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**Author(s):** Howells, Kristy; Sääkslahti, Arja

**Title:** Physical activity recommendations for early childhood : an international analysis of then different countries current national policies and practices for those under the age of 5

**Year:** 2019

**Version:** Published version

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**Please cite the original version:**

Howells, K., & Sääkslahti, A. (2019). Physical activity recommendations for early childhood : an international analysis of then different countries current national policies and practices for those under the age of 5. In B. Antala, G. Demirhan, A. Carraro, A. Oktar, H. Oz, & A. Kaplánová (Eds.), Physical Education in Early Childhood Education and Care : Researches - Best practices - Situation (pp. 321-336). Slovenská vedecká spoločnosť pre telesnú výchovu a šport.

FÉDÉRATION INTERNATIONALE D'ÉDUCATION PHYSIQUE



**Physical Education in Early Childhood  
Education and Care  
Researches – Best Practices – Situation**

**Branislav Antala  
Giyasettin Demirhan  
Attilio Carraro  
Cagla Oktar  
Hakan Oz  
Adriana Kaplánová**

*Editors*

**Bratislava 2019**

## **Physical Education in Early Childhood Education and Care: Researches – Best Practices – Situation**

### **Editors:**

Branislav ANTALA (Slovakia)  
Giyasettin DEMIRHAN (Turkey)  
Attilio CARRARO (Italy)  
Cagla OKTAR (Turkey)  
Hakan OZ (Turkey)  
Adriana KAPLÁNOVÁ (Slovakia)

### **Reviewers:**

Pavel ŠMELA (Slovakia): pavel.smela@uniba.sk  
Jaroslava ARGAJOVÁ (Slovakia): jaroslava.argajova@gmail.com  
František SEMAN (Slovakia): frantisek.seman@uniba.sk  
Petra PAČESOVÁ (Slovakia): petra.pacesova@uniba.sk  
Elena BENDÍKOVÁ (Slovakia): bednikova.elena@gmail.com  
Ingrid RUŽBARSKÁ (Slovakia): Ingrid.ruzbarska@unipo.sk  
Irmak Hürmeriç ALTUNSOZ (Turkey): hurmeric@metu.edu.tr  
Serap Sevimli CELİK (Turkey): ssevimli@metu.edu.tr  
Gheorghe BALINT (Romania): gyuri68@hotmail.com  
Claude SCHEUER (Luxembourg): claud.scheuer@uni.lu

### **Publisher:**

Slovak Scientific Society for Physical Education and Sport and FIEP

### **Printed by:**

KO & KA spol.s.r.o. Tlačiareň K – print, Kadnárova 102, Bratislava, Slovakia

### **Book – Jacket:**

Anton LEDNICKÝ (Slovakia): anton.lednický@uniba.sk

### **Circulation:**

464 pages, 150 copies, 1<sup>st</sup> edition

**ISBN 978-80-89075-81-2**

Supported by the EU project '590769-EPP-1-2017-1-TR-SPO-SSCP „ Development of Preschool Physical Activity, Sports and Game Program for Strengthening of Grassroots Sports in EU “.

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## Introduction

You are holding a book that is one of the intellectual outcomes of the ERASMUS + project '590769-EPP-1-2017-1-TR-SPO-SSCP, Development of Preschool Physical Activity, Sports and Game Program for Strengthening of Grassroots Sports in EU. The project acronym is „LUDUS – Just Move and Have Fun“. This project, addressed in 2018 - 2019, is focused on supporting physical activity of preschool children. Six partner institutions are involved: Sport Volunteers Association and Hacettepe University in Turkey, University of Padua in Italy, Asterias Sports Club in Greece, Kindrgarden Mecho Pooh in Bulgaria and Comenius University in Bratislava, Slovakia.

The book is also part of the 4<sup>th</sup> Physical Education World Wide Survey, which is carried out by UNESCO in cooperation with FIEP and its partners. The publication is part of one of its lines, focusing on mapping the basic characteristics of physical education and physical activities of children and youth in the world at individual levels of schools, from pre-school education to universities. In 2017 the book "Physical Education in Primary School: Researches - Best Practices - Situation", edited by D. Collela, B. Antala and S. Epifani, was published by Pensa Multimedia in Italy and has 502 pages. 102 authors from 27 countries and 5 continents participated. In 2018, it was followed by a publication "Physical Education in Secondary School: Researches - Best Practices - Situation", published by the University of Montenegro in cooperation with the Montenegrin Sport Academy. The editors were S.Popović, B.Antala, D.Bjelica and J.Gardašević. It had 343 pages and was prepared by 84 authors from 24 countries and 5 continents.

The publication "Physical Education in Early Childhood Education and Care: Researches - Best Practices -Situation" is published in Slovakia by the Slovak Scientific Society for Physical Education and Sport. Its editors are B. Antala, G. Demirhan, A. Carraro, C. Oktar, H. Oz and A. Kaplánová. It has 464 pages. The contribution of the international organization AIESEP, whose members of its Special Interest Group for Early Years, is also a significant part of the publication. A series of these 4<sup>th</sup> Physical Education World Wide Survey publications will be completed in 2020 with the publication of "Physical Education in Universities: Researches - Best Practices - Situation"

The book is divided into four parts. In the first part of "LUDUS - Just Move and Have Fun" we bring the results of the scientific part of the project focused on literary reviews in the individual participating countries of the project and the results of comparative research of the opinions of parents, teachers, directors of institutions and trainers in individual countries on selected issues of pre-school children participating in regular exercise activities at nurseries and kinder gardens. In the second part of the publication called "Researches", we bring the latest research findings aimed at exploring the physical activity of children in pre-school facilities. The third part, the "Best Practices" brings examples of good practice from different countries of the world and the last fourth part "Situation" is focused on presenting knowledge related to the characteristics of the state of the issue in various countries of the world.



120 authors from 32 countries and five continents participated in the book, of which 20 were European countries (Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Finland, Germany, Greece, Italy, Ireland, Lithuania, Norway, Poland, Portugal, Serbia, Slovakia, Spain, Turkey, Ukraine, United Kingdom) 2 countries from America (Mexico, USA), 4 countries from Asia (China, Hong Kong, Malaysia, Singapore), 3 countries from Africa (Algeria, RSA, Senegal) and 3 countries from Oceania (Australia, New Zealand, Samoa). Therefore, the publication brings a broad international perspective on the issue of pre-school physical education and physical activities in pre-school facilities.

A thank you goes also to the reviewers who, through their comments and advice, helped the authors improve the quality of their contributions.

Branislav Antala  
Giyasettin Demirhan  
Attilio Carraro  
Cagla Oktar  
Hakan Oz  
Adriana Kaplánová

Editors

# Physical Activity Recommendations for Early Childhood: An International Analysis of Ten Different Countries' Current National Physical Activity Policies and Practices for those under the Age of 5

Edited by **Kristy Howells<sup>1</sup> - Arja Sääkslahti<sup>2</sup>**

<sup>1</sup>*Canterbury Christ Church University, United Kingdom*

<sup>2</sup>*University of Jyväskylä, Finland*

e-mail: [kristy.howells@canterbury.ac.uk](mailto:kristy.howells@canterbury.ac.uk)

With support and contributions from members of the International Association for Physical Education in Higher Education Special Interest Group for Early Years (AIESEP SIG for Early Years). Represented by (in alphabetical country order): Kristine De Martelaer<sup>a</sup>, Marieke De Craemer<sup>b</sup>, Boris Jidovtseff<sup>c</sup> (<sup>a</sup> Vrije University of Brussels, <sup>b</sup> Gent University, <sup>c</sup> University of Liege, Belgium), Jinxia Dong (Peking University, China), Danielle Louise Nørager Johansen & Thomas Skovgaard (University of Southern Denmark, Denmark), Arja Sääkslahti (University of Jyväskylä, Finland), Roland Naul (University of Münster, Germany), Maura Coulter and Christina Duff (Dublin City University, Ireland), Patrizia Tortella and Guido Fumagalli (University of Verona, Italy), Ingunn Fjortoft (University of South-Eastern Norway, Norway), Kristy Howells (Canterbury Christ Church University, United Kingdom), Mark Urtel<sup>1</sup>, Debra Vinci<sup>2</sup> & Christopher Wirth<sup>2</sup>, (<sup>1</sup>Indiana University Purdue University Indianapolis, <sup>2</sup> University of West Florida, USA),

## Abstract

During the last two decades there have been growing interests on recommendations for children's physical activity. The World Health Organization (WHO) launched the first global international recommendations for children in 2010, focusing on children and youth aged 5-17-year olds. The recommendations were based on the dose-response relationship between the frequency, duration, intensity, type and amount of physical activity needed for prevention of non-communicable diseases. Until 2019, there was a gap in the recommendations, as the WHO did **not** offer global recommendations for those children under the age of 5 (early years). The new recent guidelines

(WHO, 2019) now offer a focused recommendations for physical activity, sedentary behaviour and sleep for under 5 years of age, however what the guidelines do not offer are ways in which early years' practitioners and teachers can support physical activity through play to ensure children are inspired, motivated and competent to have a physically active daily life as well enjoy moving.

An international policy and practice analysis, (not previously undertaken), of ten sample countries, was completed of current national physical activity practices. Also, an international comparison of early years' education settings was examined, specifically for those under the age of 5, to investigate current curricula, as well as the qualifications, knowledge and understanding of those supporting children's learning in different cultural contexts. The sample of ten countries (Belgium, China, Denmark, Finland, Germany, Ireland, Italy, Norway, United Kingdom and United States of America) questioned whether the global daily physical activity recommendations (WHO, 2010), currently applied at time of analysis, are costumed and used for to the early years' age group on a national level or if they need to be adjusted, especially in light of the new guidelines.

The analysis revealed that eight countries have developed their own national recommendations for children below the age of 5, while only two countries do not have any early years' specific physical activity recommendations. National authorities seem to be the most common executive sources behind the recommendations. The content of physical activity for children under the age of 5, mostly included the total amount and intensity of physical activity. The total daily amount of physical activity in these ten countries varies between 60 minutes moderate to vigorous intensity physical activity up to 180 min total light to moderate intensity physical activity and for some countries the daily recommendations are only from age 1 year, not between birth and 1 year, this age range remains unsupported.

The conclusions from the analysis of national recommendations, underlined the need to extend further the new global recommendations so that they are developed to support all countries to go beyond just physical activity intensity levels and to consider how young children's development can be supported in a versatile way by physically active play. Also age specific recommendations are offered for appropriate and purposeful physical activity to support early years and school aged children's overall development. The findings also suggest educational recommendations for staff members of early childhood education and care settings to know appropriate and age specific recommendations to ensure they are able to support young children to reach the national and global recommendations. Research recommendations are also proposed.

**Key words:** Physical activity, Recommendations, Early years' children, National differences

## Background

AIESEP (Association Internationale des Écoles Supérieures d'Éducation Physique) is an international, non-governmental, non-profit, professional association, which aims to promote high quality research worldwide in the areas of physical education, physical activity and sport pedagogy across the lifespan. (AIESEP, 2018a). The Special Interest Group (SIG) for early years is an active network of researchers and academics with an interest in issues related to early childhood education, physical activity and health, physical education, physical development and sport pedagogy (AIESEP, 2018b). During the AIESEP world congress 2018 in Edinburgh (UK), the SIG for early years organized a pre-congress seminar in which different countries presented the physical activity policy and recommendations for their country. The pre-congress went beyond the community network approach of the EU Guidelines 2008, to extend the discussion to a global level. This chapter is a policy and practice analysis of the ten countries involved in the pre-congress seminar with the aim to enable effective advocacy for new global physical activity recommendations of the under 5 years age range, which could lead universally to improvements in children's health.

## WHO recommendations

Global recommendations on physical activity for health were launched by WHO (2010) and then extended in 2019, to provide guidance on the dose-response relationship between the frequency, duration, intensity, type and amount of physical activity needed for the prevention of Non-Communicable Diseases, such as diabetes, heart and lung diseases. The aim of these recommendations was to improve children's: cardiorespiratory health; muscular fitness and strength; bone health; and cardiovascular and metabolic health biomarkers to support lifelong healthy lifestyles.

The WHO (2019) recommends that:

- Children less than 1 year should be physically active for at least 30 minutes, not to be restrained for more than 60 minutes at a time, have 0 minutes screen time and between 12 – 17 hours of sleep.
- Children aged 1 – 2 years of age should be physically active for at least 180 minutes, not restrained for more than 60 minutes at a time, for 1-year olds to have 0 minutes screen time, whilst 2 year olds to have no more than 60 minutes of screen time and to have 11 – 14 hours of sleep.
- Children aged 3 – 4 years of age should be physically active for at least 180 minutes of which at least 60 minutes should be at a moderate to vigorous level, not be restrained for more than 60 minutes at a time, not to have more than 60 minutes and to have 10 – 13 hours of sleep.

## National recommendations for children – ten examples:

This chapter focuses on the international analysis and comparison of both the current educational settings and provision to provide context of the learning settings (tables 1a and 1b) and the current

national physical activity policies and practices (tables 2a – 2d). Children’s living environment varies based on the country in which they live. Moreover, national early education systems vary a great deal across countries, including the age at which children start attending early years’ educational settings such as: nursery/preschool/kindergarten, childcare/toddler care and the age which children start school, the number of hours spent within the early years’ setting and the qualifications of those learning the early years’ educational settings. This detailed comparison is shown in tables 1a and 1b. Table 1a and 1b illustrate the context of the ten countries early years’ educational settings and the variance between countries in the starting ages, qualifications, the length of time spent by the children within the educational settings, for both early years (preschool) as well as school age children (in country alphabetical order).

**Table 1a Situation in Belgium, China, Denmark, Finland, Germany and Ireland**

Country	Age of children in early educational settings (preschool / young children)	Qualifications of those teaching children in preschool	Number of hours a day and week young children spend in preschool	Age children start school	Qualifications of those teaching children in school.	Number of hours a day and week children spend in school
Belgium	Childcare/toddler care settings from 0 – 2 and half years. Preschool from 2 and half to 5 years	Bachelor degree in early childhood education or in physical education	Variance across the regions. From up to 30 hours a week, with mornings only on Wednesday, up to 6 hours a day, 5 days a week.	6 years	Bachelor degree in primary education or physical education	5 hours a day, 4 days a week, only 3 and half hours a day on Wednesdays.
China	0 – 6 years	Minimum of secondary high education, most have 2 years college degrees or above.	8 – 9 hours a day, 5 days a week, 40 – 45 hours per week.	6 years	Minimum of teaching diploma most have Bachelor degree in education	6 – 7 hours a day. Five days a week
Denmark	0 – 6 years	Educated Pedagogues (leader) has Bachelor degree in social education. Assistants have less qualifications related to early childhood education.	On average 7.5 hours a day, 5 days a week.	During the calendar year, children turn 6 years old.	Bachelor degree in education. 85% of lessons covered by educations with this or equivalent qualification	6 – 7 hours a day, 5 days a week
Finland	9 months – 6 years	Minimum of Bachelor degree. Leader of the room have Masters in Early Childhood	4 – 9 hours a day, 5 days a week.	Children start in August of the year of the child’s 7 <sup>th</sup> birthday.	Masters degree in education.	Approximately 4 hours a day during first two years, Five days a week
Germany	0 – 3 may attend childcare/toddler care settings. Most then attend preschool (kindergarten) at approximately 3 years to 5 years	Minimum of secondary level education, leaders have Bachelor degree level qualifications.	Varies from 2 hours a day up to 8 – 10 hours a day, 5 days a week.	Normally 6 years, though some start at 5 and others start at 7 years.	Masters degree in education or Masters degree in physical education.	Approximately 3 – 5 hours a day, 5 days a week. 18 – 24 hours a week.
Ireland	Approximately 6 months to 5 years	Minimum level 5 qualifications, level 6 Bachelor degree for leader of the room. Some settings have Masters degree level 7 or Doctorate 8 degrees.	Varied between 3 hours a day, 5 days a week, up to for full time working parents 7 – 10 hours a day, 5 days a week.	Normally 5 years, but some start at 4, others at 6 years.	Bachelor degree in primary education or a Masters in primary education teaching	4 – 6 years have 4.5 hours a day, older children 5.5 hours a day. 5 days a week

Table 1b Situation in Italy, Norway, UK and USA

Country	Age of children in early educational settings (preschool / young children)	Qualifications of those teaching children in preschool	Number of hours a day and week young children spend in preschool	Age children start school	Qualifications of those teaching children in school.	Number of hours a day and week children spend in school
Italy	3 months – 6 years.	Educators of 3 – 36 months age range have Bachelor degree in Education or high school diploma, the coordinator (lead) has a Masters degree. Educators of 30 months – 6 years age range have Masters degree in Primary Education.	3 – 36 months, from 5 – 9 hours a day, 30 months – 6 years, minimum of 25 hours a week, up to 40 – 50 hours a week, 5 days a week.	6 years, if the child is born in January or February, they can start school at 5 years old.	Masters degree and national exam to obtain licence to teach.	27 hours or 40 hours a week, family can choose the school.
Norway	Approximately 6 months to 6 years	Bachelor degree with specialisation in early childhood education. Assistants have 2 weeks introduction course.	8 hours a day, 5 days a week.	6 years.	Bachelor degree or Masters degree in mandatory teacher education	4 hours a day for the first two years of school, then 6 hours a day, 5 days a week.
UK	0 – 4 years	Level 3 qualifications, some have level 4, 5, and 6 Bachelor degree or early years' practitioner teacher status or Masters qualifications.	Up to 8 – 11 hours a day, 5 days a week.	September after child's 4th birthday	Bachelor degree in primary education or a Post graduate qualification in primary education teaching. Professional skills tests in literacy and numeracy also have to be completed.	6 – 6.5 hours a day 5 days a week.
USA	0 – 4 year olds	No universal requirement; varies from state level permit to 4 year degree.	Varied: 2 – 3 hours a day for 2 – 3 days a week, up to 8 hours, 5 days a week.	Some states have voluntary curriculum for 4 – 5 year olds, most go anytime between 5 – 8 years.	Bachelor degree or Master's degree and teaching licence.	6.5 hours a day, 5 days a week

Tables 2a, 2b, 2c and 2d illustrate the current national physical activity recommendations in the ten countries, how the countries are applying the global recommendations from the WHO (2010) and the national recommendations that have been devised for early years (those under 5 years old) as well as school aged children (in country alphabetical order).

**Table 2a Current national recommendations in Belgium, China and Denmark**

Country	Physical activity recommendations set in country	Current curriculum	Specific age-related ideas provided	Future recommendations
Belgium	Complex recommendations due to three languages spoken in Belgium. Health promotion and physical activity recommendations belong to policy at community level. For over 5 years of age the WHO recommendations are used. In the Flemish community additional recommendations for under 5 years of age have been developed including reducing sedentary behaviour and sleep recommendations.	No specific curriculum details. Schools are encouraged to provide 2 hours of physical education a week.	Flemish expert group recently developed a physical activity pyramid which replaces the active food guide pyramid in which physical activity was combined with diet. Recommendations for physical activity in age group 0-12 months: as much space and opportunity as possible to play and move, 1 year-5 years: minimum 3 hours/day light, moderate to vigorous physical activity (MVPA), 6-17 years: most part of the day, at light intensity, 60 minutes a day MVPA and 3x/week special attention to strengthen muscles and bones.	Additional recommendations needed for quality of movement, importance of relaxation of exercise and sleep duration. Continue to have healthy behaviours that interact with each other and need to be promoted in a complementary way.
China	No official guidelines. Exercise Guide for early years (3–6 years) recommended in June 2018 to model Western practices, - outlines benefits of engaging in physical activity and sport.	Instructional Outlines of Kindergarten Education includes health focus – 1) physical and mental state, 2) motor development, and 3) living habits and life ability. Physical activity and sport in kindergartens often takes the forms of morning exercises, outdoor activities, physical education classes, sports games and competitions. Emphasizing game-based teaching and learning.	No official age specific ideas provided nationally.	Baseline guidelines for physical activity for under 6s should be issued.
Denmark	The Danish Day Care Act targets early years aged 0 – 5 years and include: body, senses and movement as one of six themes in the standard curriculum for day care centre.  The National Public-School Act obligates primary and lower secondary schools to ensure all pupils at least 45 minutes of daily physical activity.  The Danish Health Authority is instrumental in compiling and promoting health recommendations including physical activity recommendations. For children and young the recommendations are specified for two age groups, 0 – 4 years and then 5 – 17 years.	No specific curriculum details, but schools obligated to implement the 45 mins a day format.	Toddlers aged 0 – 4 years old should move as much as possible, to explore the surroundings, to interact with others, and to get to know their own body. For infants under the age of one: Specific suggestions are baby-swimming, baby-rhythmic classes, crawling, using furniture to stand up. For toddlers aged 1-4 years old: Specific suggestions focusing on interaction and play like ball-games, using public playgrounds, gymnastics, riding on a bicycle. Screen time should be reduced to a minimum (no definition of minimum). For children and adolescents aged 5-17-year-olds: Specific recommendations to be physically active at least 60 minutes per day at a moderate to high intensity. At least three times a week, to include focus on muscle strength and bone strengthening.	Future recommendations should be in line with WHO for 5–17 years. Further for children within the age span of 0- 1 years and 1-4 years of age recommendations and activities should be divided and focus very much on motor competencies development.

**Table 2b Current national recommendations in Finland, Germany and Ireland**

Country	Physical activity recommendations set in country	Current curriculum	Specific age-related ideas provided	Future recommendations
Finland	3 hours/day physical activities in different intensities: at least 1 hour MVPA and 2 hours lighter activities (playing outdoors and practicing motor skills through playing) No sitting/standing still longer than 1 hour periods, all prolonged sitting periods needs breaks	No specific curriculum specifications, except recommended for: Joy, play and doing together – focus on everyone involved.	10 ways to reach the recommended physical activity: Activity is invigorating – at least three hours of physical activity every day Being active is inspiring – too much sitting is boring Towards an active lifestyle – the family is an important role model Listen - give the child an opportunity to have a say Learning skills by doing – the value of diversity The environment challenges and entertains – making dreams come true outdoors Equipment and toys – inspire to experiment Guided physical activity – sense of success Physical activity in early childhood education and care – every child's right The whole village encourages physical activity – everyone in cooperation	Recommendations are intended for parents, early childhood education teachers, physical exercise and health care professional, and other organizations and individuals involved in promoting physical activity, health or wellbeing among under 8 year olds. Physical activity recommendations for school aged children (7-18 years), Focus split into 2 age ranges: 7-12-years physically active for 2 h – 1 ½ /day and 13-18 –years from 1 ½-1h/day. Continued periods of sitting for more than 2 hours should be avoided. Screen time with entertainment media should be limited to 2 hours/day.
Germany	90 mins a day of daily exercise, accumulated in 15 min periods. TV sets in bedrooms to be avoided. Screen time to be set as <3 years 0 min, <6 years max. 30 min, <11 years max. 60 min, <12 years max. 120 min.	No specific curriculum links to federal training curriculum for educators in Kindergarten, no links with state physical education curricula for primary schools.	Kindergarten children and early years (4–6 years) 180 minutes of physical activity. Elementary 6–11 years, 90 mins a day MVPA. (12,000 steps min)	Revised federal training curriculum for educators in kindergarten according to physical activity guidelines, inclusion of guidelines with recommended criteria for all 16 state physical education curricula for primary schools.
Ireland	National guidelines for 2–18 years. All children MVPA for 60 mins a day. Muscle strengthening, flexibility and bone strengthening exercises 3 times a week.	Promotion of active play within training programmes for early childhood qualifications. Within early curriculum, wellbeing is one of four main themes, with physical and mental health as goal. Primary school physical education curriculum for 4–7 year olds. Early years curriculum (Aistear) 0 – 6 years, with additional resources available on the National Council for Curriculum and Assessment website including resources on fundamental motor skills.	Leaflet for parents and caregivers recommending active play 0-3 and 3-6 years of 180 mins active play. Recommended 4–6 year olds receive one hour of physical education a week.	No nationally endorsed guidelines for young children aged 0–6 years. The National Physical Activity Plan for Ireland states the guidelines will be actioned on by 2018.



**Table 2c Current national recommendations in Italy and Norway**

Country	Physical activity recommendations set in country	Current curriculum	Specific age-related ideas provided	Future recommendations
Italy	No specific goals for physical activity.	<p>The physical education in national school recommendations focuses is on cognitive, social, cultural and affective experiences (3–13 years). Children aged 3–5 (Kindergarten) have 5 areas of experiences for educational goals 1) self and others; 2) body and movement; 3) images sounds and colours; 4) languages and words; 5) knowledge of world.</p> <p>Children aged 6–10 (Elementary) focus on self-awareness; body and motor language help to communicate own moods; play to develop motor skills; respect the rules; act following safety criteria; take care of body.</p> <p>No specific training for physical activity or physical education within teacher training. Physical Education lessons, only comes into last year of primary school.</p>	No specific age related ideas offered other than curriculum focus.	More time and focus on physical activity and physical education lessons.
Norway	Linked to WHO recommendations but specified for all children 0–18 years 60 mins of MVPA each day and muscle and bone strengthening activities 3 times a week. Sedentary time to be reduced.	Focus for development and fundamental movement skills to include activities that stimulates power, speed, balance, coordination, agility and endurance to develop and accumulate motor capital.	<p>0–8 years, specific ideas guidelines:</p> <p>0–3 years: First steps towards basic movement skills (rolling, crawling, creeping, climbing, walking, running, jumping) in different environments</p> <p>4–5 years: Mastering basic skills in varied environments (walking, running, jumping, climbing, throwing and catching, etc.)</p> <p>6–8 years: Mastering task-oriented motor skills in versatile environments (biking, skiing, skating, swimming, sport-related activities and games)</p>	The focus for early years' age groups is the development of motor abilities through a gradual progression of learning, and accumulation of motor capital as a fundamental base for future physical activity over a life span. To also use a variety of challenging movement environments, versatile experiences both indoors and outdoors.

Table 2d Current national recommendations in UK and USA

Country	Physical activity recommendations set in country	Current curriculum	Specific age-related ideas provided	Future recommendations
UK	For children 5 – 18 linked to WHO recommendations – 60 MVPA a day play 3 days a week for bone and muscle strengthening activities. Plus reduce amount of sedentary time. Department of Health offers guidelines for 0 – 5 for those who are walking and those who are not walking.	Sustained physical activity identified within curriculum of Physical Education as a main aim. Health and wellbeing are key areas found in the curricula with Physical Education being a statutory area of the curricula for all ages of children up until age of 16 years. Physical development is also found as a prime area of learning for the under 5 years of age in the foundation phase curricula.	For under 5 years of age not already walking - keep babies as active as possible, and suggests physical activity through encouragement of reaching, grasping, pulling, pushing, moving heads, supervised floor play which they refer to as tummy time. Need for nurturing play environment, as this helps develop physical curiosity which will encourage the children to want to move and explore the world around them.  For under 5 years of age, who are walking - able to walk a specific time of 180 minutes of physical activity is recommended with a balance of light (rolling, playing, walking standing up) and energetic activities (skipping, hopping, running and jumping, dancing, swimming, gymnastics) as well as active play (using climbing frame, riding bike, playing in water and chasing games), active play is described as movements that will make the children huff and puff. The NHS (2018) warn against children under 5 being sedentary for long periods and suggest not being strapped into chairs, or buggies for long periods of time.  For children aged 5–18: 180 minutes of physical activity is recommended with a balance of light (rolling, playing, walking standing up) and energetic activities (skipping, hopping, running and jumping, dancing, swimming, gymnastics) as well as active play (using climbing frame, riding bike, playing in water and chasing games), active play is described as movements that will make the children huff and puff. The NHS (2018) warn against children under 5 being sedentary for long periods and suggest not being strapped into chairs, or buggies for long periods of time.	Continue with focus, but more training for early practitioners (those teaching under 5 years of age).
USA	Recently (2018) added physical activity recommendations for 3-5 years old children. Target of 3 hours a day, of aerobic, muscle strengthening and bone strengthening activities, including light, and MVPA. No recommendations on percent of each type of activity. Activities to include locomotion, manipulative and free play.	No specific curriculum, child care and early years is offered by variety of sources including employer sponsored programmes, private programmes and programmes provided by the church, community, or state.	0 – 3 years suggestions include: Need for tummy time each day, multiple times a day, and chances to freely explore own movements.	No consideration currently for under 3 years. Variety of organisations responsible for recommendations, need consensus. Potential to draw on Canadian model of looking at 24 hour intervals with 30 mins tummy time while infants awake throughout the day. Limiting restrained time to 1 hour. From age one 180 mins a day movement. Leading to 60 mins MVPA as the child near 3 years.

## **Summary of national recommendations**

Two countries (Denmark and Norway) base their national recommendations directly to WHO (2010) recommendations. Six countries (Belgium, Finland, Germany, Ireland, UK and USA) have their own culture specific recommendations, while two countries (China and Italy) do not have or use physical activity recommendations for early years children or school aged children.

The daily recommendations were implemented into national laws in one country (Finland), and partly implemented into the national school curricula in another country (Denmark). Two really important steps forwards by these two countries. Two countries (Belgium and UK) encourages 2 hours a week of physical education within the curricula. Two countries (Ireland and UK) have specific elements of the curricula dedicated to physical development or physical education as main areas of children's learning. In four countries (Denmark, China, Finland and Italy) early years' curricula states the importance of children's physical activity, but do not describe the amount of physical activity to be achieved within the day.

The content of young children's physical activity mostly includes the total amount and intensity of physical activity rather than the type of activities that could be undertaken. The total daily amount of physical activity mainly varies between 60 minutes moderate to vigorous intensity physical activity up to 180 minutes total light to moderate intensity physical activity.

## **Suggestions for ideal future recommendations for all nations**

Based on the analysis and comparison of the national recommendations of the ten countries (table 1 and 2), there seems to be a need for an international global statement regarding young children's physical activity recommendations to be wider than just physical activity intensity and accumulation. For the recommendations to focus more on how physical activity can support children's overall development. A growing amount of research evidence shows how physical activity supports physical growth (e.g. Armstrong and van Mechelen, 2017), development of motor skills (e.g. Hulsteen et al. 2018), social-emotional skills and moral development (e.g. Howells et al., 2018) as well as cognitive functioning (e.g. Singh et al., 2018). Previous research from the EU expert group HEPA (WHO, 2015) has identified that if physical education or physical activity of more than 45 minutes is implemented on a daily basis there have been health promotion impacts, such as reduced BMI and improved fundamental motor skills for overweight early years and school aged children. The importance of children enjoying physical activity has been identified as one of the most important factors that influence children's physical activity (Dowda et al. 2011). Therefore, it is important that both children and practitioners and teachers enjoy physical activity to continue as a lifelong activity.

Early years' educational settings are important arenas where physical activity can and should be practised every day. Qualifications of early years' staff members varies greatly across the countries (see table 1). Table 1 indicates that there are marked differences in staff education, knowledge and skills on how to support children through physical activities that supports physical and motor development in early ages. It is strongly suggested that further accredited education and training is needed to upskill *all* countries to the same level of knowledge and understanding of physical

activity. Therefore, national cultural specific recommendations are needed to improve and support practice.

The AIESEP SIG for early years' group suggests that global physical activity recommendations for the early years' age groups include the following content:

*Overall recommendations:*

- Recommendations should take into account all age-related phases of movement development of early childhood (babies, infants, toddlers, school-aged children).
- The role of environmental aspects should be recognized: A focus on using and optimizing the use of versatile environment, both indoors and outdoors, for physically active play that fosters creativity and physical learning opportunities.
- Emphasis on the role of physical activity and movement to support children's holistic (physical, cognitive, social, moral, emotional) development.
- Support active travel and transport – consideration for children's mobility needs in planning and design of infrastructure.
- Reduce daily sedentary time by breaks of physical activity and spending more time outdoors.
- Highlight the essential role of versatile and play in diverse environments and different seasons in developing fundamental movement skills, life skills and emotional regulation. (For clarification versatile refers to both indoor and outdoor environments. The indoors includes how equipment and toys are used to support play. The outdoors include the natural environments i.e. forest, water, ice and snow and how these can be used in different seasons throughout the year, as well as built up environments. Also, how the shape of the landscape, - flat, uphill and downhill and how the different types of surfaces, - soft and hard, can be used to promote and develop play, movement and physical activity.)
- Play environments should be diverse and challenging and stimulating for age-related physical activity.
- Emphasis on the multitude of stakeholders who influence early childhood physical activity beyond merely parents and caregiver.
- Additional recommendations are needed about the quality of movement, the importance of relaxation exercises alongside sleep time. Indeed, evidence show that healthy behaviours (i.e., in relation to; physical activity, diet, fluid intake and health food choices, sedentary behaviour and sleep) interact with each other and need to be promoted in a complementary way.
- The value of physical activity and physical education lessons needs to be promoted globally and in particular within the training of early childhood educators.

*Recommendations for educational purposes:*

- Create greater awareness about recommendations – in ways that make sense to those we want to engage in dialogue with: the children, their parents/significant others/or involved professionals etc.
- Identify the target audiences of the recommendations and their role in how to action the recommendations, in terms of who is accountable and responsible for ensuring the young children meet the recommendations.

- There is an urgent need to provide further education on physical activity levels for children, as well as physical development and physical education within the early years setting and training. This then needs to be replicated into both the national child care systems and educational settings as it is vital to improve the global health of our young children, from a very early age. Throughout early years into the first school years (0 – 8 years), a number of major developments take place in relation to physical growth. Therefore, the guidelines for daily physical activity should be age specific and customized to different phases of development in the different age groups. AIESEP early years SIG recommends that these aspects are considered:

*Specific age recommendations, example activities to support physical activity:*

*Age groups: 0-12 months:*

- At least 30 minutes of tummy time, to include sensory and motor stimulation through free movement, while the infant is awake, throughout the day. Additionally, limiting to no more than 1 hour being restrained (infant carrier, etc.) so that they can take part in free movement by locomotor movements like creeping, crawling, rolling, standing, walking.

*Age groups 1-3 years:*

- First steps towards basic movement skills (rolling, crawling, creeping, climbing, walking, running, jumping) in different environments.
- Focus on motor development and develop physical curiosity to encourage the children to move in and around their environments.
- Starting around 1 year of age, the recommendation moves towards 180 minutes a day of movement, at varying intensities, with a similar limitation on time being restrained (high chair, stroller, etc.).
- Importance of free play in a versatile environment should be underlined.
- As the child grows and develops into 2-3 years old and can follow instructions we support the aforementioned advice of 180 minutes a day, and this would include periods of physical activity of moderate to vigorous and vigorous structured movement and free play accumulated into 60 minutes on a daily basis as well as 120 minutes of light to moderate physical activity through play on a daily basis.

*Age groups: 3-5 years:*

- Mastering basic skills in varied environments (e.g. walking, running, jumping, skipping, hopping, climbing, throwing and catching).
- Free play with different equipment encouraged, and playing outside during all seasons.
- For children to experience versatile environments with naturally increasing challenges.
- For children to achieve in total 180 minutes of physical activity of which they should continue to accumulate 60 minutes of moderate to vigorous movement and to be achieving 120 minutes of light to moderate and vigorous physical activity through play on a daily basis.

*Age group 6-8 years (to be added to current physical activity recommendations):*

- Mastering task –oriented motor skills in versatile environments (biking, skiing, skating, swimming, sport – related activities and games) during all seasons.
- For activities to include activities that stimulate power, speed, balance, agility, control, coordination, endurance, (referred to in some countries as the ‘Golden rules for physical activity and development of fundamental motor skills’). Also for versatile movement experiences to accumulate ‘Motor Capital’.
- For children to continue to achieve 180 minutes of physical activity of which they should be achieving 60 minutes of versatile and varied moderate to vigorous physical activity accumulated on a daily basis, and also engage in 120 minutes of light to moderate physical activity intensity to allow children to practice basic gross and fine motor skills, as well as balance and coordination activities. Prolonged sitting periods should be avoided by introducing short activity breaks within sitting periods.

*Recommendations for research purposes:*

- Recommendations on how to collect data of the actual physical activity levels of babies, infants, toddlers, school-age children, using objective measurements such as accelerometers or fixed observation systems, so that it is possible for studies to be comparable across countries.
- To emphasise the role of physical activity (quality and intensity) and movement in early childhood and how to investigate such development changes by study programs.
- To emphasise the importance of the developing fundamental movement skills and to change the perception of motor competence of teachers, practitioners and children, to be more positive towards physical activity. To ensure that children all allowed to play to be inspired, motivated and competent to have a physically active daily life as well enjoy moving.
- To continue to explore and investigate physical activity interventions for infants and toddlers to establish the foundations for physical activity recommendations and how they may support milestones in growth and development, cognitive functions, socialization, emotional development and overall well-being.
- To develop best practices through reliable and functional recommendations based on research and successful practice.
- To develop physical activity policies and curricula for early years’ educational settings, schools and teacher education in practicing physical activity for the age groups 0-8 years.
- To compare and to share research across and between countries to learn from each other and promote overall global health of our young children through physical activity and play.

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