

Professor, University of Luxembourg

Claude Scheuer works at the Institute for Teaching and Learning within the Department of Education and Social Work (DESW) of the University of Luxembourg. He teaches in the primary school teacher education, Bachelor of Educational Sciences, and has previously worked as a Physical Education teacher in primary and secondary school for 13 years. His research focuses on basic motor competencies of children and adolescents and on active schools. Since 2011, he is the president of EUPEA (European Physical Education Association).



WG4 – Grassroots youth sport

WG Chair:

Maurizio Bertollo

Professor, University "G. d'Annunzio" Chieti-Pescara

Maurizio Bertollo is Professor of Motor Behaviour and Sports Sciences at "G. d'Annunzio" University of Chieti-Pescara, Italy and the director of the BIND-Behavioral Imaging and Neural Dynamics Center. Currently he is serving as President of the European Federation of Sport Psychology (FEPSAC). His research area is about Motor Behavior and Psychology of Sport and Exercise, with emphasis on performance optimization, stress-recovery balance, psychophysiology and neuroscience in sport, bio-psycho-physiological states underpinning performance, and physical education for health and well-being.





PROGRAMME



Programme

Venue: Faculty of Education, Regensburger Allee 16 - Viale Ratisbona 16

Time	Wednesday 28th September	Thursday 29th September	Friday 30th September		
9:00-9:15		Keynote 2 (Laura Alfrey) (Room A2.50, 2 nd floor)			
9:15-9:30			Keynote 4 (Gregor Jurak) (Room A2.50, 2 nd floor)		
9:30-9:45					
9:45-10:00					
10:00-10:15				Coffee break (Foyer, ground floor)	
10:15-10:30				Coffee break (Foyer, ground floor)	
10:30-10:45				Working group Session (2) (2 nd floor, rooms: A2.21 for WG1, chair: A. Sääkslähti; A2.22 for WG2, chair: B. Niederkofler; A2.25 for WG3, chair: C. Scheuer; A2.26 for WG4, chair: M. Bertollo)	Working group Session (4) (2 nd floor, rooms and chairs as for previous sessions)
10:45-11:00					Presentation of working groups results and closing comments (Room A2.50, 2 nd floor)
11:00-11:15					
11:15-11:30					
11:30-11:45					
11:45-12:00					
12:00-12:15				Lunch (Foyer, ground floor)	
12:15-12:30					
12:30-12:45					
12:45-13:00					
13:00-13:15	Registration (Foyer, ground floor)	Poster Session (2) (Foyer, 1 st floor)			
13:15-13:30					
13:30-13:45					
13:45-14:00					
14:00-14:15	Opening ceremony and introduction (Room A2.50, 2 nd floor)	Keynote 3 (Christian Herrmann) (Room A2.50, 2 nd floor)			
14:15-14:30					
14:30-14:45	Keynote 1 (David Stodden) (Room A2.50, 2 nd floor)				
14:45-15:00					
15:00-15:15		Coffee break (Foyer, ground floor)			
15:15-15:30					
15:30-15:45	Coffee break (Foyer, ground floor)	Working group Session (3) (2 nd floor, rooms and chairs as for previous sessions)			
15:45-16:00					
16:00-16:15	Working group Session (1) (2 nd floor, rooms: A2.21 for WG1, chair: Arja Sääkslähti; A2.22 for WG2, chair: Benjamin Niederkofler; A2.25 for WG3, chair: Claude Scheuer; A2.26 for WG4, chair: Maurizio Bertollo)				
16:15-16:30					
16:30-16:45					
16:45-17:00					
17:00-17:15					
17:15-17:30	Poster Session (1) (Foyer, 1 st floor)				
17:30-17:45					
17:45-18:00		Bus to the Plose Mountain (Meeting point: Viale Ratisbona 16)			
18:00-18:15					
18:15-18:30	Welcome cocktail and walking the talk (Foyer, ground floor)	Walk-talk and "Alpine social dinner"			
18:30 onwards					



ABSTRACTS



Posters on “Early childhood education and care (ECEC)”

Development of the national monitoring system of physical activity and motor competence for Early Childhood Education and Care in Finland

Topic: Early childhood education and care (ECEC)

Authors: JOYPAM – research group^{1,2,3,4}

¹University of Jyväskylä, Faculty of Sport and Health Sciences, Finland,²Jamk University of Applied Sciences, Lides, Finland,³University of Eastern Finland, Finland,⁴et al.

Finland lacks a systematic national-level monitoring system for physical activity and motor competence for children in Early Childhood Education and Care (ECEC). The aim of this JOYPAM project was to co-create, pilot test and make recommendations for a national monitoring system for the joy of motion, physical activity and motor competence for young children in Finland. During the project implemented in 2019–2021, a multidisciplinary expert group first selected and developed methods suitable for population-level data collection for children aged 4–6 years. Later during the project 800 children, their guardians and ECEC staff participated in the study measurements including 1) children’s pictorial interview on children’s joy of motion and perceived competence in physical activities, 2) physical activity measurements during a seven-day period by using a wrist-worn accelerometer (Axivity AX3), 3) motor skills tests evaluating balance, locomotor and manipulative skills, and 4) surveys to guardians and ECEC staff on children’s physical activity and motor competence. The project provided strong bases for the recurrent national monitoring system for Finland. In order to implement population-level monitoring, data collection through early childhood education is recommended. The information produced by this kind of monitoring can be utilized by childhood education staff and guardians in order to support the development of the child’s growth, development and well-being.

Reference: Sääkslahti, Mehtälä, & Tammelin (2021).

Poster presentation

Teacher educators' perceptions of assessment in early childhood

Topic: Early childhood education and care (ECEC)

Authors: Carla Vidoni¹, Anne Soini², Osvaldo L. Ferraz³

¹University of Louisville, Kentucky, USA, ²University of Jyväskylä, Finland, ³University of São Paulo, Brazil

Early childhood (EC) education and care settings are essential in promoting a young child's holistic development (Park & Park, 2019). Considering the evidence that movement skills should be part of young children's education, previous research has shown that teacher educators (TEs) are critical agents in the dissemination of knowledge and implementation of motor development teaching practices (Soini et al., 2021). TEs' beliefs and curriculum decisions influence the legitimacy of physical literacy as an essential subject in EC, and consequently, they may foster or limit children's movement opportunities in their early years (Tsangaridou, 2017). However, it is still unclear how preservice teachers (PSTs) learn to assess children's progress in movement skills. This presentation aims to report TEs' perception of assessment in EC teacher education (ECTE) physical education (PE) courses. This case study used a qualitative method to examine TEs' perceptions of the PE curriculum across three ECTE courses/programs. Participants were one TE from Brazil, Finland, and the USA. Data were collected through interviews and PE course syllabi. Data were analyzed inductively via individual-case and cross-case. The results of this study show that TEs used multiple forms of assessment such as reading assignments, PSTs' self-assessments, lesson planning, quizzes, exams, class participation, and analysis of research reports. Motor skill performance assessment of PSTs was not reported as a one of the expectations of the courses in this study. Nevertheless, teaching the importance of movement in EC education was mentioned several times. Each TE described how they taught movement skills and what they intended PSTs to learn. This finding supports previous literature in which motor skill performance assessment has been inconclusive on whether PSTs' motor skill performance should be assessed or not in ECTE courses (Backman et al., 2020).

Poster presentation

Posters on “Early childhood education and care (ECEC)” and “Primary school”

Moving from kindergarten to primary school. A study protocol for the Swiss longitudinal "BeKiPri" study

Topic: Early childhood education and care (ECEC), Primary school

Authors: Elke Gramespacher, Katrin Adler

School of Teacher Education, University of Applied Studies Northwestern Switzerland (FHNW), Switzerland

During the transition from kindergarten to 1st grade, children gain transitional experiences that will predispose their coping with the challenges of future educational paths (Griebel & Niesel, 2013). There are international findings that suggest that children’s PA decreases during this time in a relevant way (e.g., Finger et al., 2018). Girls and children with a migration background are considered particularly vulnerable groups in this regard. The findings on the favorable effects of higher activity levels on competencies like executive functions or motor skills are relevant to school and transition. Consequently, the aforementioned vulnerable groups may benefit from promotion interventions in terms of future learning outcomes and health. The “BeKiPri” study analyses changes in children’s activity levels during the transition, influences from the parental home, kindergarten, and primary school, and will generate practical strategies for the promotion of PA during the transition (e.g., Gramespacher & Adler, *in press*).

Two cohorts of children (n = 100; duration: 04/21-11/22), their parents and teachers participate. Primary outcomes are PA time of the children in the transition from kindergarten to 1st grade and relevant characteristics of parents’ home, kindergarten and primary school. The children’s activity time will be recorded one week (≥ 10 h/d; GENEactive; dominant wrist). Activity- and transition-related conditions and expectations of parents and teachers are recorded by questionnaire and interview.

The poster outlines the state of art, provides information on the study design, measurement instruments, and first practical suggestions emerging from the “BeKiPri” study.

Poster presentation

Measuring motor competence with the athletic skills track in a primary school setting in the Netherlands

Topic: Primary school

Authors: Joris Hoeboer¹, Sanne de Vries¹, Pim Koolwijk¹, Geert Savelsbergh²

¹The Hague University of Applied Sciences, the Netherlands, ²VU University Amsterdam, the Netherlands

The decline of motor competence of children is a worrisome trend because motor competence relates to a healthy and active lifestyle. In order to intervene in this trend or to develop more effective interventions, more insight is needed into the motor competence of primary school children, a crucial period for a lifelong exercise.

In 2021, the motor skills of 132,000 children (aged 4- to 12-year-old) were measured at 722 primary schools in the Netherlands with the Athletic Skills Track (AST). The AST is a reliable, valid, and feasible motor skill assessment tool to assess children’s motor competence in a physical education (PE) setting. The track consists of a series of 5 to 7 concatenated fundamental movement skills (e.g., rolling, creeping and walking). The outcome of the assessment is the time children need to complete the track. The time is converted into Motor Quotient scores based on age- and gender-related reference values.

Results show that 24% of the children have a moderate to serious motor disorder, 51% are normally motor gifted and 25% are highly motor gifted. When comparing the results of 2019 (based on N = 56,430 children), 2020 (N = 88,400), and 2021 (N = 132,000) it shows that these percentages remain stable.

Despite all efforts to improve the development of motor competence of children, the annual motor skill screening with the AST shows there is no improvement of motor competence over time in the measured age groups.

Poster presentation

Implementation of motor competence assessment outcomes into practical interventions for young children

Topic: Primary school

Authors: **Pim Koolwijk¹, Joris Hoeboer¹, Remo Mombarg², Geert Savelsbergh³, Sanne de Vries¹**

¹The Hague University of Applied Sciences, the Netherlands, Institute of Sport Studies, ²Hanze University of Applied Sciences, the Netherlands, ³VU University Amsterdam, the Netherlands

The increasing number of young children with a low proficiency in fundamental movement skills (FMS) emphasize the need to intervene. Particularly considering that delayed fundamental motor skills (FMS) development at early age does not diminish with normative growth. In recent years several reviews and meta-analyses have been conducted on the effectiveness of FMS interventions in young children. However, identifying key elements that determine the effectiveness of these interventions is challenging.

The purpose of a large-scale Dutch study called Start(V)aardig is specifying elements that determine the effectiveness of motor interventions and translating these elements into an 18-week FMS intervention to stimulate motor competence level of young children.

A pre-test is done by measuring the motor competence levels of more than 100 young children (4-7 years old) using the Athletic Skills Track (AST-1) and the Test of Gross Motor Development (TGMD-3). An intervention was developed based on a systematic review performed at the start of this project. A weekly FMS training (60') was provided using proven elements like deliberate practice and deliberate play, a variety of activities consequently training all different FMS (locomotor-, object control- and balance skills), and professionals trained prior, and coached during, the intervention. After the final training session, a post-test was completed by all participants.

Results will be presented by giving an insight in the effectiveness of an 18-week motor intervention program. Also, assessment outcomes using a product orientated assessment (AST-1) and a process orientated assessment (TGMD-3) were evaluated and will be presented.

Poster presentation

The SLOfit curves project

Topic: Primary school

Authors: Jerneja Premelč¹, Maroje Sorić^{2,1}, Shawnda Morrison¹, Gregor Starc¹, Gregor Jurak¹

¹University of Ljubljana, Faculty of Sport, Slovenia, ²University of Zagreb, Faculty of Kinesiology, Croatia

Human development accelerates in infancy, childhood, and into early adulthood. An important period of rapid development, including an accelerated growth rate, so-called the 'adolescent growth spurt', is adolescence. Intellectual growth spurts also occur during this time and improve concentration and memory. The SLOfit research group of the Faculty of Sport at the University of Ljubljana, in collaboration with the Jožef Stefan Institute, has developed a method of the so-called "Sports Cardboard" using artificial intelligence. The Growth Curve Comparison allows users to predict height and maturity during puberty. The purpose of the SLOfit curve study is to update this method on a sample of Slovenian adolescents in the 12-year longitudinal study. This will help us determine how maturation affects adolescent movement performance, behaviour, and cognitive processes, to predict future fitness levels and identify youth who may be at risk for future adverse health outcomes. We aim to develop a prediction model which estimate one's future physical fitness based on modern physical growth patterns, 24-hours movement behavior (HMB), and physical performance markers.

The sample includes 640 students of both sexes aged 7 to 19 years from schools in Ljubljana. Variables measured include standard monthly anthropometric procedures and children's physical fitness measured 4 times per year using established measurement. Children's cognitive abilities will be assessed using the "d2 test of attention" and the "Structure recognition test" once per year. The children's family environment will be evaluated using valid instruments. For socio-economic status assessment, self-report questionnaires will be used.

The results obtained will, for the first time, provide a comprehensive and detailed picture of development in the current generation of adolescents. By monitoring youth longitudinally, this study will unearth how growth accelerations impact physical fitness, and whether subsequent carry-over effects are present in young people's 24-HMB and what are the links with cognitive development.

Poster presentation

The more the better? Associations between the amount of physical education and basic motor competencies

Topic: Primary school

Authors: **Marina Wälti¹**, **Lucas Schole²**, **Uwe Pühse¹**, **Erin Gerlach²**, **Claude Sheuer³**, **Christian Herrmann⁴**

¹University of Basel, Switzerland, ²University of Hamburg, Germany, ³University of Luxembourg, ⁴Zurich University of Teacher Education, Switzerland

Basic motor competencies (BMC) are a key learning goal of physical education (PE). Research shows that BMC levels between countries differ but associations to individual factors are similar (Wälti et al., 2022). Specifically, participation in extracurricular physical activity consistently predicts BMC levels. It is not yet known whether structural factors of PE are also associated with BMC. According to Helmke (2021), teaching time is an important factor of learning outcomes. Therefore, we hypothesize that the amount of PE per week determines the level of BMC and possibly more so for third/fourth grade primary school children than for first/second grade children, as children from higher grades had more years of PE.

In the present study, we assessed BMC (object movement and self-movement), anthropometric data and participation in extracurricular physical activity in 3069 6- to 10-year-old children using the MOBAK-1-4 (Herrmann, 2018) and structural factors (amount of PE) in 179 teachers from twelve European countries. Latent regression analyses corrected for children's age, sex, and region of assessment were conducted

We found no significant associations between the amount of PE and object movement or self-movement. Associations did not differ between the 1st/2nd and the 3rd/4th graders. Other country-specific factors seem to be more decisive for the differences in BCM levels than the amount of PE (García-Hermoso et al., 2020). Future studies should look at the content and quality of PE lessons. Countries with only one or daily PE lessons may have stronger associations with BMC levels and should be taken into account. Nevertheless, for children with no extracurricular physical activity, PE may be crucial for BMC development.

Poster presentation

Which criteria to define motor competence? How much cultural and background factors influence the definition?

Topic: Primary school

Authors: Nicola Lovecchio, Valeria Agosti, Antonio Borgogni

Department of Human and Social Sciences, University of Bergamo, Italy

Motor competence (MC) is an umbrella term used to define the motor skill competency. Some authors consider the fundamental movement and motor coordination skills excluding motor fitness results while others highlight the quality of movement and the motor control outcomes.

Within fundamental movement skills we can consider throwing, catching, running while motor control is about movement sequences. The scenario is difficult to investigate comparatively since the common habits or teacher-to-teacher suggestion affected the vision. In Italy, the assessment of MC is collected using Eurofit tests that are a measure of performance, in Germany the Mobak battery proposes throwing, slalom and rolling abilities. Another famous battery is the KTK that implies lateral jumps and balance. In northern Europe, an interesting battery include throwing a tennis ball and climbing wall bars (coordination, Fjørtoft et al., Phys Ther; 2011).

Thus, what MC means in a practical way? Which form of motor outcome is more representative of MC concept? The efficiency in object control, in locomotor stability or in motor coordination?

Indeed, during the childhood the stature increase of 50 cm and the mass of 12-15 Kg following tumultuous phases.

Considering the motor skill, is well known that it depends on the maturation of the Central Nervous System, but, within this view, can we still consider the use of nomograms divided between male and female as robust approach?

A strong definition of MC becomes important to clarify the contents and, as a consequence, common further assessment.

Researchers, PE teacher and trainers should reach a clear and close definition of MC to implement a shared battery test.

In point of this, the definition should define a goal-directed human movement rather than theoretical points (i.e. quality of movement) because the real scope of motor competence regards the long life and the everyday tasks.

Poster presentation

Analyzing trajectories of motor competencies and physical fitness across childhood

Topic: Primary school

Authors: Maïke Tietjens, Lena Henning, Dennis Dreiskämper

University of Münster, Germany

Several developmental models highlight the role motor competencies and physical fitness (together: motor performance) play for motivation and the initiation, maintenance, or decline of physical activity (e.g., Stodden et al., 2008; Dreiskämper et al. 2022).

A special focus is also paid to (a) how this role might change across developmental stages (early childhood, middle childhood, late childhood) and (b) how the children's physical self-concept influences the association between motor performance and physical activity.

Although the importance of both motor competencies and physical fitness is highlighted, so far, most studies take into account either motor competencies or physical fitness and a joint consideration is largely missing. Thus, our *first suggestion* is that the development of both, as well as interactions between them and their meaning for physical activity, should be taken into account more closely across different developmental stages.

In line with these models, we further argue that also the interplay between motor performance and the individual's physical self-concept effects physical activity. Taking into account relationships between motor performance and physical self-concept, most studies so far concentrate on variable-centered approaches. The variable-centered approach implies that all children are drawn from a single population. However, children differ significantly in their motor performance and cognitive maturity. Therefore, our *second suggestion* is that future studies should a) include physical self-concept assessments and b) should be analyzed from a person-centered perspective additionally. Such, individual trajectories can be taken into account.

Finally, our *third suggestion* is that also predictors for different trajectories should be considered, as motor competencies, physical fitness, and self-concept develop as a function of e.g., age and gender, but also BMI and socioeconomic status.

Trying to address these suggestions, we would like to present and discuss two longitudinal studies conducted in primary schools. The first study included five measurement time points (N = 250), the second three (N = 462).

Poster presentation

Catch them young: Measuring object-control in pre-schoolers

Topic: Primary school

Authors: Freek van Iersel¹, Mark de Niet¹, Irene Faber^{2,3}, Sebastiaan Platvoet¹

¹HAN University of Applied Science, Nijmegen, the Netherlands, ²Institute of Sport Science, University of Oldenburg, Germany, ³Research Centre Human Movement and Education, Windesheim University of Applied Sciences, the Netherlands

Object control (e.g. throwing, catching and kicking) is one of the essential aspects of gross motor coordination and regularly assessed to objectify the skills level of children. Instruments have been developed for this purpose, but generally focus on children between 9-12 years. A valid instrument that can assess object control in younger children (4-8 years) is lacking. Therefore, the eye hand coordination test developed by Faber and colleagues (Faber test) has been modified to be suitable to assess object control in this young age category. The aim of this research is to evaluate this modified Faber test on its reliability and validity in a sample of 537 children aged between 4 and 8 years (grade 1-4). To evaluate test-retest-reliability, 29 children were re-tested on the same day and 182 children were re-tested after 4 weeks. Test-retest statistics proved the reliability of the modified test; ICCs between .778 and .899 per grade. Additionally, construct validity of the modified test was supported as older children outperformed the younger in the categories number of throws, correct hits, correct catches and the combined score ($p < 0.05$). In conclusion, the modified Faber test was found reliable and valid for measuring object control of children between the age of 4-8 years old.

Keywords: object control, fundamental movement skills, pre-schoolers, validity, reliability, ball control, motor development.

Poster presentation

Move your body or submit an answer – Is there a way to facilitate the measurement of motor competence in children and adolescents?

Topic: Primary school, Secondary school

Authors: Katharina Poeppel, Nicolas Bloß, Dirk Buesch

University of Oldenburg, Germany

Even before the COVID-19 pandemic, researchers noted a decrease in physical fitness. This trend has been exacerbated by the pandemic and its accompanying circumstances, such as a temporary elimination of physical education classes and sports club offerings (Wilke et al., 2021). Children and adolescents are particularly affected, as they develop essential coordination and conditioning skills at this age. Therefore, assessing their motor function status is a major step to deducing general knowledge about the current state and implications for targeted support in the future. The International Physical Performance Test Profile 6-18 (IPPTP-R; Bös et al., 2021) is a motor test battery and represents a validated and comprehensive survey instrument in this context, although its implementation is time-consuming. Thus, the question arises whether children and adolescents need to participate in a motor test battery to get an idea of their motor function status or whether this age group can also evaluate its own performance in a questionnaire via self-report. In German-speaking countries, the Physical Fitness Questionnaire (FFB-Mot; Bös et al., 2002) represents a self-assessment instrument for adults whose questions are formulated adult-specific. Data collected via this questionnaire show significant correlations to motor tests. This logic is now transferred to children and adolescents. Our working group is therefore developing a self-assessment instrument based on the IPPTP-R, which is tailored to the performance capabilities of children and adolescents. First findings from the currently ongoing survey will be presented. If the logic from the results of adult samples can be transferred to children and adolescents, an economical procedure would be available, which allows an additional monitoring of motor development independent of a physical test. Thus, it would be possible to deduce recommendations for physical fitness which is independent e.g., of pandemic restrictions.

Poster presentation

Body image assessment: Reflection on available tools and proposals for new protocols of measurement

Topic: Primary school, Secondary school

Authors: Simone Digennaro, Alice Iannaccone

Department of Human Sciences, Society and Health, University of Cassino and Southern Lazio, Italy

Body image is a multidimensional phenomenon that plays a significant role in the development of the physical literacy among children. Contrary to what it may seem, it is not just synonymous to physical appearance. The perception of one's own physical appearance is a part of the concept, but it also comprises thoughts, feelings, beliefs, bodily sensations, and other cognitions that individuals experience with respect to their own body. Broadly, body image can be dichotomized into a perceptual component (self-estimation) and a subjective component (satisfaction), originating from the relations between the self and the inputs coming from the environment. The subjective component includes both affective and cognitive subcomponents. All forms of consciousness and experiencing the body, seen against this background, are related to a subjective system of worldly relations in which the body is active and perceiving. This viewpoint posits that the level of body image satisfaction is determined by the distance between the actual and the ideal body image, and by the affective and cognitive opinions related to this distance.

Body image measurement inspires research from various disciplines of science. In this light, several instruments of measurement are available: the Body Image State Scale (Cash et al.,2002), the Sociocultural Attitudes Towards Appearance Questionnaire (Smolak et al.,1999), the Sociocultural Internalization of Appearance Questionnaire for Adolescents (Keery et al.,2004), Children's Figure Drawings (Collins, 1991), the Physical Appearance Comparison Scale (Thompson et al.,1991), or the Body Shape Questionnaire (Cooper et al.,1987).

Some of them have been proficiently used to measure body image among children (Ricciardelli et al.,2013) and youths (Carraro et al.,2010; Marengo et al.,2018; Digennaro, 2022).

However, in the light of the multidimensional and complex nature of the concept, there is the need to revise the available tools and to reflect on the definition of new protocols of measurement.

Poster presentation

An Assessment Framework for Quality Physical Education: Harnessing the power of threshold concepts

Topic: Secondary school

Authors: Fiona Chambers¹, David Aldous², Anna Bryant²

¹University College Cork, Ireland, ²Cardiff Metropolitan University, Cardiff, Wales, UK

Background: The compelling focus on health enhanced physical activity and quality physical education provides a unique opportunity to put forward new ways of assessing for learning through human movement in the contemporary school health and physical education curriculum. Therefore, this paper will discuss research that developed a prototype assessment framework, which uses four proposed threshold concepts in physical education (Chambers, Aldous & Bryant, 2020) to enable educators to plan for and assess high quality movement experiences in schools.

Methodology: In this study, there were seven international writing pods who used a design thinking (Brown, 2008) paradigm to (a) put forward threshold concepts and (b) develop a Movement Planning and Assessment Tool (MPAT). Each pod focused on a particular movement genre: gymnastics, dance, parkour, Gaelic games, martial arts, outdoor education and netball. Data from writing pods were then analysed in a conceptual sandbox through dialogic and discourse analysis.

Results: The data analysis revealed four threshold concepts in PE embedded within the MPAT. It is proposed that this tool may guide teaching and assessment of high quality movement in HPE classrooms. Drawing upon Bernstein’s concept of Languages of Description (Bernstein, 1999; 2000; Morais & Neves, 2001), findings also showcase the characteristics of these four PE threshold concepts: *Corporeal Reflexivity*, *Corporeal Aesthetics*, *Self-Actualisation through Human Movement* and *Eudaimonia through Human Movement*. Each are transformative, educative and interdisciplinary in their structure.

Conclusion: This is the first time that threshold concepts in PE have been identified. They may provide a clear direction for educators when planning, teaching and assessing meaningful movement experiences in schools especially when scaffolded within the MPAT. To further build on this work, it is intended that the PE threshold concepts and associated MPAT will be prototyped in collaboration with HPE academics, teachers and pupils in a further study in 2022/23.

Poster presentation

Holistic motor competence assessment in action through Project FLAME – Convergent validity between fundamental movement skills and functional movement assessments in adolescence

Topic: Secondary school

Authors: Wesley O'Brien¹, Conor Philpott¹, Diarmuid Lester¹, Sarahjane Belton², Michael Duncan³, Brian Donovan¹, Fiona Chambers¹, Till Utesch⁴

¹*School of Education, Sports Studies and Physical Education Programme, University College Cork, Ireland,* ²*School of Health and Human Performance, Dublin City University, Ireland,* ³*Research Centre for Applied Biological and Exercise Sciences, Coventry University, UK,* ⁴*Institute of Sport and Exercise Sciences, University of Münster, Germany*

Background: The assessment of motor competence is well positioned for school-based curricular emphasis in Ireland, through the integration of purposeful motor skills and movement patterns in second level school physical education. With the growing interest in holistic motor competence assessment in physical education, the aim of this study is to present the convergent validity between fundamental movement skills (FMS) and functional movement assessments in a large cohort of adolescent youth in Ireland.

Method: A sample of 583 adolescents, aged between 12 and 16 years old participated in the Project FLAME study. Ten FMS were assessed in line with the behavioural components from the Test of Gross Motor Development, and the Get Skilled Get Active resource. Seven specific functional movements were also assessed, using the existing protocol from the widely established Functional Movement Screen. All data were analysed using Bayesian procedures, in which the Bayes factors provided information about the probability of a hypothesis being true.

Findings: The results indicate that it is very probable (BF₁₀ > 10,000:1) that boys show higher actual motor competence levels in the object control subset of FMS, when compared to girls. Furthermore, a positive association between the total scores of the Functional Movement Screen and the locomotion subset of FMS was found to be very probable (BF₁₀ = 7.737).

Conclusion: This study provides evidence of convergent validity between functional movement and FMS assessments in adolescence. The findings present a rationale for physical education pedagogues to move beyond traditional perceptions of movement as being exclusively pertaining to sport-specific skills, to a more holistic concept of motor competence comprising of both movement skills (FMS) and movement patterns (functional movement).

Poster presentation

KTK over 14: The assessment of gross motor coordination in adolescents

Topic: Secondary school

Authors: **Matteo Giuriato¹, Valentina Biino^{1,2}, Federico Schena³, Massimo Lanza³**

¹Department of Human Sciences, University of Verona, Italy, ²School University of Medicine and Surgery, University of Verona, Italy, ³Department of Neurosciences, Biomedicine and Movement Sciences, University of Verona, Italy

Although gross motor coordination (GMC) is essential for acquiring motor skills, and for overall motor development, cognitive development and health, few studies measure it in adolescence. The aim of the study is, firstly, to assess the applicability of the *Körperkoordinations Test für Kinder* (KTK) in females and males between 14 and 18 years old. Secondly, to collect preliminary data on the relationship between body mass index and age with gross motor coordination.

Methods: 748 adolescents (14y - 18y; 357 boys, 391girls) were assessed with: (a) the four KTK's sub-tests (Walking backwards—WB, Jumping sideways—JS, Moving sideways—MS, Hopping for height—HH), (b) anthropometric measurements and (c) Physical activity questionnaire (IPAQ). Participation in organised sport (d) was registered using a demographic questionnaire.

Results: KTK was proposed and carried out according to the authors' indications without difficulty or adaptations because of the subjects' age. The correlation between the four sub-tests and their sum (Raw Score - RS) is always significant, varying between weak and strong ($r = 0.231-0.796$). Limited percentages of subjects (0-7.0%) achieve or exceed the maximum values predicted by the authors in three sub-tests (WB-JS-MS). In HH, on the other hand, the "ceiling effect" concerns 27.11% of females and 66.11% of males. Only one male (17y) achieved the maximum score in all sub-tests. All parameters of KTK are better in adolescents who play sports than in those who do not ($p < 0.05-0.001$) except for WB. RS shows differences in gender ($p < 0.001$), age ($p < 0.001$) and interaction gender-age ($p < 0.05$). 17-year-old females show RS greater than 14-16-18-year-olds, while 14-year-old males have lower RS than other age groups ($p < 0.01-0.001$). Obese subjects show lower RS values ($p < 0.001$) than others.

Discussion: Data seem to indicate the possibility of using the KTK test in adolescents despite the ceiling effect of the HH sub-test, suggesting that there may be an "extra tool" for evaluating gross motor coordination in adolescents.

Poster presentation

The practicalities of assessing motor competence in a holistic manner – How Project FLAME measures both fundamental movement skills and functional movement at secondary school level

Topic: Secondary school

Authors: Diarmuid Lester¹, Conor Philpott¹, Sarahjane Belton², Michael Duncan³, Brian Donovan¹, Fiona Chambers¹, Till Utesch⁴, Wesley O'Brien¹

¹*School of Education, Sports Studies and Physical Education Programme, University College Cork, Ireland,* ²*School of Health and Human Performance, Dublin City University, Ireland,* ³*Research Centre for Applied Biological and Exercise Sciences, Coventry University, UK,* ⁴*Institute of Sport and Exercise Sciences, University of Münster, Germany*

Background: It is essential that motor competence is assessed and monitored into adolescence, to ensure the transition to more advanced movement skills and patterns are achieved. Motor competence is a multidimensional concept and may not be recorded adequately by one test battery. If used individually, commonly used assessment batteries may provide only a limited view of overall motor competence. Fundamental movement skills (FMS) are the basic observable building blocks or precursor patterns of the more specialised, complex movement skills required to successfully participate in organised and non-organised games, sports and recreational activities. Functional movement, defined as the ability to move the body with proper muscle and joint function, and indeed functional strength (i.e., what a person can do with their own body) are also important considerations for motor development, as they are relevant to an individual's mobility and quality of life. The Functional Movement Screen (FMS™) attempts to take a comprehensive approach to assess human movement, by exploring movement patterns representative of those used in daily activities and sport.

Method: Using a stations-based approach, the following ten FMS were assessed in a 120-minute physical education period: run, skip, horizontal jump and vertical jump (locomotor); two-handed strike, stationary dribble, catch, kick, overhand throw (object control) and balance (stability), in conjunction with the behavioural components from three established testing batteries, namely the Test of Gross Motor Development (TGMD) (Ulrich, 1985), TGMD-2 (Ulrich, 2000) and the Victorian Fundamental Motor Skills manual (Department of Education Victoria, 1996). The following seven functional movements were also assessed: deep squat, hurdle step, in-line lunge, shoulder mobility, active straight-leg raise, trunk stability push-up and rotational stability (Cook et al., 1998).

Discussion: The purpose of the intended poster is to provide an overview of the data collection process involved in a school-based setting while visually demonstrating the practicalities and operational challenges of assessing motor competence in this holistic manner.

Poster presentation

The FitBack website: Usability assessment of an online multilingual platform for monitoring youth fitness

Topic: Secondary school

Authors: **Giampaolo Santi**¹, **Alessandra Colangelo**², **Attilio Carraro**¹, **FitBack – Research group**^{3,4,5,6,7}

¹Faculty of Education, University of Bozen-Bolzano, Italy, ²Department of Philosophy, Sociology, Education and Applied Psychology, University of Padua, Italy, ³Faculty of Kinesiology, University of Zagreb, Croatia, ⁴University of Tartu, Estonia, ⁵Faculty of Sport, University of Ljubljana, Slovenia, ⁶University of Granada, Spain, ⁷Faculty of Sport and Physical Education, University of Belgrade, Serbia

Several studies report physical fitness is an effective and economic indicator of physical activity and related outcomes, and suggest the implementation of common systems for monitoring youths' fitness (Popovic et al., 2021; Sember et al., 2020). The present paper reports the assessment procedure of a website for youth fitness monitoring. The website has been developed within the FitBack project, two of its main pages were assessed in terms of users' experience (Schrepp et al., 2017) and usability (i.e., content, navigation, design, effectiveness; Bailey & Seals, 2017; Chiew & Salim, 2003). Open ended questions allowed for qualitative feedback from participants.

Three groups of users participated in the study: 14 policy makers within the area of physical activity promotion (Mage = 46.8 years; 6 women), 78 secondary school students (age range 12-19 years; 31 girls), and 27 physical education teachers (Mage = 37.8 years; 12 women). Participants were from six European countries (Croatia, Estonia, Italy, Serbia, Slovenia, and Spain) and completed the survey in their native language. Policy makers evaluated the webpage "10 steps to design a physical fitness monitoring system", students and teachers evaluated the webpage "Make interactive report".

The webpage "10 steps to design ..." received positive evaluation regarding user experience (Mscore = 29.9 on a range 5-35) and usability (Mscore = 78.4 on a range 19-95). The webpage "Make interactive ..." was positively evaluated regarding user experience by students (Mscore = 27.2) and teachers (Mscore = 31.8). In terms of usability, students reported a mean score of 51.8 (range 14-70), whereas teachers reported a mean score of 81.2.

Participants reported satisfactory experience and good usability when navigating the two webpages. Their qualitative feedback guided the improvement of the FitBack website. The assessment has contributed to the accomplishment of the project, which results will be soon presented in future publications.

Poster presentation

Physical fitness in a large sample of Italian secondary school students within the PE4MOVE project: The relationship with out-of-school physical activity, intrinsic motivation and enjoyment in physical education.

Topic: Secondary school

Authors: Alessandra Colangelo¹, Giampaolo Santi², Erica Gobbi³, Attilio Carraro²

¹*Department of Philosophy, Sociology, Education and Applied Psychology, University of Padua, Italy,* ²*Faculty of Education, University of Bozen-Bolzano, Italy,* ³*Department of Biomolecular Sciences, University of Urbino "Carlo Bo", Italy*

Physical fitness (PF) can provide reliable information about physical activity (PA) practice. Physical education (PE) is a key setting to measure youths' PF and to encourage students to be more physically active and fit in accordance to curricular contents. Data on PF collected by PE teachers at school can inform on the PF of many school-aged youths and the related health risk. The purpose of this paper is to provide a description of PF in a large sample of secondary school students in the Marche Region (Italy) and to investigate its relationship with out-of-school PA, motivation and enjoyment in PE.

Data were collected within the PE4MOVE project in the school year 2021/22. Secondary school PE teachers were trained to test their cardiorespiratory (6MWT; Geiger et al., 2007) and musculoskeletal PF (SLJ and HG of ALPHA-Fitness Test Battery; Ruiz et al., 2011). Students answered to an online questionnaire including also sex, gender, self-report weight and height, self-report MVPA (Prochaska et al., 2001), intrinsic motivation and enjoyment in PE lessons (BREQ-2; Markland & Tobin, 2004 and PACES; Motl et al., 2001; both adapted in Papaioannou et al., 2020).

A sample of 3827 secondary school students (boys 48.0%; middle school 49.4%; age 13.7 ± 2.2 , 10-20 years old) was considered. Boys and middle-school students had higher scores in all PF tests, in intrinsic motivation and enjoyment compared with girls and high-school students except for the 6MWT presenting lower score in high-school students ($p < 0.01$). Results in SLJ and SMW tests showed a positive moderate correlation with MVPA ($r = 0.3$; $p < 0.01$). Results in PF tests and self-report BMI showed small correlations with intrinsic motivation and enjoyment in PE ($r \leq 0.2$; $p < 0.1$). These findings are in line with previous results and add knowledge about a large sample of Italian students.

Poster presentation

Results from the Republic of Slovenia Report Card for Physical activity for children and youth

Topic: National/Regional motor competence assessment practices

Authors: Vedrana Sember¹, Gregor Jurak¹, Gregor Starc¹, Marjeta Kovač¹, Mojca Golobič², Poljanka Pavletič Samardžija³, Mojca Gabrijelčič⁴, Marko Primožič⁵, Primož Kotnik⁶, Žan Luca Potočnik¹, Shawnda A. Morrison¹

¹Faculty of Sport, University of Ljubljana, Slovenia, ²Biotechnical Faculty, University of Ljubljana, Slovenia, ³Republic of Slovenia National Olympic Committee, Slovenia, ⁴Slovenian National Institute of Public Health, Slovenia, ⁵Ivan Grohar Primary School, Škofja Loka, Slovenia, ⁶Medical Faculty, University of Ljubljana, Slovenia

The 2018 Report Card for Slovenia includes 11 physical activity (PA) indicators (Table 1) and is the second AHKGA report for Slovenia. The main sources are the national study Analysis of Children’s Development in Slovenia (ACDSi 2013-16) and the SLOfit surveillance system (2010-17). Other sources include governmental reports, legislative documents, and web pages. Over 80% of population between 6 and 19 are meeting the WHO PA guidelines and 75% of parents encourage them to be physically active. Approximately 60% of boys and 47% of girls are involved in organized sport participation but less than 1/3 play actively more than 2 hours per day. Almost 49% commute actively to school. Over 70% are meeting the screen-time recommendations of less than 2 hours daily. Schools in Slovenia provide equal opportunity for PA within regular PE classes and other school-based sporting activities. All municipalities are legally obliged to produce the annual programme of sport, to provide co-funding and cooperate with local sports organisations. The government strongly supports children's PA and started introducing an experimental programme on 155 primary schools with the goal to introduce it in all primary schools after 3 years. Less than 40% of children are meeting the sleep guidelines while insufficient physical fitness is diagnosed only in 11.8% of boys and 9.9% of girls. The encouraging results signal that in Slovenia we have developed effective solutions strongly rooted in the educational system to address the growing risk of physical inactivity.

Poster presentation

SLOfit upgrade: Physical fitness surveillance for Slovene university students

Topic: National/Regional motor competence assessment practices

Authors: Tjaša Ocvirk, Kaja Meh, Gregor Jurak

Faculty of Sport, University of Ljubljana, Slovenia

Physical fitness is measured regularly in children and adolescents in Slovenia, recently SLOfit adults was introduced. It is used for monitoring lifelong physical fitness from the age of 18. We used the SLOfit adults test battery to measure fitness of Slovene students from the Faculty of Sport and other faculties to compare results and determine if students from Faculty of sport were physically fitter.

193 healthy students (81 from the Faculty of Sport), aged between 18 to 23 years (Mage = 20.9; SD = 0.99) were included in the sample. All participants completed SLOfit adults test battery. Mann Whitney test was conducted to compare results between groups.

There were no statistically significant differences between groups in both sexes in the vertical jump test and figure 8 run. Mann Whitney test indicated that male and female students of Faculty of sport performed better in sit and reach test and partial curl up test for more than 10% and in hand tapping test for 5% in women and 6% in men. Women from the sports faculty were also for 11% better in hand grip test.

SLOfit adults enables young adults to monitor their physical performance after high school well into adulthood. It is interesting that there were no differences in explosive power and agility between groups in both sexes, however, this could be explained with the novelty of the tests. All participants took these two tests for the first time and the results could be influenced by the learning effect, while other tests resemble Sports Educational Chart that is implemented in high schools. Moreover, the sample is small, and findings cannot be generalised. Nevertheless, we note that the SLOfit system now offers an excellent opportunity for surveillance of physical fitness of students and thus enable prompt interventions on individual as well as society level.

Poster presentation

Move! – Finnish National monitoring and feedback system for physical functioning capacity

Topic: National/Regional motor competence assessment practices

Authors: Mikko Huhtiniemi

University of Jyväskylä

Move! is a national monitoring and feedback system for physical functioning capacity targeted for all Finnish 5th and 8th grade students. The main purpose of the Move! system is (1) to systematically collect national data on physical functioning capacity (PFC) from the age cohorts of students at Grade 5 and 8 (11-15 years old) in Finland, and (2) to give systematic feedback to students and their parents on how to develop PFC. The PFC in the Move! system has been operationalized to include elements of physical fitness and motor competence ideally required during adolescence and later in adulthood.

Physical education (PE) teachers implement the Move! tests during regular PE classes. Tests include 20m shuttle run (endurance), 5-leaps (strength of the lower body, locomotor skills, stability skills), throwing-catching combination (manipulative skills), curl-up (endurance of abdominal muscles), push-up (endurance of upper body muscles), and flexibility tests.

The Move! test results are used extensively. At schools, PE teachers give immediate feedback to students after the test sessions. In addition, teachers can utilize Move! data when planning PE programs and lessons. The results are also utilized in extensive health check-ups, where school nurses and doctors consider students' Move! test results along with other health data. Students and their parents are also directed to the Move! web pages where they are provided more information about the tests along with tips on how to develop PFC. Through the national database, it is also possible to follow how Grade 5 and 8 students' PFC develop over time.

The Move! is included in the national PE curriculum and is therefore compulsory for all students. The system ties together school PE, health care, and data-informed decision-making, and can be seen as an essential pedagogical innovation enhancing Finnish students' PFC and well-being.

Poster presentation

OBAFI: Observatory of Physical Activity of Castilla-La Mancha (Spain)

Topic: National/Regional motor competence assessment practices

Authors: Javier Valenciano Valcárcel, Alejandro Jiménez-Loaisa

University of Castilla-La Mancha, Spain

OBAFI is the physical activity observatory for schoolchildren in Castilla-La Mancha, a region in the centre of Spain. This project aims to monitor over time the physical-sports habits, sedentary behaviour, and health-related physical fitness of schoolchildren between 6 and 16 years old.

The observatory is an initiative of the University of Castilla-La Mancha (UCLM), which is developed in collaboration with the educational administration and schools. Schools interested in participating in OBAFI join a network and their teachers receive specific training to administer the questionnaires and tests. Information is collected every year since 2017 and the data are processed by the UCLM team thanks to funding from the regional government.

The data are hosted in an aggregated and anonymous form on the observatory's website (<https://obafi.es/>). OBAFI is the current project that provides public information on the largest number of schoolchildren in Spain and offers different filters to consult the data stored on the website (age, sex, province, population size). In addition, OBAFI team provides reports to schools on the specific situation of their pupils in comparison with the OBAFI as a whole and with other national and international benchmarks.

Now, we have finished processing the fourth wave, corresponding to the year 2021. This time 6,753 schoolchildren participated, and the preliminary results probably reflect the destabilisation of physical-sports habits caused by the pandemic. For example, compared to the first wave, regular physical activity has decreased by 10 points (from 57% to 47%) and overweight has increased by 7 points (from 32% to 39%). However, physical fitness has remained at similar levels.

Poster presentation

Diagnosis of motor performance dispositions. Different approaches in the German discussion

Topic: National/Regional motor competence assessment practices

Authors: Erin Gerlach¹, Christian Herrmann²

¹University of Hamburg, Germany, ²University of Teacher Education Zürich, Switzerland

The diagnosis of motor performance dispositions is a precondition for appropriate and successful support measures and interventions. In the German-speaking countries, researchers in the field of motor performance dispositions differentiate between measures of (1) motor abilities (e.g. strength, endurance), (2) motor skills (e.g. butterfly in swimming), and (3) motor competencies (capacities in order to participate in the sport and movement culture) (Herrmann, Selig & Gerlach, 2015).

These diverse approaches exhibit different theoretical backgrounds. While motor abilities can be assigned to training and health science, motor skills are associated with movement science, and basic motor competencies can be attributed to educational science and sport pedagogy. Besides these different theoretical backgrounds, the three approaches have varying aims and functions. Moreover, the process of measuring and the application in research and assessment differ. The poster will report about these aspects (Gerlach, Herrmann, Jekauc & Wagner, 2017).

Poster presentation