



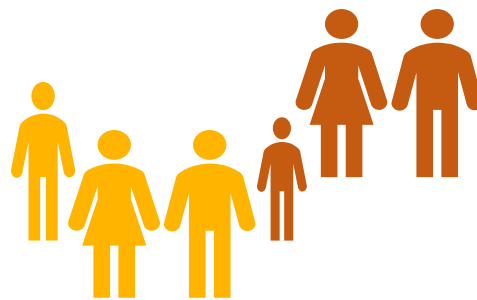
Conferência

# Promoção da Saúde em Escolas: O Presente e o Futuro num Mundo em Mudança

HELENA RAFAELA ROSÁRIO

Universidade do Minho

# Promoção da saúde em escolas: o presente e futuro num mundo em mudança



# Sumário

1-Obesidade e NCDs: Presente e futuro.

2-Programa de intervenção em escolas primárias – o início

3-Programa de intervenção: Creche “Healthy children 2021”

4-Projeto FCT BeE-school (Be Empowered in school) "A health promotion intervention for vulnerable school - children and families (BeE-school): a cluster-randomized trial"



- NCD redução da mortalidade prematura em 1/3 até 2030 <sup>1</sup>
- NCD apresentam determinantes e riscos comuns
- Em crianças é praticamente inexistente a presença de NCD, mas o risco dos determinantes que potenciam estas doenças já existe
  - Obesidade
  - Hábitos alimentares poucos saudáveis
  - Movimento desarmonioso
- Alterações climáticas

1 WHO. Health in 2015: from MDGs, millennium development goals to SDGs, sustainable development goals. World Health Organization, 2015.

# Overweight and obesity in Portugal

	Crianças (<10 anos)		Adolescentes (10-17 anos)	
	Feminino	Masculino	Feminino	Masculino
<b>Obesidade</b>				
n ponderado	25.817	33.465	24.319	50.087
prevalência ponderada	6,9%	8,5%	5,9%	11,4%
IC 95%	[2,8-11,1]	[4,7-12,4]	[3,1-8,8]	[5,7-17,0]
<b>Pré-obesidade</b>				
n ponderado	49.874	67.199	89.365	111.194
prevalência ponderada	18,7%	15,9%	21,7%	25,3%
IC 95%	[13,7-23,8]	[11,4-20,4]	[16,3-27,1]	[18,7-31,8]

# Time trends in prevalence and incidence rates of childhood overweight and obesity in Portugal: Generation XXI birth cohort

Ana Isabel Freitas<sup>1</sup> · Carla Moreira<sup>1</sup> · Ana Cristina Santos<sup>1,2</sup>

**Table 1** Anthropometric characteristics of the participants stratified by age of follow-up and sex

	4 years (n = 5497; 50.7% boys)			7 years (n = 5397; 51.5% boys)			10 years (n = 4956; 50.9% boys)		
	Boys (n = 2786)	Girls (n = 2711)	p-value <sup>a</sup>	Boys (n = 2781)	Girls (n = 2616)	p-value <sup>a</sup>	Boys (n = 2521)	Girls (n = 2435)	p-value <sup>a</sup>
Age (months ± SD)	52.4 ± 5.1	52.4 ± 5.0	0.798	85.7 ± 3.0	85.6 ± 2.8	0.227	121.7 ± 3.9	122.0 ± 4.2	0.003
<i>Anthropometry</i>									
Weight (kg ± SD)	18.3 ± 2.9	18.2 ± 3.1	0.155	26.4 ± 5.2	26.3 ± 5.4	0.506	37.5 ± 8.5	38.3 ± 9.2	0.001
Height (cm ± SD)	105.9 ± 5.0	104.8 ± 4.9	<0.001	124.3 ± 5.4	123.2 ± 5.3	<0.001	141.0 ± 6.4	141.4 ± 6.9	0.010
BMI (kg/m <sup>2</sup> ± SD)	16.2 ± 1.6	16.4 ± 1.9	<0.001	17.0 ± 2.4	17.2 ± 2.6	<0.001	18.7 ± 3.3	19.0 ± 3.5	0.003
BMI Z-scores (±SD)	0.6 ± 1.1	0.7 ± 1.1	0.019	0.7 ± 1.2	0.7 ± 1.1	0.725	0.8 ± 1.3	0.7 ± 1.2	0.006
<i>Child's BMI category</i> (n; %)			0.050			0.218			0.017
Underweight	14; 0.5	12; 0.5		15; 0.5	8; 0.3		28; 1.1	24; 1.0	
Normal weight	1908; 68.5	1766; 65.1		1740; 62.6	1602; 61.2		1396; 55.4	1383; 56.8	
Overweight	<b>590; 21.2</b>	<b>622; 22.9</b>		<b>589; 21.2</b>	<b>604; 23.1</b>		<b>624; 24.8</b>	<b>670; 27.5</b>	
Obese	274; 9.8	311; 11.5		437; 15.7	402; 15.4		473; 18.8	358; 14.7	

<sup>a</sup>Sex-related differences were assessed by either Student's *t*-test or  $\chi^2$  test



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# Height and body-mass index trajectories of school-aged children and adolescents from 1985 to 2019 in 200 countries and territories: a pooled analysis of 2181 population-based studies with 65 million participants



*NCD Risk Factor Collaboration (NCD-RisC)\**



## Summary

**Background** Comparable global data on health and nutrition of school-aged children and adolescents are scarce. We *Lancet* 2020; 396: 1511–24

# Body Mass Index Categories and Attained Height in Portuguese Adults

Rafaela Rosário<sup>a, b</sup> Renata Barros<sup>c</sup> Patrícia Padrão<sup>c, d</sup> Rute Santos<sup>e, f</sup>  
Vitor Hugo Teixeira<sup>c</sup> Oscar Lopes<sup>g</sup> Nelson Andrade<sup>c</sup> Andre Moreira<sup>d, h</sup>  
Pedro Moreira<sup>c, d</sup>

Rosário et al., 2018. *obesity facts*

European Journal of Clinical Nutrition  
<https://doi.org/10.1038/s41430-019-0494-x>

ARTICLE

Body composition, energy expenditure and physical activity

## Longitudinal associations between body composition and regional fat distribution and later attained height at school entry among preschool children predisposed to overweight

Rafaela Rosário<sup>1,2</sup> · Nanna Julie Olsen<sup>3</sup> · Jeanett Friis Rohde<sup>3</sup> · Mina Nicole Händel<sup>3</sup> · Rute Santos<sup>4,5</sup> · Berit Lilienthal Heitmann<sup>3,6,7</sup>

Rosário et al., 2019. *EJCN*

DE GRUYTER

J Pediatr Endocrinol Metab 2019; aop

Rafaela Rosário\*, Cesar Agostinis-Sobrinho, Luís Lopes, Pedro Moreira, Patrícia Padrão, André Oliveira, Carla Moreira, Susana Póvoas, Jorge Mota and Rute Santos

## Adiposity and attained height in adolescents: a longitudinal analysis from the LabMed Physical Activity Study

Rosário et al., 2019. *Journal Ped End Metab*



International Journal of  
*Environmental Research  
and Public Health*



Article

## Longitudinal Associations between Intake of Fruit and Vegetables and Height Attainment from Preschool to School Entry

Rafaela Rosário<sup>1,2,\*</sup> · Mina Nicole Händel<sup>3</sup> · Jeanett Friis Rohde<sup>3</sup> · Nanna Julie Olsen<sup>3</sup> and Berit Lilienthal Heitmann<sup>3,4,5</sup>

Rosário et al., 2021. *IJERPH*



Inundações de “proporções catastróficas”  
no centro da Europa  
Expresso, 16 de Julho 2021



Photo, Beira – Mozambique, 2019



Nesta fotografia, de 4 de junho de 2017, paquistaneses banham-se num canal para vencer o calor e obter algum alívio da temperatura extremamente quente, durante o oitavo dia do Ramadão. Temperaturas máximas de 47 graus Celsius foram registadas em Lahore, no Paquistão.

Photo, Paquistão 2017

**31 OCT - 12 NOV 2021**

**GLASGOW**

# **COP26**

**IN PARTNERSHIP WITH ITALY**





# THE LANCET



Milken Institute School of Public Health  
THE GEORGE WASHINGTON UNIVERSITY

## The Global Syndemic of Obesity, Undernutrition, and Climate Change: *The Lancet* Commission report

Boyd A Swinburn, Vivica I Kraak, Steven Allender, Vincent J Atkins, Phillip I Baker, Jessica R Bogard, Hannah Brinsden, Alejandro Calvillo, Olivier De Schutter, Raji Devarajan, Majid Ezzati, Sharon Friel, Shifalika Goenka, Ross A Hammond, Gerard Hastings, Corinna Hawkes, Mario Herrero, Peter S Hovmand, Mark Howden, Lindsay M Jaacks, Ariadne B Kapetanaki, Matt Kasman, Harriet V Kuhnlein, Shiriki K Kumanyika, Bagher Larjani, Tim Lobstein, Michael W Long, Victor K R Matsudo, Susanna D H Mills, Gareth Morgan, Alexandra Morshed, Patricia M Nece, An Pan, David W Patterson, Gary Sacks, Meera Shekar, Geoff L Simmons, Warren Smit, Ali Tootée, Stefanie Vandevijvere, Wilma E Waterlander, Luke Wolfenden, William H Dietz

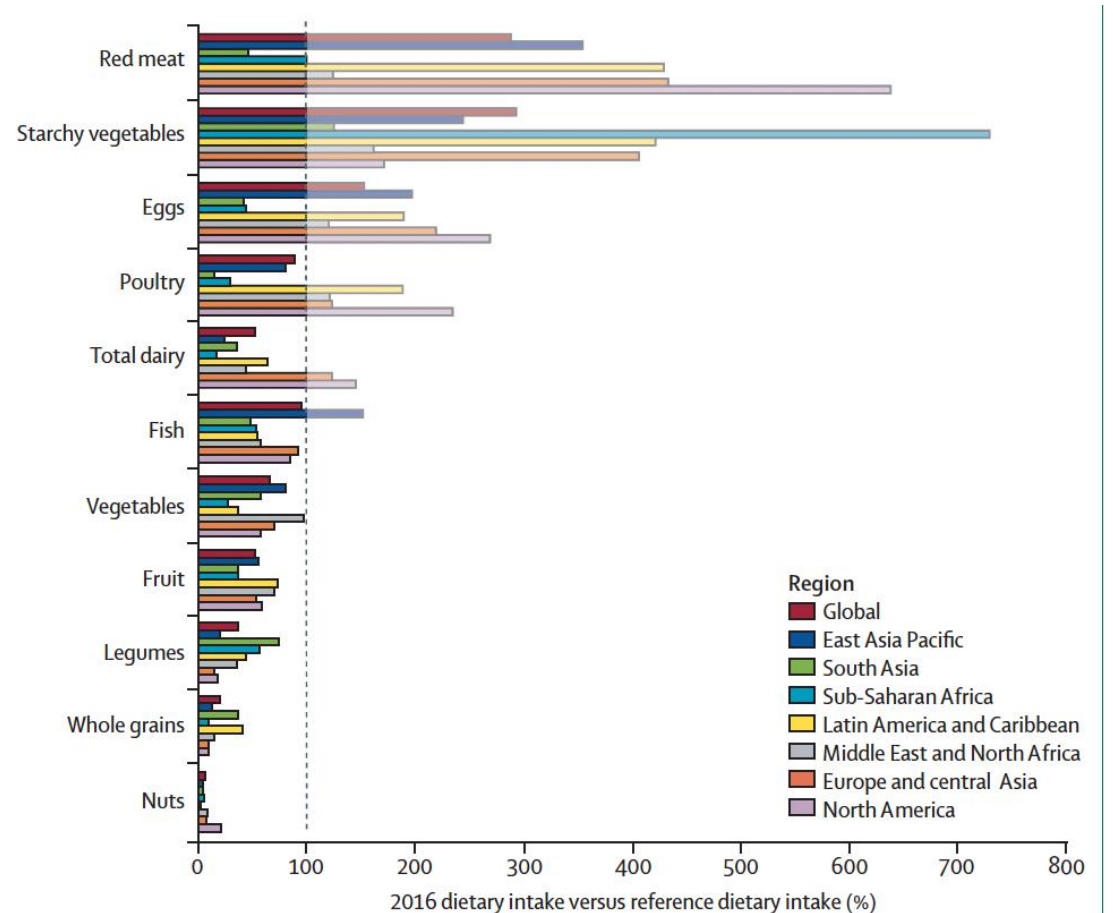


Figure 1: Diet gap between dietary patterns in 2016 and reference diet intakes of food. Data on 2016 intakes are from the Global Burden of Disease database.<sup>130</sup> The dotted line represents intakes in reference diet (table 1).

Willet et al. 2019. Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems. *Lancet*

# The Mediterranean diet and health: a comprehensive overview

■ M. Guasch-Ferre<sup>1,2</sup>  & W. C. Willett<sup>1,2,3</sup>

From the <sup>1</sup>Department of Nutrition, Harvard T.H. Chan School of Public Health; <sup>2</sup>Channing Division of Network Medicine, Department of Medicine, Brigham and Women's Hospital and Harvard Medical School; and <sup>3</sup>Department of Epidemiology, Harvard T.H. Chan School of Public Health, Boston, MA, USA

“It is likely that the combination of a **healthy diet** with **social behaviours** and the way of life of Mediterranean regions makes the MedDiet a sustainable **lifestyle model** that could likely be followed in other regions with country-specific and culturally appropriate variations.”



Improving the health of  
children and young people in  
the European Region and  
Central Asia

## Schools are a setting for health.

Domains of adolescent well-being:

good health and optimum nutrition;

connectedness, positive values, and  
contribution to society;

safety and a supportive environment;


learning, competence, education, skills,  
and employability; and

agency and resilience.

Source: Annex 1, resources for adolescent well-being

Schools are increasingly regarded as a key setting for promoting the health, well-being and development of children and adolescents (23). Globally, most children and adolescents

# COVID-19 and Schools Closure: Implications for School Nurses

Rafaela Rosário, PhD 

*School of Nursing, University of Minho, Portugal  
Health Sciences Research Unit: Nursing (UICISA: E),  
Nursing School of Coimbra (ESENfC), Portugal*

**Lifestyles:** We know that compliance to 24-h movement behavior guidelines (physical activity, sedentary behavior, and sleep) is low (Janssen et al., 2017). In addition, the consumption of fruit and vegetables in children is below recommendations (Marinho et al., 2020). If these lifestyles are maintained or even impaired during confinement, similarly to a summer break (Wang et al., 2015), it is possible that overweight or obesity increase (Rundle et al., 2020).

On the other hand, many children may be deprived of essential goods, due to the absence of social support provided by schools such as free lunches or food at reduced prices (Joob & Wiwanitkit, 2020; Van Lancker & Parolin, 2020).

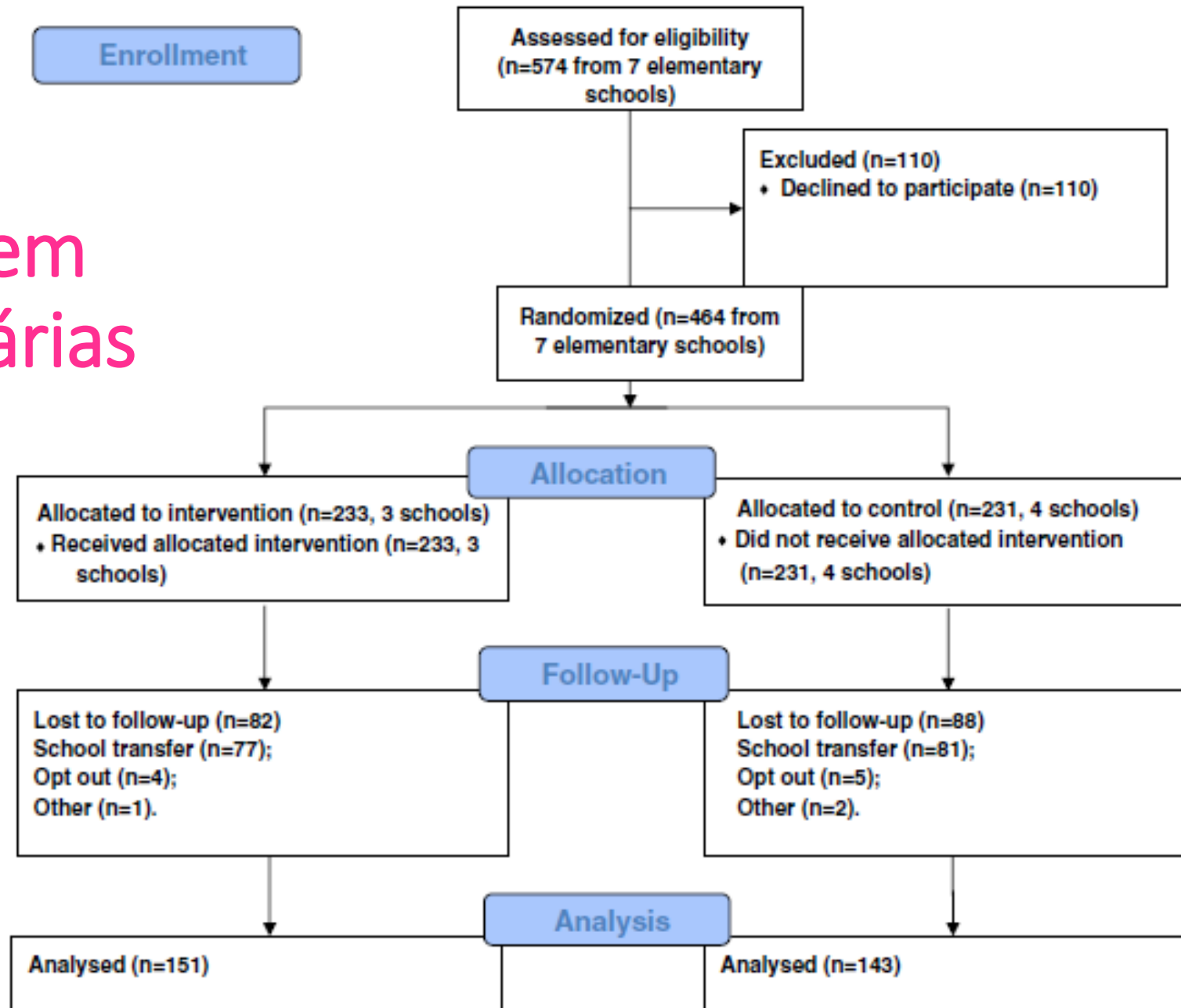
**Health Literacy:** The knowledge and skills needed to find, understand, judge, and use the most relevant information on health and COVID-19, in order to make the best decisions about health, is considered essential. Beyond COVID-19 pandemic, there is an infodemic, with increased conspiracy theories, fake news, and misinformation (AFP Fact Check, 2020).

Rosário et al., 2020. *Journal of school nursing*





# Intervenção em escolas primárias



# Recolha de dados

Antropometria

Questionário  
alimentar 24h

Índice de AF

Perfil  
sociodemográfico

0

# Programa de intervenção: professores

## Sessions and Description of the Attendance Phase During the Intervention Program

<i>Session Title</i>	<i>Description</i>
1. Incorporating characteristics of health promotion	This session focused on health promotion and overweight and obesity prevention. It focused on lifestyle determinants of health and obesity—definitions and descriptions of the problem, risk factors, and health problems.
2. Incorporating key concepts	This session provided an overview of food and nutrition concepts.
3. Development of appropriate guidelines: meeting children's needs	This session documented the dietary guidelines (the Portuguese Food Wheel) and healthy eating advice for children, covering the five main food groups. Participants explored resources and guidelines related to food and nutrition needs for children.

# Programa de intervenção: professores

## 4. Working with the families

A variety of interventions to help children and their families to consume healthy foods and plan well-balanced meals and snacks were explored. Participants also analyzed models of family-centered care.

## 5. Linking best practice to practice: incorporating characteristics of effective interventions in nutrition and food consumption in the classroom

This session provided a broad of approaches to teach children about the importance of water, and teaching strategies to replace consumption of sugar-sweetened beverages with water. Participants in this session engaged in activities to support the implementation of the program.

# Programa de intervenção: professores

6 and 7. Linking best practice to practice: incorporating characteristics of effective interventions in physical activity, nutrition, and food consumption in the classroom

8. Health behavior change

This session provided a broad of appropriate physical activity levels and healthy eating behaviors such as increasing fruit and vegetable intake and decreasing energy-dense, micronutrient-poor foods. Participants in this session engaged in activities to support the implementation of the program.

This session focused on teaching strategies, health promotion model, and social cognitive theory to be used in the classroom. The participants engaged in techniques of decision-making refusal skills, and communication.



# Programa de intervenção: professores

9. Linking best practice to practice: incorporating characteristics of effective interventions in reducing sedentary behavior in the classroom
  10. Assessment of the training program
  - 11 and 12. Working with the families
- A variety of strategies to reduce sedentary behavior such as screen exposure time were analyzed. Participants in this session engaged in activities to support the implementation of the program.
- Global assessment of the training program was carried out.
- This session provided healthy cooking and strategies to get children and families involved in healthy cooking.

# Intervenção em escolas primárias

*Research Article*

## **The Impact of an Intervention Taught by Trained Teachers on Childhood Fruit and Vegetable Intake: A Randomized Trial**

Rafaela Rosário,<sup>1,2</sup> Ana Araújo,<sup>2</sup> Bruno Oliveira,<sup>3</sup> Patrícia Padrão,<sup>3</sup> Oscar Lopes,<sup>4</sup> Vítor Teixeira,<sup>3</sup> André Moreira,<sup>5</sup> Renata Barros,<sup>3</sup> Beatriz Pereira,<sup>2</sup> and Pedro Moreira<sup>3,6</sup>

## **Impact of a school-based intervention to promote fruit intake: a cluster randomized controlled trial**

R. Rosário <sup>a,b,\*</sup>, A. Araújo <sup>c</sup>, P. Padrão <sup>c</sup>, O. Lopes <sup>d</sup>, A. Moreira <sup>e</sup>, S. Abreu <sup>f</sup>, S. Vale <sup>f</sup>, B. Pereira <sup>b</sup>, P. Moreira <sup>c,f</sup>

*Article*

## **The Impact of an Intervention Taught by Trained Teachers on Childhood Overweight**

Rafaela Rosário <sup>1,2,\*</sup>, Bruno Oliveira <sup>3</sup>, Ana Araújo <sup>2</sup>, Oscar Lopes <sup>4</sup>, Patrícia Padrão <sup>3</sup>, André Moreira <sup>5</sup>, Vítor Teixeira <sup>3</sup>, Renata Barros <sup>3</sup>, Beatriz Pereira <sup>2</sup> and Pedro Moreira <sup>3,6</sup>

Impact of an intervention through teachers to prevent consumption of low nutrition, energy-dense foods and beverages: A randomized trial<sup>☆</sup>

Rafaela Rosário <sup>a,b,\*</sup>, Ana Araújo <sup>b</sup>, Bruno Oliveira <sup>c</sup>, Patrícia Padrão <sup>c,d</sup>, Oscar Lopes <sup>e</sup>, Vítor Teixeira <sup>c,f</sup>, André Moreira <sup>g</sup>, Renata Barros <sup>c</sup>, Beatriz Pereira <sup>b</sup>, Pedro Moreira <sup>c,d,f</sup>

## ***Health Promotion Intervention to Improve Diet Quality in Children: A Randomized Trial***

Rafaela Rosário, PhD<sup>1</sup>  
Ana Araújo, MSc<sup>2</sup>  
Patrícia Padrão, PhD<sup>2</sup>  
Oscar Lopes, MSc<sup>3</sup>  
André Moreira, PhD<sup>2</sup>  
Beatriz Pereira, PhD<sup>1</sup>  
Pedro Moreira, PhD<sup>2</sup>

# Tendências e futuro







# Improving the health of children and young people in the European Region and Central Asia

## Sprint sessions SHE Academy 2021

With 25 participants from 15 countries

Children's needs: n=28 criteria

What Works: n=21 criteria

Knowledge integration: n=19 criteria

Round "RELEVANCE": N=68 criteria

Voting based on a 4 Likert scale criteria by 23 participants

### Excluded:

Children's needs: n=11 criteria

What Works: n=2 criteria

Knowledge integration: n=8 criteria

Rated "not relevant", "somewhat relevant" by 25% or more participant

Children's needs: n=3 criteria

What Works: n=1 criteria

Knowledge integration: n=1 criteria

With less than 66.7% of participants rating "very relevant"

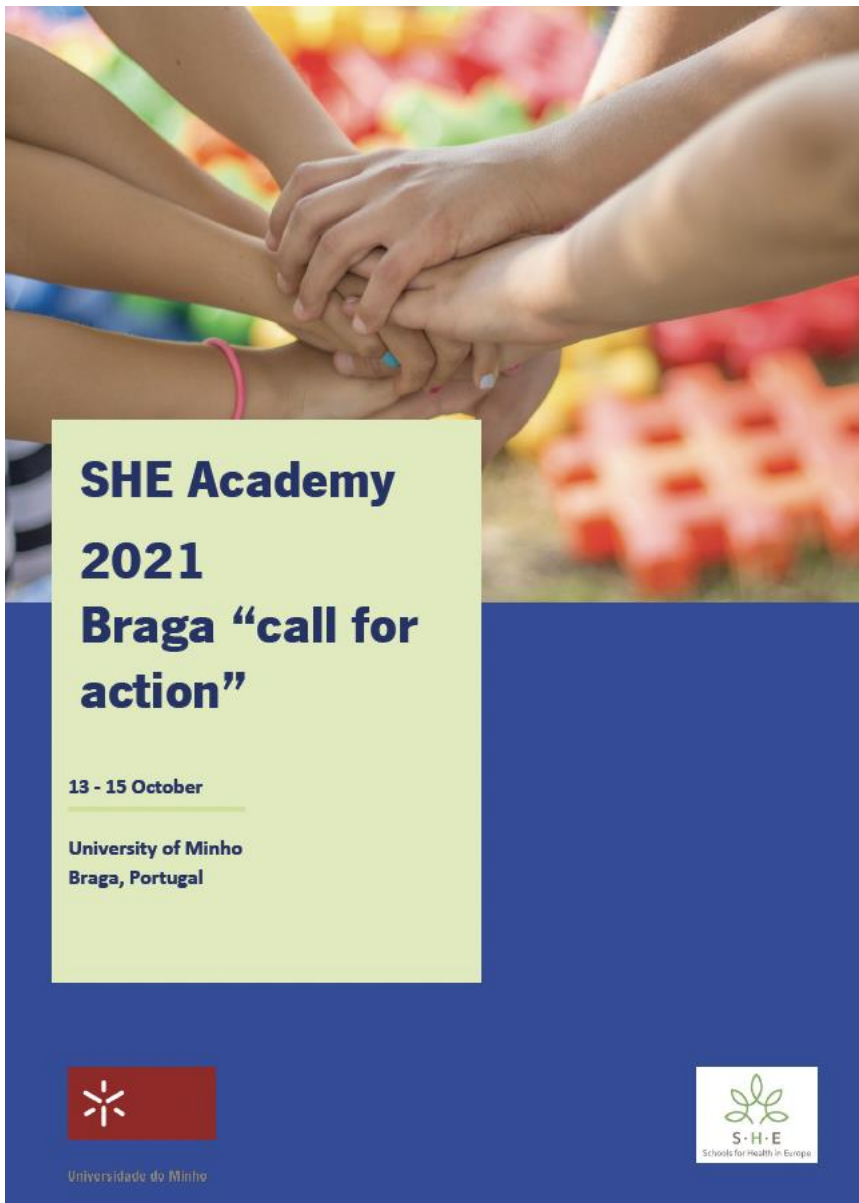


## Braga "Call for Action"

Children's needs: n=14 criteria

What Works: n=18 criteria

Knowledge integration: n=10 criteria



## SHE Academy

2021

Braga “call for  
action”

13 - 15 October

University of Minho  
Braga, Portugal



Universidade do Minho



- Stress (crianças, pais e professores)
- Ausência de motivação (crianças)
- Iniquidades
- Determinantes da saúde
- Diversidade das crianças
- Desenvolvimento profissional dos professores (poucas oportunidades)
- Gap entre evidência, políticas e práticas



# BeE-school (Be Empowered in school)



"A health promotion intervention for vulnerable school - children and families (BeE-school): a cluster randomized trial"

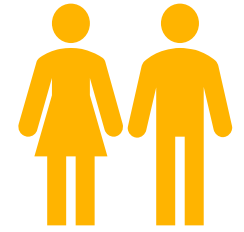
PTDC/SAU-ENF/2584/2021



**BeE-school**  
(Be Empowered in school)



risk behaviours,  
obesity, raised blood  
pressure



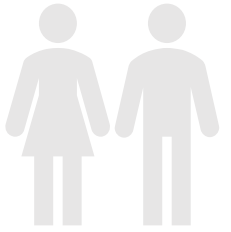
NCD in  
adults



**BeE-school**  
(Be Empowered in school)



risk behaviours,  
obesity, raised blood  
pressure



NCD in  
adults

# Aims



Analyse the effectiveness of the intervention program, based on the promotion of health literacy and lifestyles, specifically on children's:

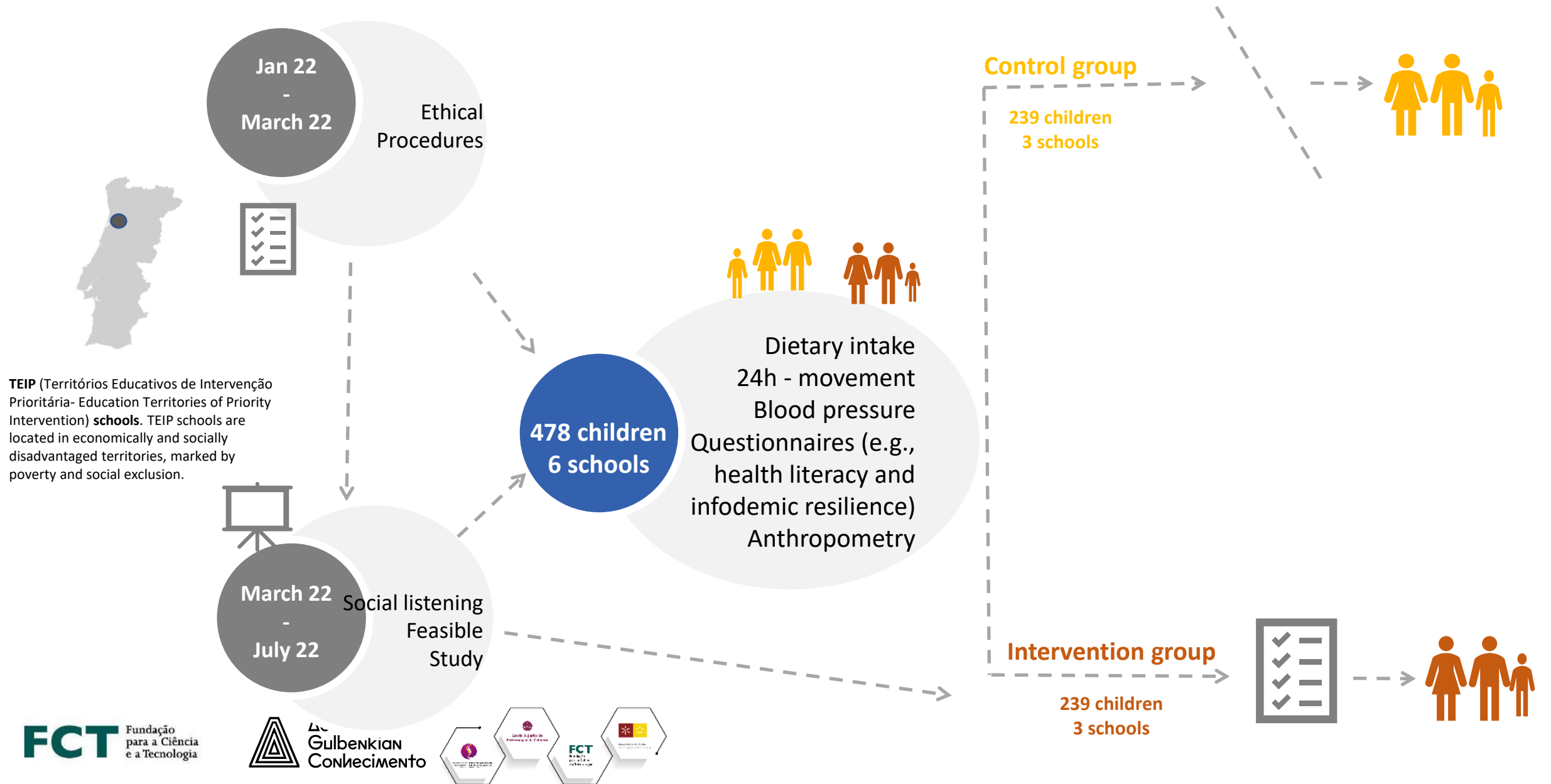
- 1-health literacy and infodemic resilience (Aim 1);
- 2-lifestyles (e.g. dietary intake, 24h movement behaviour) (Aim2);
- 3-overweight and obesity (Aim 3);
- 4-blood pressure (Aim 4).

### Baseline assessment

Sep- December 2022

### Follow-up assessment

April- July 2023



**24h anteriores e QFA**

**Actigraph GT3X à volta da cintura, 24h/dia durante 7 dias**

**Antropometria**

**Pressão arterial**

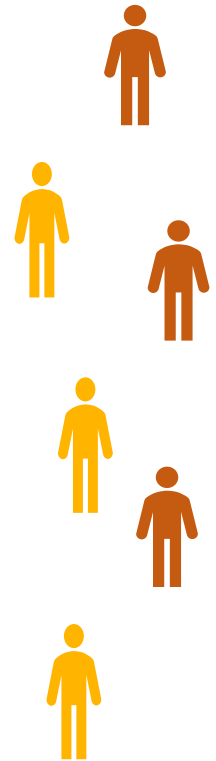
**Sociodemografico (education, income, occupation) Pais**

...

**Literacia em saúde (crianças, pais e professores)**

**Resiliência à infodemia (crianças, pais e professores)**

**Portuguese Children's Sleep Habits Questionnaire**





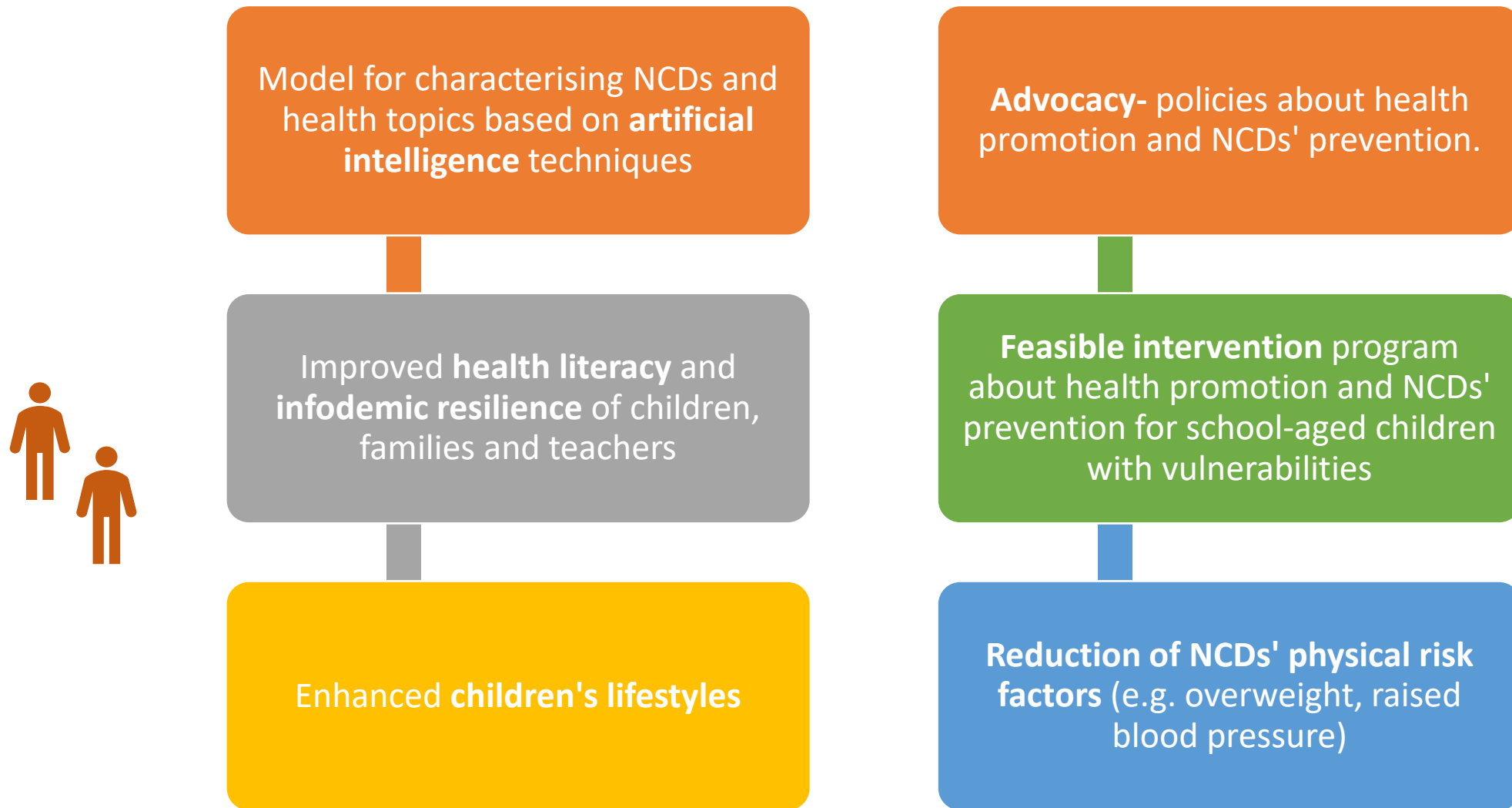
# Programa de intervenção – “knowledge integration process – translational research”

Março - julho 2023 – online  
Março – julho 22 - offline

Junho 22



# Principais resultados esperados





Rafaela Rosário, PhD  
School Health, Family



Maria José Silva, MSc  
Child health, Family



Cláudia Augusto, PhD  
Family



Silvana Martins, PhD  
Psychology, Child  
health, family



Ana Duarte, PhD cand  
Child health



Patrícia Padrão, PhD  
Nutrition, health



Pedro Moreira, PhD  
Nutrition, health



Beatriz Pereira, PhD  
Physical activity, Bullying,  
health



Inês Fronteira, PhD  
International  
Public Health



Rosário Martins, PhD  
International  
Public Health



Neida Ramos, PhD cand  
International  
Public Health



Oscar Lopes, MSc  
Management, health

# Promoção da saúde em escolas: o presente e futuro num mundo em mudança

