



WHO European Childhood Obesity Surveillance Initiative: overweight and obesity among 6–9-year-old children

Report of the third round of data collection 2012–2013



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Abstract

Surveillance data on the prevalence of overweight and obesity among children and adolescents are essential to inform the development of effective policies and strategies to tackle the challenge of childhood obesity in the WHO European Region. In response to this need, the WHO Regional Office for Europe established the WHO European Childhood Obesity Surveillance Initiative (COSI) in 2007.

The third round of data collection took place during the 2012–2013 school year and included assessment of more than 250 000 primary school-aged children in 19 countries and collection of information about the participating schools. In addition, 17 of the countries collected further data on the school environment, and 11 countries collected data on family diet and physical activity.

The systematic collection of these data and their analysis enable intercountry comparisons and a better understanding of the progression of childhood overweight and obesity in Europe, clearly showing that childhood obesity remains a major public health problem in the WHO European Region.

Keywords

Child nutritional sciences
Obesity-prevention and control
Public health surveillance
Body height
Body weight
Nutrition policy
Schools - education
Cross-sectional studies
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Abbreviations and acronyms

BMI	body mass index
COSI	Childhood Obesity Surveillance Initiative
SD	standard deviation
PSU	primary sampling unit
SSU	secondary sampling unit
SU	sampling unit
TSU	tertiary sampling unit

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Executive summary

Childhood obesity is associated with a wide range of serious health and social consequences in childhood and higher risks of premature death and disability in adulthood. Prevention is recognized as the only feasible option for curbing the epidemic, and surveillance data on the prevalence of overweight and obesity among children and adolescents are essential to inform the development of effective policies and strategies.

In response to the critical need for standardized surveillance data, the WHO Regional Office for Europe established the WHO European Childhood Obesity Surveillance Initiative (COSI) in 2007. This population-based system consists of standardized, harmonized, systematic monitoring of the prevalence of overweight and obesity (based on measurements) among primary-school children (aged 6.0–9.9 years). The common COSI protocol establishes the main characteristics of study design and sampling strategy but, by including a combination of mandatory and voluntary components, also affords participating countries some flexibility for adapting the system to their national context. This enables the monitoring of trends in the epidemic as well as comparisons of countries in the European Region.

Thirteen Member States participated in the first round of COSI data collection in 2007–2008, and a further four countries joined the second round in 2009–2010. In the first and second rounds, the prevalence of overweight among boys ranged from 19.3% and 18.0% of 6-year-olds in Belgium to 49.0% of 8-year-olds in Italy and 57.2% of 9-year-olds in Greece, respectively. In girls, the prevalence varied from 18.4% in Belgium to 42.6% of 8-year-olds in Italy and 50.0% of 9-year-olds in Greece, respectively.

Data were collected for the third round of COSI in 19 countries during the 2012–2013 school year.¹ All participating countries collected anthropometrics, and most (17/19) collected data about the schools on a mandatory record form. In addition, 17 countries collected data about the school environment on an optional record form. Furthermore, 11 countries provided data on simple indicators of children's dietary intakes and physical and inactivity patterns, family socioeconomic characteristics and co-morbid conditions associated with obesity collected on a voluntary family record form.

Over 250 000 children were measured and weighed according to the COSI protocol. The prevalences of overweight and obesity were calculated by age group for children in the defined target group, with the cut-offs recommended by WHO to compute Z-scores for body mass index (BMI) for age. The prevalence of overweight (including obesity) and obesity in boys and girls aged 6–9 years in the 19 countries that participated in the third round of COSI is presented in Fig. 1. The prevalence of overweight ranged from 18% to 52% in boys and from 13% to 43% in girls, and the prevalence of obesity ranged from 6% to 28% among boys and from 4% to 20% among girls.

The data suggest an increasing north–south gradient, with the highest prevalences of overweight and obesity in southern European countries. In the countries that collected data for more than one age group, the prevalence of overweight and obesity tended to increase with age. According to WHO definitions, more boys than girls were overweight and obese in most age groups, particularly at older ages, and in most countries.

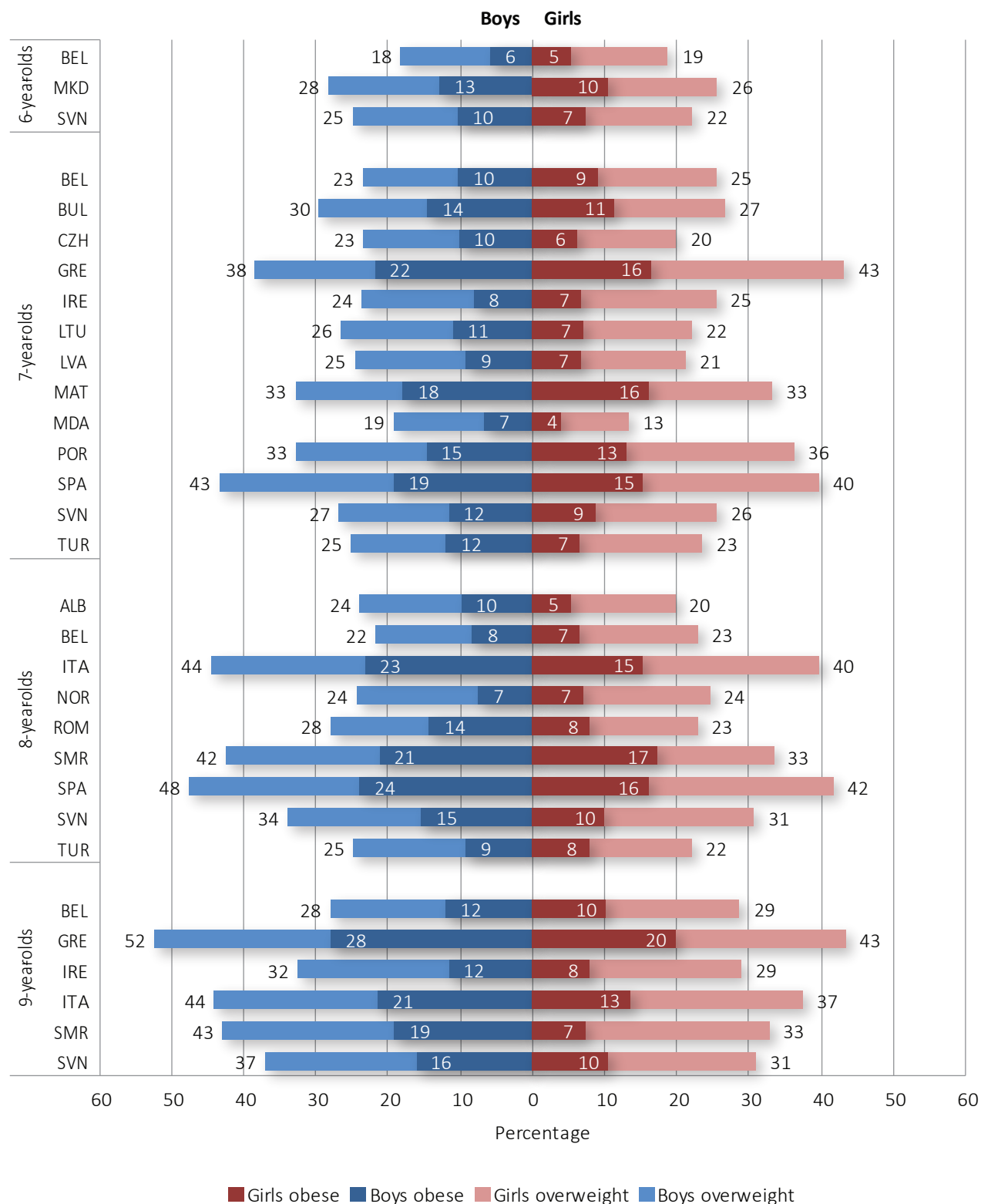
Data were also collected on eating habits and physical activity patterns, which are closely linked to the energy imbalance that results in children becoming overweight and obese. There was considerable variation among countries in the frequency of consumption of healthy and less healthy food items, with less difference between boys and girls within countries. Countries also varied considerably in indicators of physical activity, such as going to school on foot or by bicycle, attending a sports or dance club and time spent playing outside, media consumption and sleep duration. There was little variation between boys and girls within countries. The frequency of walking or cycling to school appeared to be associated with parents' perceptions of the safety of the route and the distance to school.

Given the importance of schools for promoting child health and establishing lifelong habits, data were also collected on aspects of the school environment related to nutrition and physical activity. Countries varied widely in the school nutrition environment score, which is based on the possibility of obtaining two healthy food items and three less healthy items. The mean duration of physical education classes per week varied from 62 to 187 min, and the provision of at least 1 h of physical education per week was not realized in all schools in several countries. The proportion of schools that introduced healthy lifestyle initiatives or projects varied by country, ranging from 57% to over 90%.

¹ Albania, Belgium (Flanders only), Bulgaria, Czechia, Greece, Ireland, Italy, Latvia, Lithuania, Malta, Norway, Portugal, Republic of Moldova, Romania, San Marino, Spain, Slovenia, the former Yugoslav Republic of Macedonia and Turkey.

Systematic data collection for COSI provides a better understanding of the progression of childhood overweight and obesity in Europe and of related factors, such as eating habits, physical activity patterns and school environments. Assessment of more than 250 000 primary school-aged children in 19 countries during the third round of data collection clearly shows that childhood obesity remains a major public health problem in the European Region.

Fig. 1. Prevalence of overweight (including obesity) and obesity (WHO definition) in boys and girls aged 6-9 years, by age and country, COSI round 3 (2012–2013)



1. Introduction

Obesity in children remains an important public health problem in the WHO European Region. It is unequally distributed within and between countries and population groups (1,2).

Childhood obesity is a multifactorial disease associated with a wide range of serious health and social consequences, including higher risks for premature death and disability in adulthood (3). Children with a high body mass index (BMI) often become obese adults (4). Obesity is strongly associated with risk factors for cardiovascular disease and diabetes (5), orthopaedic problems and mental health problems (3). Underachievement at school and lower self-esteem have also been linked to childhood obesity (6). Obesity arises from a combination of exposure of the child to an unhealthy, obesogenic environment (7), in which there is an imbalance between energy intake and energy expenditure, and inadequate behavioural and biological responses to the environment (2).

Prevention is recognized as the only feasible option for curbing the epidemic. Nutritional surveillance data are essential to effectively design, implement and evaluate policies and strategies for counteracting obesity (8). At the first consultation of Member States (Copenhagen, October 2005) that led to the WHO European Ministerial Conference on Counteracting Obesity (Istanbul, 15–17 November 2006), it was recognized that standardized, harmonized surveillance systems were required as a basis for policy development in the WHO European Region (8). It was acknowledged that regular assessments, based on measured weight and height, of the prevalence of overweight and obesity among children and adolescents were not commonly conducted in the Member States of the Region (9–11).

In response, the WHO Regional Office for Europe and 13 Member States established the WHO European Childhood Obesity Surveillance Initiative (COSI) in 2007, for systematic collection, analysis, interpretation and dissemination of descriptive information for use in monitoring excess bodyweight and in programme planning and evaluation (12). The importance of such surveillance was reinforced in the Vienna Declaration on Nutrition and Noncommunicable Diseases in the Context of Health 2020 (13) and in the Report of the Commission on Ending Childhood Obesity (2).

The establishment of COSI was the beginning of population-based monitoring of measured overweight and obesity among primary-school children in the WHO European Region. This age group (6.0–9.9 years) is important because it precedes puberty and can predict the condition in adulthood. Moreover, at the age of about 6 years, the “adiposity rebound”, the onset of the second period of a rapid increase in body fat, begins (14,15).

The aim of COSI is to measure trends in childhood overweight and obesity routinely in order to obtain a correct understanding of the progress of the disease in this population group. Such measurements allow intercountry comparisons within the European Region, which are important for identifying effective policies to reverse the trend. Although each country is free to develop a system appropriate to its local circumstances, data must be collected according to an agreed common protocol (16) that includes a number of stipulated core items. The protocol was developed for the first COSI round (2007–2008) by 13 Member States – Belgium, Bulgaria, Cyprus, Czechia, Ireland, Italy, Latvia, Lithuania, Malta, Norway, Portugal, Slovenia and Sweden – and has been continually updated. Four new countries joined COSI for the second round (2009–2010): Greece, Hungary, Spain and the former Yugoslav Republic of Macedonia.

In the first and second rounds, the prevalence of childhood overweight among boys varied from 19.3% and 18.0% of 6-year-olds in Belgium to 49.0% of 8-year-olds in Italy and 57.2% of 9-year-olds in Greece. In girls, the prevalence varied from 18.4% in Belgium to 42.6% of 8-year-olds in Italy and 50.0% of 9-year-olds in Greece (17). In both rounds, multi-country comparisons suggested the presence of a north–south gradient, with the highest prevalence of overweight in southern European countries. Between rounds 1 and 2, the highest significant decrease in the prevalence of overweight was found in countries in which there were higher absolute BMI values in round 1 (i.e. Italy, Portugal and Slovenia), and the highest significant increase was found in countries in which there were lower BMI values in round 1 (i.e. Latvia and Norway) (18).

This document is the official WHO report of the third round of COSI data collection in the 2012–2013 school year. It describes the methods used and presents the main results, including trends in overweight and obesity in relation to previous data collection rounds.

2. Methods

2.1 Study design and sampling strategy

The third COSI data collection round was conducted in 19 countries in the 2012–2013 school year. Surveillance was conducted for the first time in five countries (Albania, Republic of Moldova, Romania, San Marino and Turkey), while the other 14 countries had participated in at least one of the two previous rounds (Belgium (only Flanders), Bulgaria, Czechia, Greece, Ireland, Italy, Latvia, Lithuania, Malta, Norway, Portugal, Spain, Slovenia and the former Yugoslav Republic of Macedonia).²

Data were collected by a common protocol devised in 2007 by the WHO Regional Office for Europe and Member States (19), which was slightly amended for COSI 2 and 3 (16,17). The protocol defines the limits within which each participating country can create a surveillance system that both matches its own national characteristics and allows comparisons with those of the other countries.

The main characteristics of the study design and sampling strategy in the COSI protocol are:³

- The surveillance system target population is primary school-age children. More specifically, participating countries can select one or more of the following four age groups: 6.0–6.9, 7.0–7.9, 8.0–8.9 or 9.0–9.9 years.
- Primary schools are the settings for enrolment. As education is compulsory in all countries in the European Region, most children can easily be reached through the education system. Moreover, primary schools are of interest because they play an important role in influencing children’s behaviour regarding nutrition and physical activity and can be settings for the promotion of healthy lifestyles.
- Given the differences among school systems, age at starting school, number of children held back and level of pupils’ advancement in countries, it appeared at first that it would be difficult to find a uniform – and equally applicable – approach to the selection of children. It was therefore suggested that age be the first inclusion criterion. If all children in the targeted age group are in the same grade, only that grade should be included. If the targeted age group is spread across grades, however, all grades in which the majority are children in the selected age group should participate.
- COSI has a semi-longitudinal design repeated at defined intervals. For each data collection round, a new cross-sectional sample of children of the same age group is selected. Countries may opt for a prospective cohort design, in which the initial sample of children is followed up for one round. Countries may also choose to include all children in the target age group, instead of selecting a sample.
- Countries that participated in a previous round of data collection can choose to select a new sample of schools or follow a sentinel site approach, i.e. involve the same schools that were selected previously.
- COSI should be integrated into existing surveillance systems if possible, to avoid duplication or an additional burden for countries.

Table 1 provides an overview of the main characteristics of the study design in each country that participated in COSI round 3. Children were enrolled at primary schools in all countries except Czechia, where they were selected in paediatric clinics because COSI had been integrated into the mandatory health checks performed by paediatricians. Belgium and Slovenia targeted all four age groups, while most countries selected 7-year-old children (Bulgaria, Czechia, Greece, Ireland, Latvia, Lithuania, Malta, Portugal, Republic of Moldova, Spain and Turkey). Albania, Italy, Norway, Romania and San Marino targeted only older children. The former Yugoslav Republic of Macedonia is the only country that studied only 6-year-old children. Belgium included the entire population of interest (all children in first and third grade primary-school classes), as did Malta and San Marino (all children in third-grade primary-school classes). Other countries selected a nationally representative sample. Of the 14 countries that had participated in the first or second round of COSI data collection, six adopted a sentinel approach (Bulgaria, Ireland, Lithuania, Norway, Portugal and the former Yugoslav Republic of Macedonia). COSI was integrated into routinely monitored measurements in Belgium, Czechia, Malta and Slovenia but was newly established in the other countries.

² Only Flanders participated in COSI round 3, while the data collected in all the other countries are nationally representative.

³ More details on the COSI 2012 protocol and on previous versions are provided elsewhere (15,18).

Table 1. Main characteristics of study design in each country participating in COSI round 3

Country	Targeted age groups	Inclusion of a sample or of all children in targeted grades of primary school	Participation in previous COSI rounds of data collection	Sentinel approach
Albania	8	Sample	No	–
Belgium ^a	6, 7, 8, 9	All children in target grades	Yes, in 2007/8 and 2009/10	–
Bulgaria	7	Sample	Yes, in 2007/8	Yes
Czechia	7	Sample	Yes, in 2007/8 and 2009/10	No
Greece	7, 9	Sample	Yes in 2009/10	No
Ireland	7, 9	Sample	Yes, in 2007/8 and 2009/10	Yes
Italy	8, 9	Sample	Yes, in 2007/8 and 2009/10	No
Latvia	7	Sample	Yes, in 2007/8 and 2009/10	No
Lithuania	7	Sample	Yes, in 2007/8 and 2009/10	Yes
Malta	7	All children in target grades	Yes, in 2007/8 and 2009/10	–
Republic of Moldova	7	Sample	No	–
Norway	8	Sample	Yes, in 2007/8 and 2009/10	Yes
Portugal	7	Sample	Yes, in 2007/8 and 2009/10	Yes
San Marino	8, 9	All children in target grades	No	–
Romania	8	Sample	No	–
Spain	7, 8	Sample	Yes, in 2009/10	No
Slovenia	6, 7, 8, 9	Sample	Yes, in 2007/8 and 2009/10	No
The former Yugoslav Republic of Macedonia	6	Sample	Yes, in 2009/10	Yes
Turkey	7, 8	Sample	No	–

The setting in all countries was primary schools. –, not applicable.

^aOnly Flanders was involved in COSI round 3.

Table 2 shows the main features of the sampling design used in countries that did not include the whole population of targeted children. All countries used cluster sampling; 10 of 16 used a two-stage sampling design, with primary schools as the primary and classes as the secondary sampling units. Norway also adopted a two-stage cluster sampling design but with counties as the primary and schools as the secondary sampling unit. Four countries implemented a simple cluster sampling design: Italy selected third-grade classes, Greece and Latvia primary schools and Czechia paediatric clinics. Spain used provinces as the primary sampling units, schools as the secondary sampling units and classes as tertiary sampling units. Stratification was applied in 10 of 16 countries. Although they used different variables, many considered a geographical or administrative division of the national territory and the degree of urbanization of the child's place of residence or school location.

All primary schools in Malta and San Marino participated in COSI round 3. The number of schools in Belgium that participated in COSI round 3 was not available.

Table 2. Main features of sampling design used in COSI round 3, by country

Country	Cluster sampling design	Sampling unit definition	Stratification	Sampling units approached and proportion that participated (%)	
				PSU/SU	SSU
Albania	Two-stage stratified	PSU: primary schools SSU: 2nd and 3rd grades	By degree of urbanization	104 (100.0)	208 (100.0)
Bulgaria	Two-stage	PSU: primary schools SSU: 1st grade	No	185 (100.0)	191 (100.0)
Czechia	Stratified	SU: paediatric clinics	By region and degree of urbanization	91 (100.0)	–
Greece	Cluster sampling	SU: primary schools (2nd and 4th grades)	No	186 (97.3)	–
Ireland	Two-stage stratified	PSU: primary schools SSU: 1st and 3rd grades	By school size	194 (82.0)	330 (81.2)
Italy	Stratified	SU: 3rd grade	By region	2 622 (100.0)	–
Latvia	Stratified	SU: primary schools (1st grade)	By degree of urbanization and language of instruction	140 (100.0)	–
Lithuania	Two-stage stratified	PSU: primary schools SSU: 1st grade	By district and degree of urbanization	122 (NA) ^a	249 (NA) ^a
Norway	Two-stage	PSU: counties SSU: primary schools (3rd grade)	No	10 (100.0)	131 (96.2)
Portugal	Two-stage	PSU: primary schools SSU: 1st and 2nd grades	No	200 (100.0)	440 (NA) ^a
Republic of Moldova	Two-stage	PSU: primary schools SSU: 1st grade	No	203 (100.0)	203 (100.0)
Romania	Two-stage stratified	PSU: primary schools SSU: 1st and 2nd grade	By county and degree of urbanization	205 (100.0)	507 (NA) ^a
Spain	Three-stage stratified	PSU: provinces SSU: schools TSU: classes (2nd and 3rd grades)	By region and size of municipal population	130 (53.8)	250 (NA)
Slovenia	Two-stage	PSU: primary schools SSU: 1st, 2nd and 3rd grades	No	232 (100.0)	1333 (100.0)
The former Yugoslav Republic of Macedonia	Two-stage stratified	PSU: primary schools SSU: 1st grade	By regional, centres of public health and degree of urbanization	113 (96.5)	237 (NA) ^a
Turkey	Two-stage stratified	PSU: primary schools SSU: 2nd grade	By region	216 (100.0)	216 (100.0)

–, not applicable; NA, not available; PSU, primary sampling unit; SSUs, secondary sampling unit; TSUs, tertiary sampling unit; SU, sampling unit.

^a Number of sampling units that participated in the survey; the number of units approached was not available.

Table 3 shows, for each country, the number of children who were invited to participate in COSI round 3, the proportion who took part in measurements and whose parents completed the family form and the numbers of measured children in the targeted age groups.

According to the COSI protocol, the minimum final effective sample size⁴ should be 2800 children per target age group (1400 girls and 1400 boys). In order to compensate for the eventual loss of children who do not participate in the study or are not in the target age group, the overall number of children to be sampled should be higher. The sample size should be considerably increased in countries that choose to make estimates for subnational levels.

In COSI round 3, the number of children selected differed by country because of differences in study design and sampling strategy. The level of participation in the study was high: at least 90% of selected children took part in five countries (Albania, Italy, Malta, San Marino and Slovenia) and 80–87% in Bulgaria, Latvia, Norway, Portugal, Republic of Moldova and Turkey. Ireland had the lowest level of participation (59%).⁵

The effective sample size varied widely among countries that used a sampling approach, ranging from around 1000 measured children per target age group in Ireland to more than 15 000 in Italy. Moreover, the sample size was much lower than that recommended in the COSI protocol in Czechia, Ireland and Spain (1000–1800 measured children per age group instead of 2800). In Greece, Lithuania, Portugal, Republic of Moldova, the former Yugoslav Republic of Macedonia and Turkey, 2100–2700 children were measured per age group; in Bulgaria and Latvia more than 3000 children; in Romania more than 4000; and in Slovenia more than 20 000 children.

Eleven countries used the family form in the 2012–2013 data collection:⁶ Bulgaria, Czechia, Ireland, Italy, Lithuania, Malta, Portugal, Republic of Moldova, San Marino, Spain and Turkey. Parents' participation in the surveillance was particularly high in Italy and San Marino, where more than 95% of the parents of the selected children filled out and returned the family form. Bulgaria and Turkey also registered a good level of participation (around 85%), followed by the Republic of Moldova, Portugal and Lithuania (79%, 76% and 70%, respectively). Parents' participation was nearly 70% in Lithuania and Malta, while, in Ireland, the family form was filled in for only one in two children (50%).

Table 3. Numbers of children who were invited to participate in COSI round 3, proportions who took part in measurements (%) and whose parents completed the family form and numbers of measured children in the targeted age groups, by country

Country	No. of children invited to participate			No. of measured children with complete information and were in the target age groups			
	Total	Proportion who participated in measurements (%)	Proportion whose family form was filled in (%)	6-year-olds	7-year-olds	8-year-olds	9-year-olds
Albania	6 117	95.0	–	–	–	3 312	–
Belgium ^a	138 322 ^b	NA	–	56 245	15 208	48 470	18 395
Bulgaria	3 923	85.5	85.5	–	3 348	–	–
Czechia	2 650	95.0	91.6	–	1 457	–	–
Greece	11 912	78.1	–	–	2 728	–	2 642
Ireland	6 270	58.6	50.3	–	1 012	–	1 129
Italy	5 1145	90.9	95.2	–	–	29 045	16 502
Latvia	5 082	85.8	–	–	3 481	–	–
Lithuania	5 392	71.2	69.9	–	2 594	–	–
Malta	3 832	91.0	68.6	–	2 064	–	–
Norway	4 078	86.1	–	–	–	2 873	–

⁴ The minimal effective sample size is the number of children in the targeted age group who should be measured during data collection.

⁵ Data on children's participation was not available for Belgium, Czechia, Romania, Spain and the former Yugoslav Republic of Macedonia.

⁶ More details on the COSI family form are provided in section 2.2 and Annex 2.

Table 3. contd

Country	No. of children invited to participate			No. of measured children with complete information and were in the target age groups			
	Total	Proportion who participated in measurements (%)	Proportion whose family form was filled in (%)	6-year-olds	7-year-olds	8-year-olds	9-year-olds
Portugal	7 430	79.9	76.4	–	2 649	–	–
Republic of Moldova	4 426	87.1	78.9	–	2 575	–	–
Romania	4 348 ^b	NA	NA	–	–	4 278	–
San Marino	305	91.8	97.4	–	–	160	118
Spain	3 426 ^b	NA	NA	–	1 820	1 606	–
Slovenia	24 958	95.8	–	5 523	7 861	7 829	2 634
The former Yugoslav Republic of Macedonia	3 176 ^b	NA	NA	2 210	–	–	–
Turkey	5 739	86.4	87.4	–	2 613	2 345	–

–, not applicable; NA, not available; PSU, primary sampling unit; SSU, secondary sampling unit; TSU, tertiary sampling unit; SU, sampling unit.

^a Only Flanders was involved in COSI round 3.

^b Number of children who participated in the survey; the number of children approached is not available.

2.2 Data collection forms and procedures

In accordance with the agreed common protocol of the WHO Regional Office for Europe and Member States (16) for the third round, standardized data collection procedures were followed and adapted by each country to suit its local circumstances.

2.2.1 Organization

Each country was responsible for collecting and analysing its data, and a country coordination team was established. This usually consisted of:

- a principal investigator responsible for overall coordination;
- supervisor(s) responsible for data collection in each sampled school;
- a data manager responsible for overall data management;
- examiners responsible for administration of the examiner's record form and taking anthropometrics;
- data clerks responsible for entering the data into electronic data files; and
- school personnel responsible for the completing the school record forms and other relevant tasks.

In each country, these teams met regularly during the surveillance initiative to review progress, ensure uniform data collection and discuss any issues that arose.

2.2.2 Period

In most countries, data were collected in the 2012–2013 school year. Countries were requested to make measurements of all sampled children over as short a time as possible, preferably within 4 weeks and no longer than 10 weeks, avoiding data collection during the first 2 weeks of a school term or immediately after a major holiday. Table 1 shows the period of data collection in each country.

2.2.3 Examiners and training

In most countries, surveillance was conducted in the sampled schools in collaboration with teachers and other school personnel. Depending on the local arrangements, circumstances and budget, countries appointed examiners to collect the core data. The examiners were:

- school nurses, physicians or paediatricians linked to the school health system;
- other suitable school personnel, such as physical education teachers during physical education classes;
- health professionals who were taking measurements during routine comprehensive health screening or specifically for the surveillance initiative; or
- other examiners, such as university students in the fields of health, nutrition and sports.

For the third round data collection, examiners were trained in making standardized measurements as accurately and precisely as possible, according to the prescribed measurement techniques and instructions for examiners included in the protocol (16).

Training included a review of the background and objectives of the surveillance system, standardized use of the forms, making measurements as described in the protocol, supporting children who are anxious, calibrating instruments, recording measurements immediately after reading them and writing legibly to reduce mistakes during data entry. Strict adherence to the measurement techniques and recording procedures was emphasized. Attention was also paid to confidentiality, the prevention of stigmatization or bullying of vulnerable children and answering questions from children, school staff and parents.

2.2.4 Ethical considerations

The protocol (16) was in accordance with the International Ethical Guidelines for Biomedical Research Involving Human Subjects (20) and was approved by ethical committees in each country.

All study procedures were fully explained to parents, in a letter or at a school information meeting, and they gave informed consent for the measurements and data treatment (written in the local language) before the child was enrolled. In accordance with the local legal requirements, countries could choose passive or active informed consent (see Table 4). Although parents have the right to know their child's body height and body weight, these were communicated only upon request.

The children's assent was always obtained before the measurements were made. Children were never told the measurements of other children. The confidentiality of all collected and archived data was assured. The children's names and, in some cases, the entire date of birth were not included in the electronic data files sent by the countries to the WHO Regional Office.

2.2.5 Data collection forms

Four data collection forms (see Annex 2) are included in the COSI manual of data collection procedures (21):

- a mandatory examiner's record form,
- a mandatory school record form,
- a voluntary school record form and
- a voluntary family record form.

The forms include closed questions with pre-coded answers (when applicable). The child's record form and the school record form were accompanied by detailed instructions. The voluntary school record form was used if the country decided to collect data on the schools. Table 1 shows use of each record form by country.

As the original data collection forms and instructions for their administration were prepared in English, countries were advised to have them translated into their local languages by a professional translator. The forms were then translated back into English and carefully checked for discrepancies with the original English version.

Mandatory examiner's record form

Variables

The mandatory variables collected on the examiner's record form are: date of birth (or age in months), sex, place of residence, school grade, date and time of measurement, clothes worn when measured, school address, body weight and body height.

Administration

Preparation of a private room with specific requirements, organization and preparation of children for the study, the anthropometric instruments and calibration and maintenance procedures, measurement techniques and administration of the forms are described in the manual of data collection procedures (21). Examiners are advised to follow the guidance strictly.

Anthropometric measurements

The mandatory anthropometric measures are body weight and height. These two measures are often used as they are easy to measure (16) and provide anthropometric indices such as the BMI, which is a well-recognized indicator of whether a child is underweight, of normal weight, at risk for overweight, overweight or obese (22).

Examiners are advised not to calculate the BMI at the point of measurement, because it requires time and special tools. It is recommended that waist and hip circumferences be measured to characterize a population in terms of abdominal fat distribution, independently of total fat (23). Of the 19 countries, seven collected additional data on waist circumference and four on hip circumference.

Children's weight and height are measured in a private room at school by trained examiners, preferably in the morning before lunch, by standardized procedures (21). Countries are required to use the same anthropometric instruments everywhere and to calibrate them, preferably every day when measurements are being made. The instruments must be highly accurate and precise.

Body weight is measured on portable electronic (digital) scales calibrated to 0.1 kg (100 g) and measuring up to 150 kg. These are easy to use and transport and reduce observer measurement error, as the weight is displayed electronically. Body weight is measured and recorded in kilograms to the nearest 100 g (0.1 kg).

Height is measured on a height board mounted at a right angle between a level floor and a straight, vertical surface (if possible with a digital counter). The height board should be made of smooth, moisture-resistant (varnished or polished) wood, and the horizontal and vertical pieces should be firmly joined at right angles, with a movable piece as the head-board. Height is measured in centimetres and the reading taken to the last completed millimetre (0.1 cm).

After assent, children should be measured wearing normal, light, indoor clothing. If they are not wearing light indoor clothing, the clothes worn should be recorded. Examiners are advised to communicate with the child in a sensitive way and to explain the measurement procedures.

Mandatory school record form

The school record form was completed by the school principal (head teacher), by the teachers in the sampled classes or by someone else who could document and report the variables required. The variables were: the location of the school, the number of children registered and measured (examined) per sampled class, those whose parents refused to allow their child to be measured and children who were absent on the measuring day. Furthermore, a few school (environmental) characteristics were included, such as the frequency of physical education lessons, the availability of school

playgrounds, the possibility of purchasing a number of listed food items and beverages on the school premises and current organized school initiatives to promote a healthy lifestyle (healthy eating, physical activity).

It was strongly recommended that the form be given to the relevant school representative on the day of the measurements and that it be completed in the presence of the examiner.

Most of the countries (17/19) provided data on the mandatory school form; only Belgium and Spain did not use the form.

Voluntary school record form

Of the 19 participating countries, 13 collected additional data on the voluntary school record form, which contained optional questions about the school environment on, for example, the availability of safe routes to school, transport to school, the school curriculum, school meals, vending machines and the availability of fruit, vegetable or milk schemes. Each country could decide to answer some or all the questions on this form, and the replies could be appended to the mandatory school form.

School principals or teachers of the classes sampled were asked to complete the form. Again, it was strongly recommended that the form be completed in the presence of the examiner.

Voluntary family record

The family form was completed by 11 countries. Submission of the form was voluntary, and all or only some of the items could be completed. The forms were filled in by parents or caregivers, and countries had to attach the letter sent to the parents to inform them about the initiative and request their consent.

The form contains data on simple indicators of the children's dietary intake and physical activity or inactivity patterns, the family's socioeconomic characteristics and comorbid conditions associated with obesity.

Table 4. Data collection period, informed consent and use of record forms in COSI round 3, by country

Country	Data collection period	Informed consent	Examiner's record form	Mandatory school record form	Voluntary school record form	Family record form
Albania	February–March 2013	Active	✓	✓	✓	
Belgium	September 2012–July 2013	NA	✓			
Bulgaria	April–May 2013	Passive	✓	✓	✓	✓
Czechia	January–June 2013	Active	✓	✓	✓	✓
Greece	January–June 2013	Active	✓	✓	✓	
Ireland	November 2012–February 2013	Active	✓	✓		✓
Italy	April–June 2012; October–November 2012	Passive	✓	✓	✓	✓
Latvia	October–December 2012	Passive	✓	✓	✓	
Lithuania	March–May 2013	Active	✓	✓	✓	✓
Malta	February–June 2013	Passive	✓	✓	✓	✓
Norway	September–December 2012	Active	✓	✓		
Portugal	May–June 2013; October–November 2013	Active	✓	✓	✓	✓

Table 4. contd

Country	Data collection period	Informed consent	Examiner's record form	Mandatory school record form	Voluntary school record form	Family record form
Republic of Moldova	May 2013	Active	✓	✓	✓	✓
Romania	April–May 2013	Active	✓	✓		
San Marino	May 2012	Passive	✓	✓	✓	✓
Spain	October–December 2013	Active	✓			✓
Slovenia	April 2013	Active	✓	✓	✓	
The former Yugoslav Republic of Macedonia	March–June 2013	Passive	✓	✓		
Turkey	May–June 2013	Active	✓	✓	✓	✓

NA, not applicable

3. Overweight and obesity among children aged 6–9 years

3.1 Data elaboration

The cut-offs recommended by WHO in 2007 for data on school-aged children and adolescents were used to compute BMI-for-age Z-scores and to estimate the prevalence of overweight and obesity (24,25). BMI was calculated from the formula: weight (kg) divided by height squared (m²). Overweight and obesity were defined as a BMI-for-age value > +1 Z-score and > +2 Z-scores, respectively (24). According to WHO definitions, the estimated prevalence of overweight includes children who are obese (26). Children for which a biologically implausible (or extreme) BMI-for-age value was estimated were excluded from the analysis (values below –5 or above +5 Z-scores relative to the 2007 WHO growth reference median) (24). For comparison, prevalence calculated with the International Obesity Task Force cut-offs (27) are presented in Annex 1.

All cleaned country datasets were sent to the WHO Regional Office, where they were reviewed for inconsistencies and completeness in a standard manner and then merged for intercountry analyses. The final anthropometric dataset included measurements for children who had given informed consent and for whom complete information on age, sex, weight and height was available.

The prevalence of overweight and obesity among boys and girls was calculated by age group (see Table 5). Children who were not in the defined target age groups were excluded from the analysis. As sampling weights to adjust for the sampling design, oversampling and non-response were available for only a few countries, the analysis was performed unweighted.⁷

Table 5. Numbers of children included in the analysis of overweight and obesity in COSI round 3, by country, age group and sex

Country	Age group	Boys (N)	Girls (N)	Total (N)
Albania	8-year-olds	1 706	1 606	3 312
Belgium	6-year-olds	28 372	27 810	56 182
	7-year-olds	8 020	7 159	15 179
	8-year-olds	24 534	23 915	48 449
	9-year-olds	9 411	8 978	18 389
Bulgaria	7-year-olds	1 671	1 676	3 347
Czechia	7-year-olds	759	693	1 452
Greece	7-year-olds	1 346	1 375	2 721
	9-year-olds	1 320	1 320	2 640
Ireland	7-year-olds	508	504	1 012
	9-year-olds	579	550	1 129
Italy	8-year-olds	14 502	14 500	29 002
	9-year-olds	8 590	7 902	16 492
Latvia	7-year-olds	1 803	1 677	3 480
Lithuania	7-year-olds	1 273	1 311	2 584
Malta	7-year-olds	1 014	1 037	2 051

⁷ For Greece, values were calculated by applying a weighting factor in order to correct for the unbalanced distribution of the sample by geographical area.

Table 5. contd

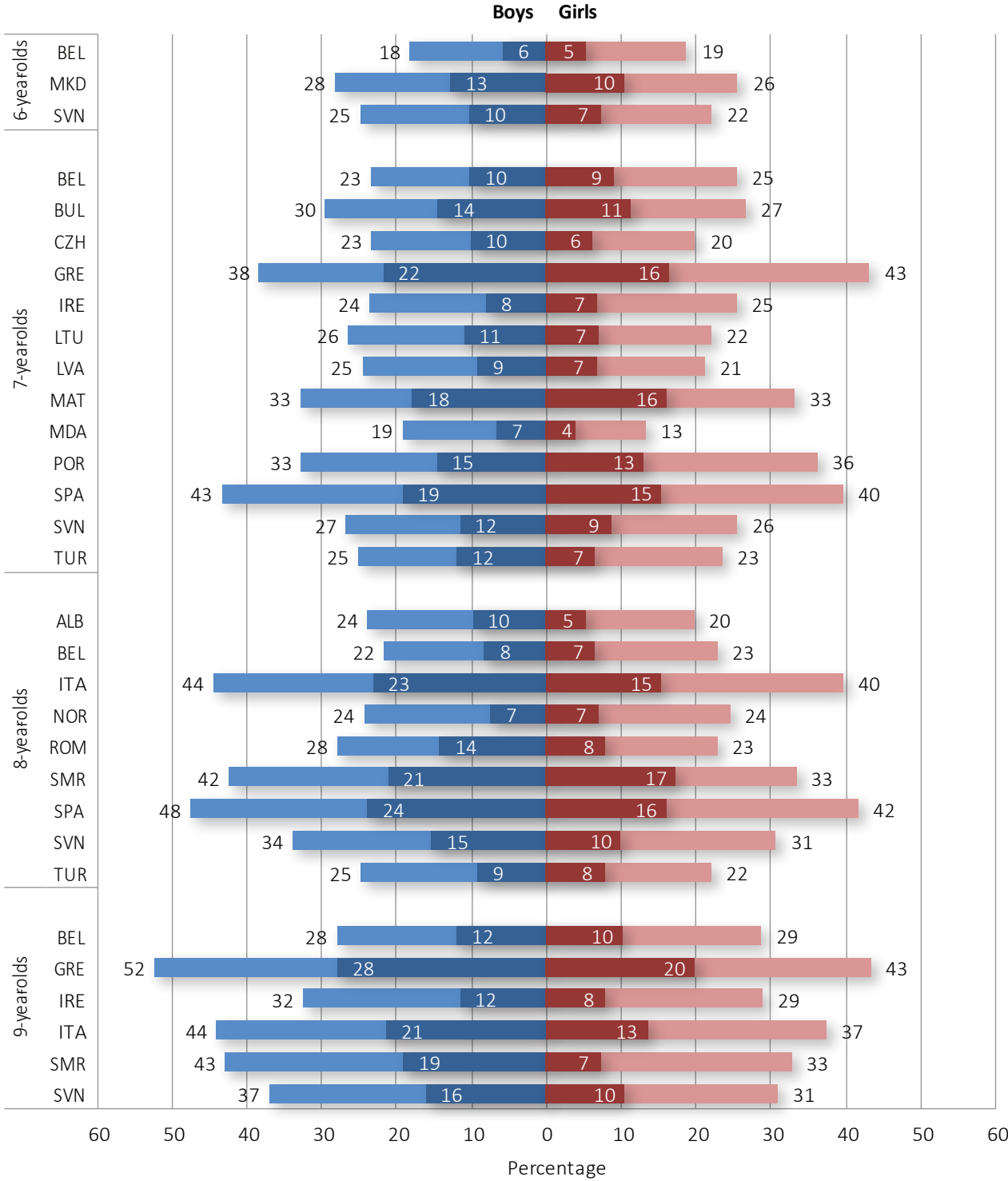
Country	Age group	Boys (N)	Girls (N)	Total (N)
Norway	8-year-olds	1 492	1 381	2 873
Portugal	7-year-olds	1 331	1 313	2 644
Republic of Moldova	7-year-olds	1 309	1 264	2 573
Romania	8-year-olds	2 134	2 140	4 274
San Marino	8-year-olds	85	75	160
	9-year-olds	63	55	118
Slovenia	6-year-olds	2 769	2 735	5 504
	7-year-olds	4 015	3 823	7 838
	8-year-olds	3 975	3 834	7 809
	9-year-olds	1 370	1 261	2 631
Spain	7-year-olds	870	944	1 814
	8-year-olds	804	800	1 604
The former Yugoslav Republic of Macedonia	6-year-olds	1 125	1 070	2 195
Turkey	7-year-olds	1 266	1 341	2 607
	8-year-olds	1 212	1 132	2 344

3.2 Prevalence by age group, sex and country

The prevalence of overweight (including obesity) and obesity according to the WHO definition among boys and girls aged 6–9 years in the 19 countries participating in COSI round 3 is presented in Fig. 1 in the Executive summary. The prevalence of overweight ranged from 18% to 52% in boys and from 13% to 43% in girls and that of obesity from 6% to 28% among boys and from 4% to 20% among girls.

The data suggest the presence of an increasing north–south gradient, with the highest prevalence of overweight and obesity in southern European countries. In the countries in which data were collected on more than one age group, there was a tendency for an increase in the prevalence of overweight and obesity by age. According to WHO definitions, more boys than girls were overweight and obese in most age groups, particularly at older ages, and in most countries.

Fig. 1. Prevalence of overweight (including obesity) and obesity (WHO definition) in boys and girls aged 6-9 years, by age and country, COSI round 3 (2012/2013)



■ Girls obese ■ Boys obese ■ Girls overweight ■ Boys overweight

4. Eating habits and physical activity among children aged 6–9 years

Eating habits and physical activity patterns are closely linked to the energy imbalance that results in overweight and obese (2). COSI collects information on some eating and physical activity behaviour to provide the information necessary for policy-makers to design, implement and evaluate the effectiveness of policies and strategies to improve diets and increase physical activity.

The greater availability and affordability of energy-dense, nutrient-poor foods and drinks has contributed to the obesogenic environment in which many children now grow up, which encourages weight gain (2). Eating breakfast regularly is associated with a better-quality diet and a lower risk of becoming overweight or obese (28-31). Daily consumption of fruit and vegetables is an important component of a healthy diet, while consumption of foods such as savoury or sweet snacks, fast foods, processed meat products and sugary soft drinks, which tend to be high in saturated fats, free sugars or salt, should be limited (32).

The benefits of physical activity, such as active play, walking, cycling and participation in sports, for children's physical and mental health as well as for their academic achievement are well documented (33-35): higher levels of habitual physical activity are associated with less overweight in children (36). WHO recommends that children have at least 60 min of moderate-to-vigorous physical activity every day (33), but only a small proportion of children currently meet this recommendation (37,38). Active transport – walking or cycling – involves more physical activity and cardiovascular fitness (39), but in many countries the proportion of children who walk or cycle to and from school has been decreasing (37).

Concern has been raised that the time children spend watching television or using electronic media (screen time) is displacing unstructured play and resulting in more sedentary time and less physical activity (37,40,41). This has prompted some national authorities to issue guidance for parents to limit their children's screen or sedentary time (37,42-44). Short sleep duration is another energy-related behaviour that is independently associated with weight gain and adiposity in childhood (45,46).

4.1 Data elaboration

As mentioned in section 2.2, COSI collects limited information on eating habits and the physical activity and inactivity of children from the questionnaire filled in by parents. Table 6 lists the items included in the analysis and the availability of information by country.

This section presents the frequency of eating breakfast and some food and beverages items generally accepted as healthy or as having high contents of salt, sugar, fat or trans fats and therefore unhealthy. The following eating habits were analysed:

- eating breakfast every day;
- eating fresh fruit daily;
- eating vegetables daily;
- eating foods like potato crisps, corn crisps, popcorn or peanuts on more than 3 days a week;
- eating foods like pizza, French fries (chips), hamburgers, sausages or meat pies on more than 3 days a week;
- eating sweets or chocolate on more than 3 days a week;
- eating foods like biscuits, cakes, doughnuts or pies on more than 3 days a week;
- drinking soft drinks containing free sugar on more than 3 days a week; and

- drinking 100% fruit juice on more than 3 days a week.

The following aspects of physical activity and sedentary behaviour were investigated:

- travelling to or from school on foot or by bicycle;
- going to a sports or dancing club on at least 2 days a week;
- playing outside for at least 1 h a day;
- watching television or videos or playing computer games for at least 2 h a day; and
- sleeping at least 9 h a day.

Table 6. Data on children’s lifestyle and categorization of answer options for behavioural analyses

Question	Answer options	Categorization of answer options	Countries that provided information
<i>Breakfast frequency</i>			
“Over a typical or usual week, how often does your child have breakfast?”	“Every day”; “most days (4–6 days)”; “some days (1–3 days)”; “never”	Every day=“every day” < 7 days/week=“most days (4–6 days)”; “some days (1–3 days)” or “never”	Bulgaria, Czechia, Ireland, Lithuania, Malta, Portugal, Republic of Moldova, Spain and Turkey
<i>Food and beverage consumption frequency</i>			
“Over a typical or usual week, how often does your child eat or drink the following kinds of foods or beverages: (i) fresh fruit; (ii) vegetables (excluding potatoes); (iii) foods like potato crisps, corn crisps, popcorn or peanuts; (iv) foods like pizza, French fries, hamburgers, sausages or meat pies; (v) foods like sweets or chocolate; (vi) foods like biscuits, cakes, doughnuts or pies; (vii) soft drinks containing sugar; (viii) 100% fruit juice”?	“Every day”; “most days (4–6 days)”; “some days (1–3 days)”; “never”	Food items (i) to (ii):	Bulgaria, Czechia, Ireland, Italy (items (i) and (ii) only), Lithuania, Republic of Moldova, San Marino (only items (i) and (ii)), Spain and Turkey
		Every day=“every day”	
		< 7 days/week=“most days (4–6 days)”; “some days (1–3 days)” or “never”.	
		Food items (iii) to (viii):	
		> 3 days/week=“every day” or “most days (4–6 days)”	
		≤ 3 days/week=“some days (1–3 days)” or “never”	

Table 6. contd

Question	Answer options	Categorization of answer options	Countries that provided information
<i>Physical activity</i>			
1.1.2 “How does your child usually get to and from school? Please tick one box for “Going to school” and one box for “Coming from school””	“S/he usually takes the school bus”; “s/he usually goes by public transport”; “s/he is usually brought by car”; “s/he usually rides a bicycle”; “s/he usually walks”; “other”	Going to or from school on foot or by bicycle = “s/he usually rides a bicycle” or “s/he usually walks” (on at least one route) Going to or from school not on foot or by bicycle=“s/he usually takes the school bus”, “s/he usually goes by public transport”, “s/he is usually brought by car” or “other” (on both routes)	Bulgaria, Czechia, Ireland, Lithuania, Malta, Portugal, Republic of Moldova, Spain and Turkey
“Is your child a member of one or more sports or dancing clubs (e.g. football, running, hockey, swimming, tennis, basketball, gymnastics, ballet, fitness, ballroom dancing, etc.)?” “Over a typical or usual week, on how many days does your child go to this/these sports or dancing club(s)?”	“Yes”; “No” “0 days a week”; “1 day a week”; “2 days a week”; “3 days a week”; “4 days a week”; “5 days a week”; “6 days a week”; “7 days a week”	≥ 2 days/week=“2 days a week”, “3 days a week”, “4 days a week”, “5 days a week”, “6 days a week” or “7 days a week” < 2 days/week=“0 days a week”, “1 day a week” or “not a member of one or more sports or dancing club(s)”	Bulgaria, Czechia, Ireland, Lithuania, Malta, Portugal, Republic of Moldova, Spain and Turkey
“In his/her free time, about how many hours a day does your child usually play outside, at home or somewhere else? Please tick one box for weekdays and one box for weekends.”	“Never”; “less than 1 h per day”; “about 1 h per day”; “about 2 h per day”; “about ≥ 3 h per day”	≥ 1 h/day ^a < 1 h/day ^a	Bulgaria, Czechia, Ireland, Lithuania, Portugal, Republic of Moldova, Spain and Turkey
<i>Screen time</i>			
1.1.4 “In his/her free time, about how many hours per day does your child usually spend watching television (including videos), at home or somewhere else? Please tick one box for weekdays and one box for weekends.”	“Never”; “less than 1 h per day”; “about 1 h per day”; “about 2 h per day”; “about ≥ 3 h per day”	< 2 h/day ^b ≥ 2 h/day ^b	Bulgaria, Czechia, Ireland, Italy, Lithuania, Malta, Portugal, Republic of Moldova, San Marino, Spain and Turkey

Table 6. contd

Question	Answer options	Categorization of answer options	Countries that provided information
“In his/her free time, about how many hours per day does your child usually spend using a computer for playing games (other than homework), at home or somewhere else? Please tick one box for weekdays and one box for weekends.”	“Never”; “less than 1 h per day”; “about 1 hour per day”; “about 2 h per day”; “about ≥ 3 h per day”	< 2 h/day ^b	Bulgaria, Czechia, Ireland, Italy, Lithuania, Malta, Portugal, Republic of Moldova, San Marino, Spain and Turkey
		≥ 2 h/day ^b	
<i>Sleep duration</i>			
“How long does your child usually sleep each day?”	___ h and ___ min (both night sleep and naps)	≥ 9 h/day	Bulgaria, Czechia, Ireland, Lithuania, Portugal, Republic of Moldova, Spain and Turkey
		< 9 h/day	

^a Numerical values were assigned to the items “playing outside on a weekday” and “playing outside on a weekend day” in order to convert this item to a numerical scale (“never”=0; “< 1 h per day” =0.5; “about 1 h per day” =1; “about 2 h per day”=2; “about ≥ 3 h per day” =3). Usual outside play time per day was calculated by weighing weekday (5/7) and weekend hours (2/7) accordingly.

^b Numerical values were assigned to the items “using a computer” and “watching television” on a weekday or a weekend day in order to convert these two items to a numerical scale (“never”=0; “< 1 h per day”=0.5; “about 1 h per day”=1; “about 2 h per day” =2; “about ≥ 3 h per day” =3). Total screen time per day was calculated as the sum of the two items by weighing weekday (5/7) and weekend hours (2/7) accordingly.

The analysis included children aged 6–9 years for whom family forms had been completed (see Table 7). Sampling weights to adjust for the sampling design, oversampling and non-response were available only for a few countries, and the analysis was therefore performed unweighted.

Table 7. Children included in the analysis of eating habits and physical activity and sedentary behaviour in COSI round 3, by country, age group and sex

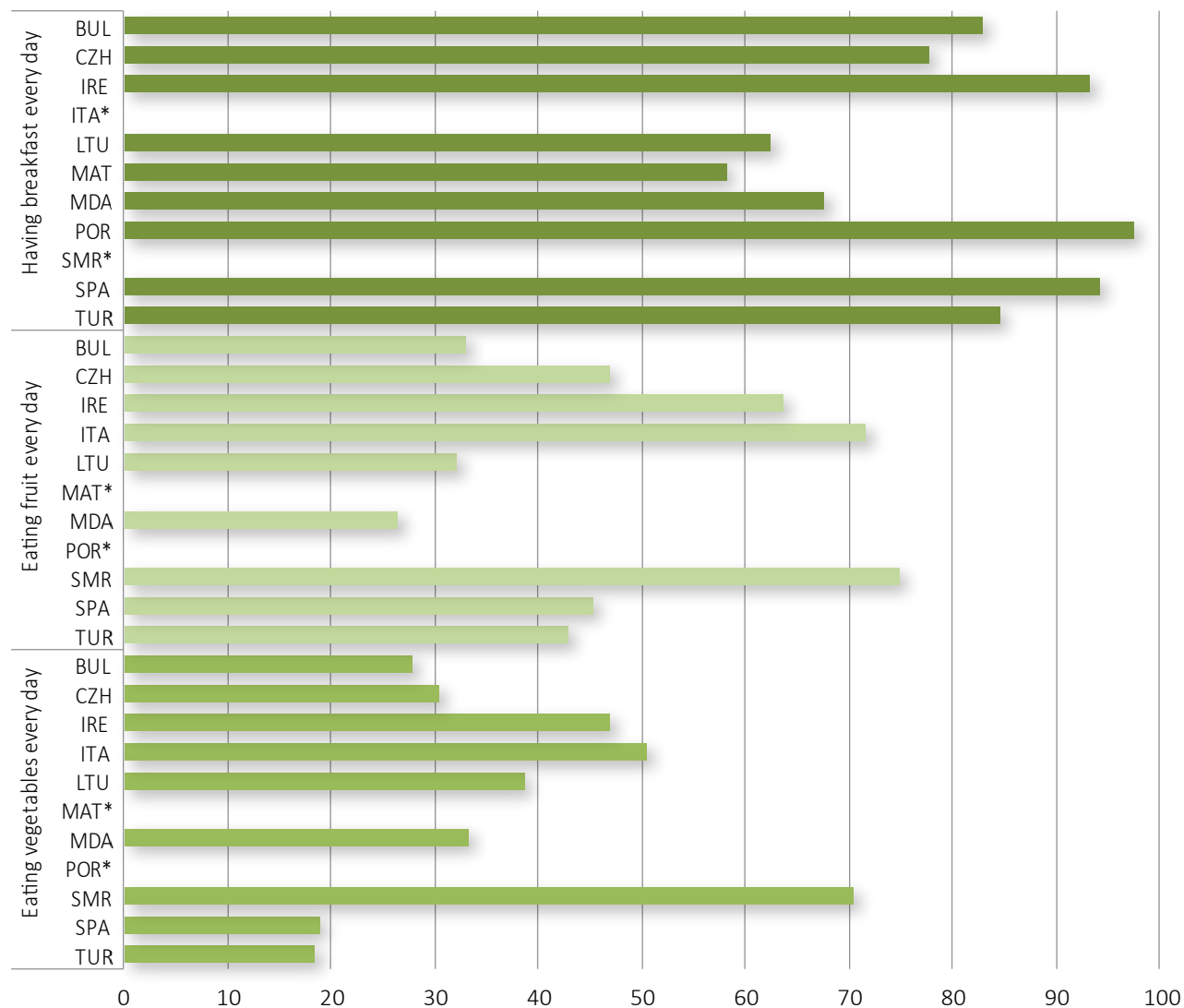
Country	No. of children included in the analysis	Boys (%)	Age (%)			
			6-year-olds	7-year-olds	8-year-olds	9-year-olds
Bulgaria	3 352	49.9	0.0	100.0	0.0	0.0
Czechia	2 400	51.5	40.0	58.6	1.4	0.0
Ireland	1 001	47.8	29.7	68.3	1.7	0.3
Italy	45 897	50.8	0.0	0.7	63.3	36.0
Lithuania	3 761	50.1	0.3	68.4	31.2	0.1
Malta	2 622	51.0	0.0	58.9	40.6	0.5
Portugal	5 583	49.8	29.5	43.7	24.7	2.1
Republic of Moldova	3 488	51.8	3.7	68.0	28.0	0.3
San Marino	278	53.2	0.0	0.0	57.5	42.5
Spain	3 363	49.2	0.0	53.0	47.0	0.0
Turkey	4 998	49.7	0.0	52.5	47.5	0.0

The number of children differs by item because of missing data.

4.2 Dietary behaviour

Breakfast, food and beverage consumption frequency was assessed from the answers to nine questions. Fig. 2 shows the proportion of children who ate breakfast, fresh fruits and vegetables every day by country. The majority of children had breakfast every day, the proportions ranging from 58% in Malta to 94% in Portugal. Fresh fruit was eaten daily by only 27% of Moldovan children; the highest proportions were observed in Italy (72%) and San Marino (75%). In San Marino, over 70% of children ate vegetables daily, while in Turkey this proportion was only 18%.

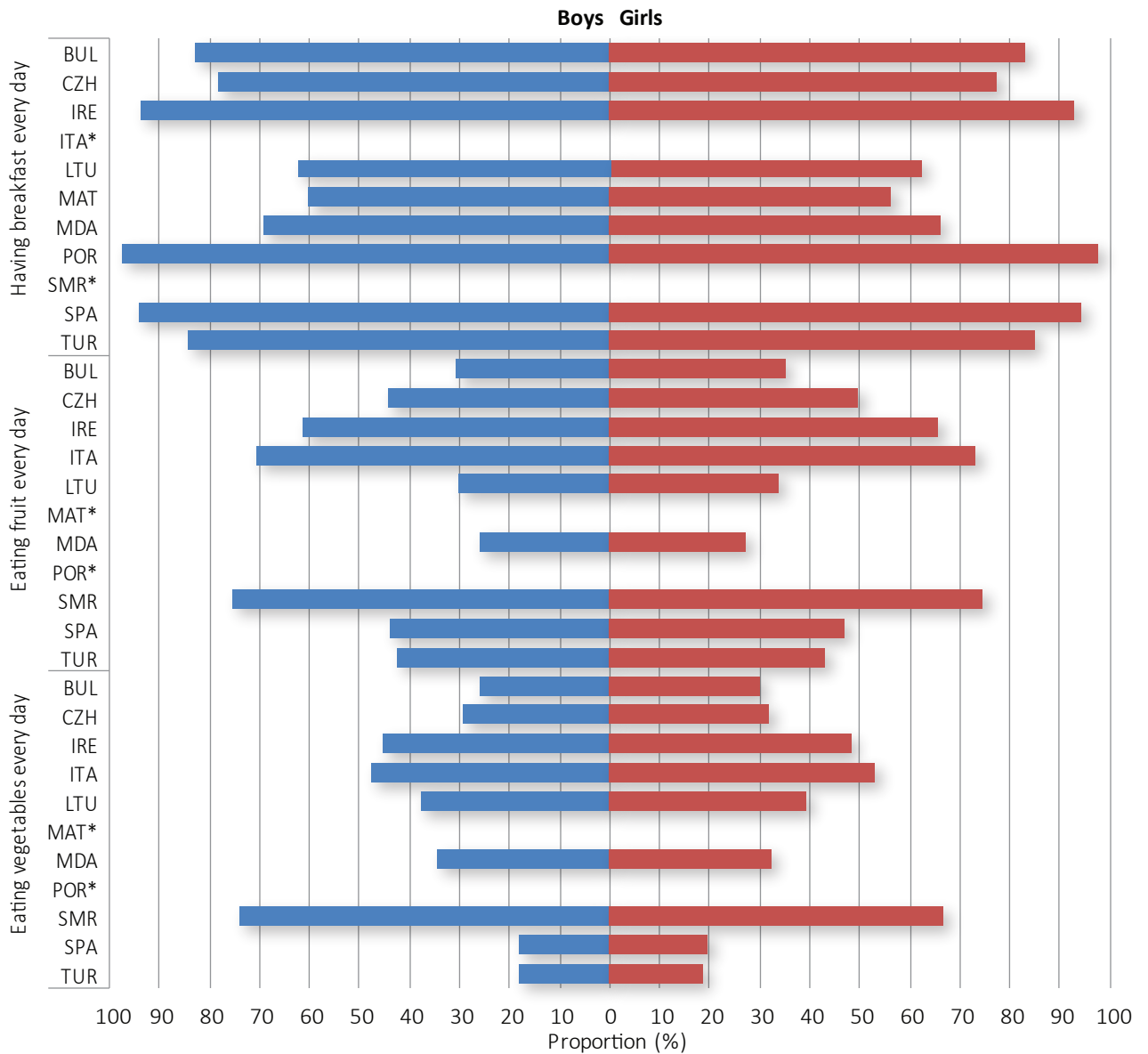
Fig. 2. Eating habits by country, COSI round 3 (2012–2013)



* Question not asked in this country.

Fig. 3 presents the eating habits of boys and girls by country. Boys and girls in each country had similar eating habits.

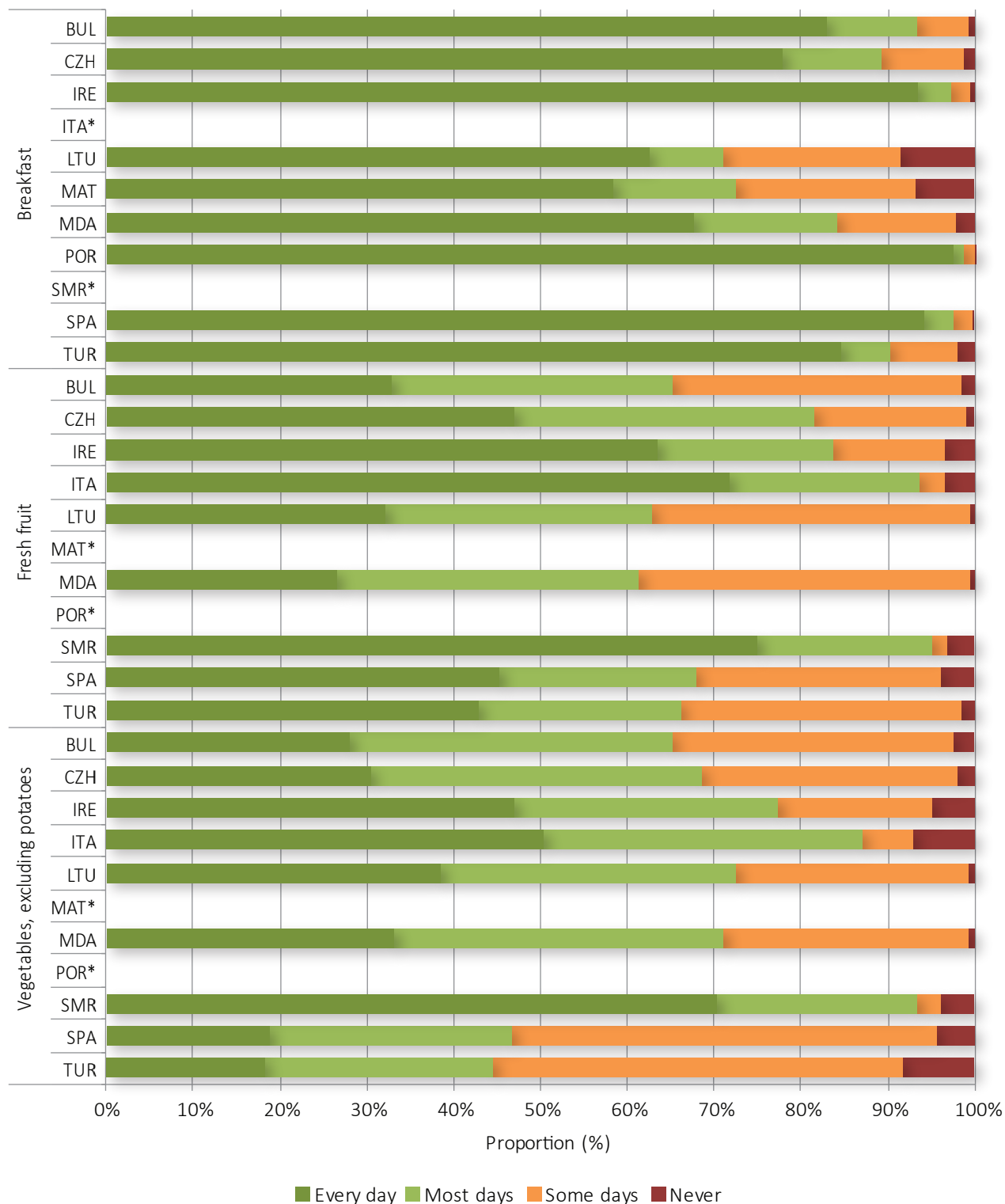
Fig. 3. Eating habits by sex and country, COSI round 3 (2012–2013)



* Question not asked in this country.

Fig. 4 shows the frequency distribution of eating fresh fruit and vegetables by country. Fresh fruits were consumed on all or most days by 63–95% of children and vegetables by 45–93%.

Fig. 4. Frequency distribution of indicators of healthy nutritional behaviour by country. COSI round 3 (2012/2013)

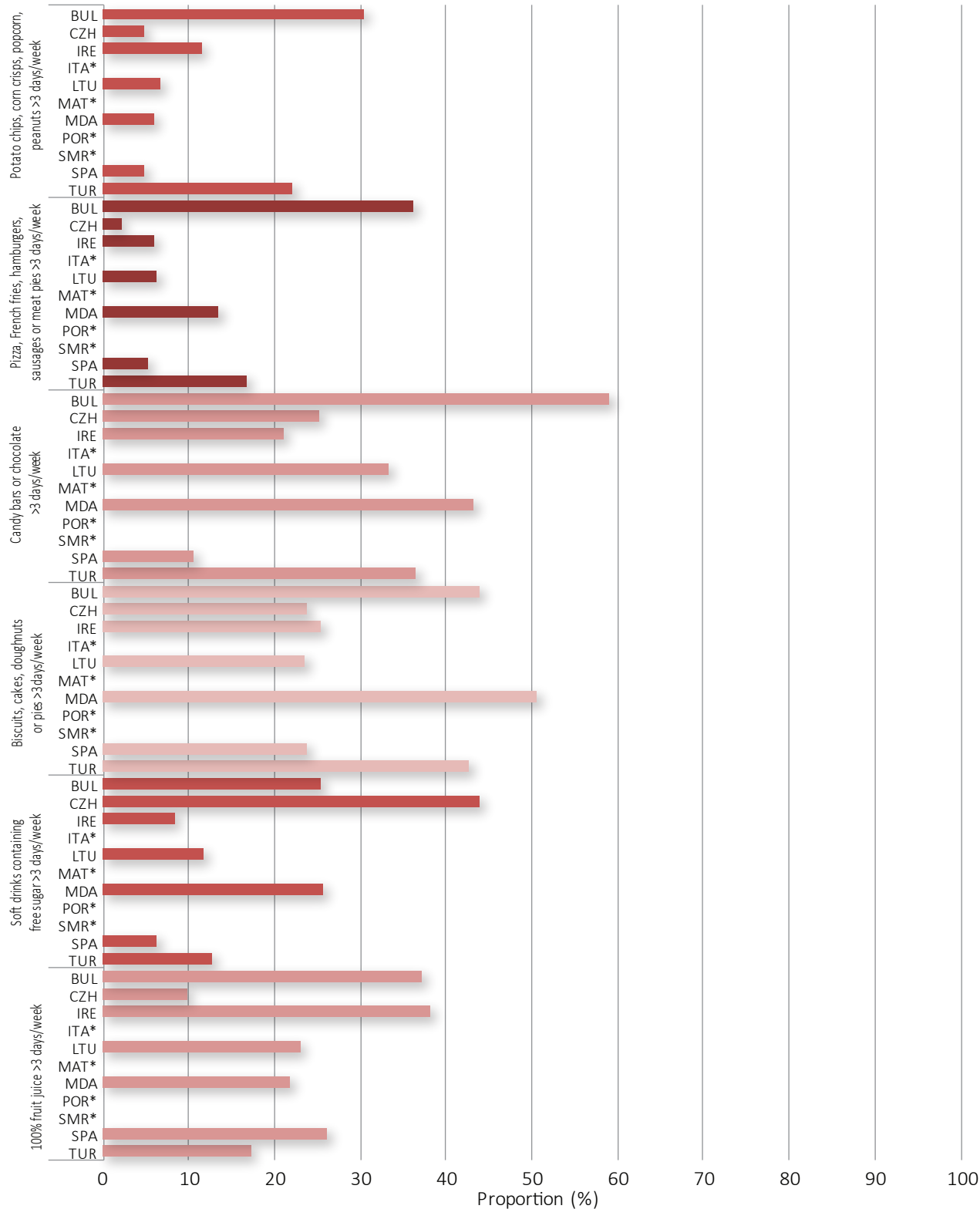


* Question not asked in this country.

Fig. 5 presents the proportions of children who ate less healthy foods like potato chips, corn crisps, popcorn and peanuts and unhealthy beverages on more than 3 days per week. The proportion ranged from < 5% in Czechia and Spain to 31% in Bulgaria. In Bulgaria also, the highest proportion of children ate foods like pizza, French fries, hamburgers, sausages, meat pies, sweets or chocolate on more than 3 days a week.

The proportion of children who drank soft drinks containing free sugar on more than 3 days per week ranged from 6% in Spain to 44% in Czechia. The proportion of children who drank 100% fruit juice on more than 3 days per week was highest in Bulgaria (37%) and Ireland (38%).

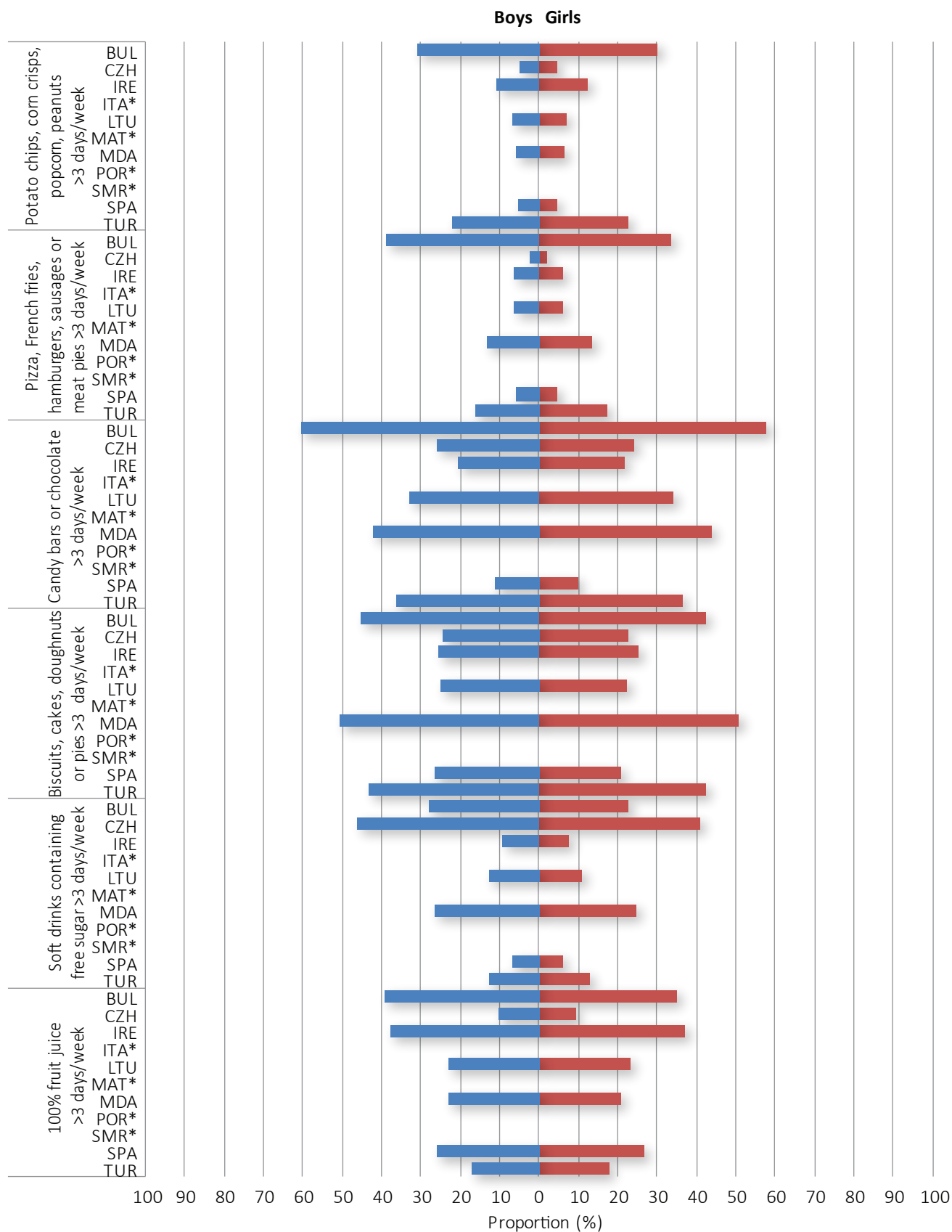
Fig. 5. Proportions of children who frequently ate selected less healthy foods, by country, COSI round 3 (2012–2013)



* Question not asked in this country.

Fig. 6 presents the consumption of selected food items for which frequent consumption is considered to be less healthy, by country. No strong sex difference in the consumption patterns was observed.

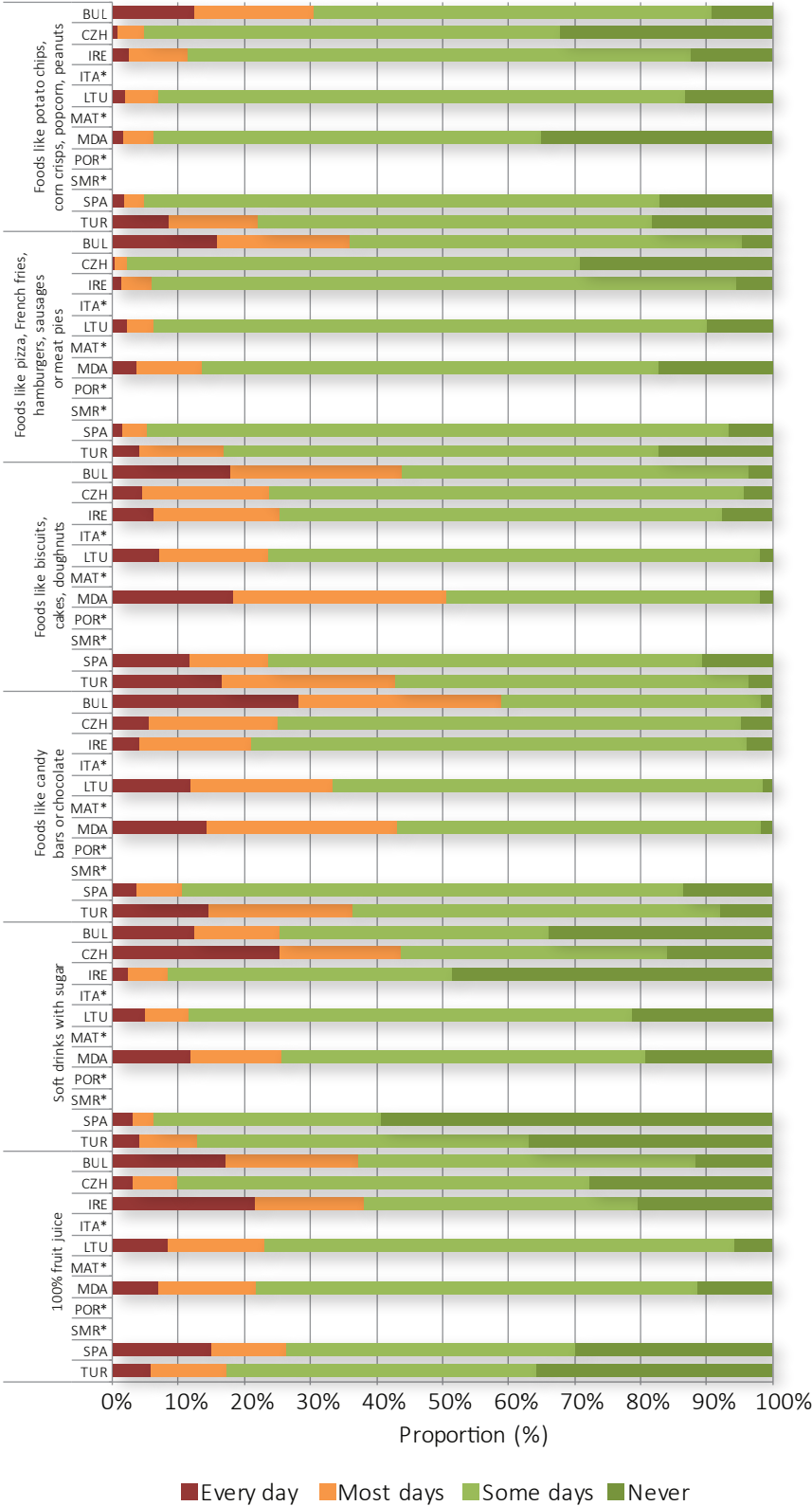
Fig. 6. Proportions of children who frequently ate selected less healthy food items, by sex and country, COSI round 3 (2012–2013)



* Question not asked in this country.

Fig. 7 shows the frequency distribution of foods and beverages that are less healthy if consumed too often, by country. Between 78% of the children (Turkey) and 95% in Spain and Czechia consumed foods like potato chips, corn crisps, popcorn or peanuts only on some days of the week or never. Foods containing high amounts of sugar were consumed daily or on most days by 11% of children in Spain and up to 59% of children in Bulgaria.

Fig. 7. Frequency distribution of consumption of selected less healthy food items by country, COSI round 3 (2012–2013)



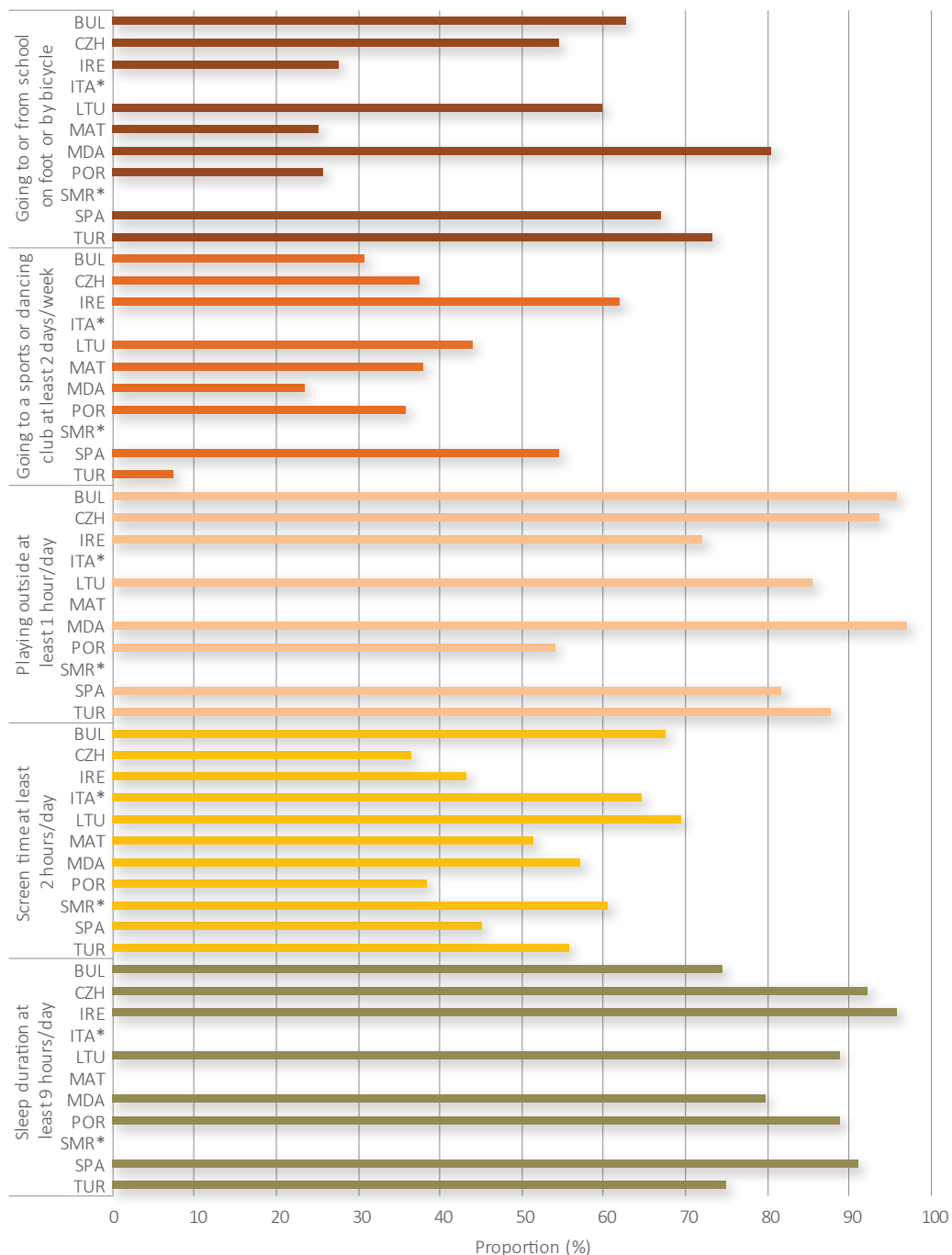
* Question not asked in this country.

4.3 Physical activity behaviour

Physical activity behaviour was assessed from the answers to up to five questions, including screen time and length of sleeping per day. Participating countries did not use all the questions, as described in section 4.1.

Fig. 8 shows indicators of physical activity, screen time and sleep duration for all children by country. It indicates considerable variation among countries. In Ireland, Malta and Portugal, less than 30% of children used active transport to and from school, while in the Republic of Moldova this proportion was over 80%. In the Republic of Moldova, only 23% of children went to a sports or dancing club at least 2 days a week, while in Turkey this proportion was 7%. In Portugal, only 54% of children played at least 1 h per day outside, while in Bulgaria, Czechia and the Republic of Moldova the proportion was > 93%. The smallest proportion of children who had ≥ 2 h of screen time per day was in Czechia (37%). In Bulgaria, Italy, Lithuania and San Marino, more than 60% of children had a daily screen time of ≥ 2 h. The proportion of children who had < 9 h of sleep per day ranged from 4% in Ireland to 26% in Bulgaria.

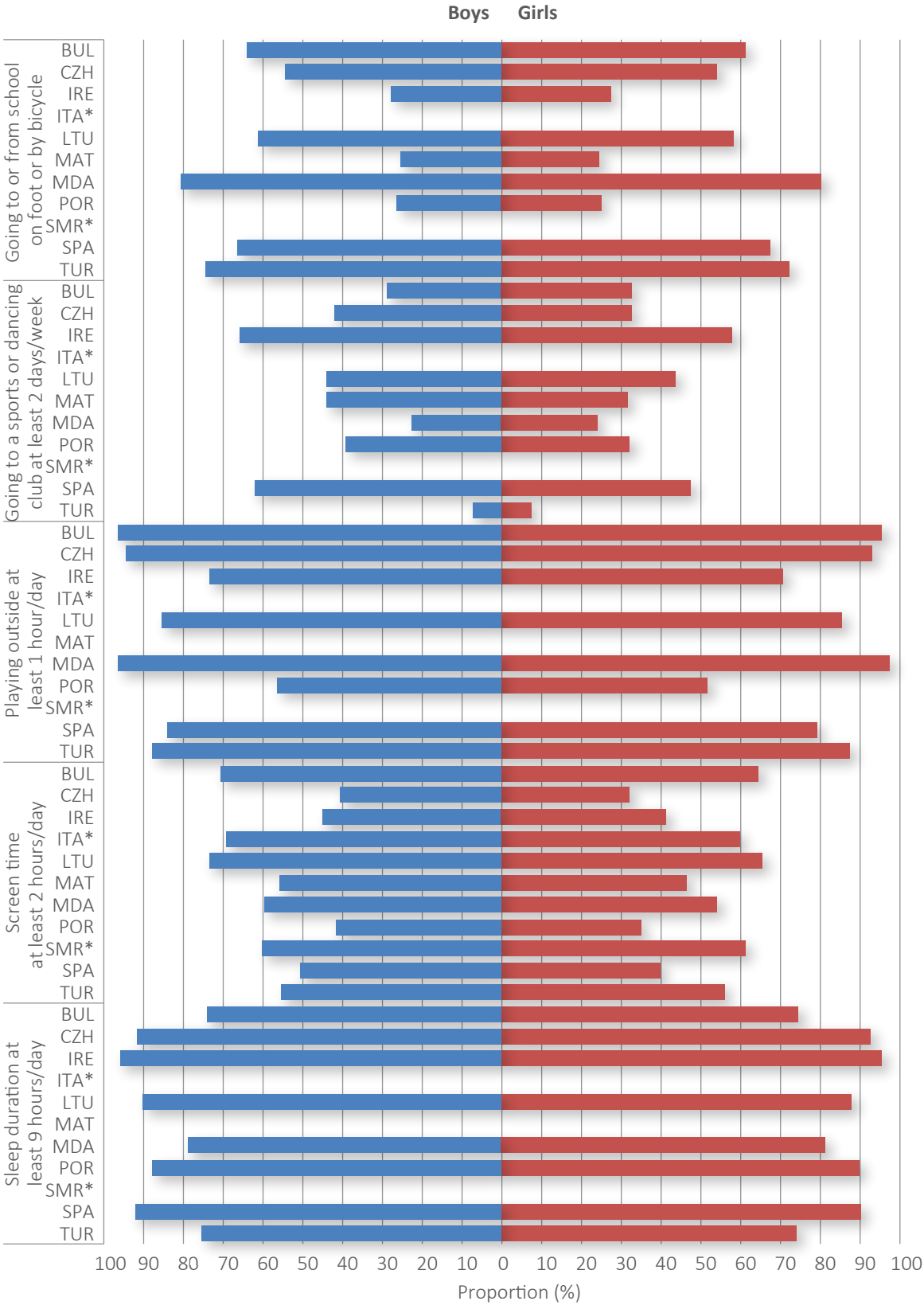
Fig. 8. Indicators of physical activity, screen time and sleep duration by country, COSI round 3 (2012–2013)



* Italy and San Marino used only the question on screen time.

Fig. 9 shows indicators of the physical activity, screen time and sleep duration of boys and girls by country. In each country, boys and girls had very similar patterns of physical activity and inactivity.

Fig. 9. Indicators of physical activity, screen time and sleep duration by sex and country, COSI round 3 (2012–2013)

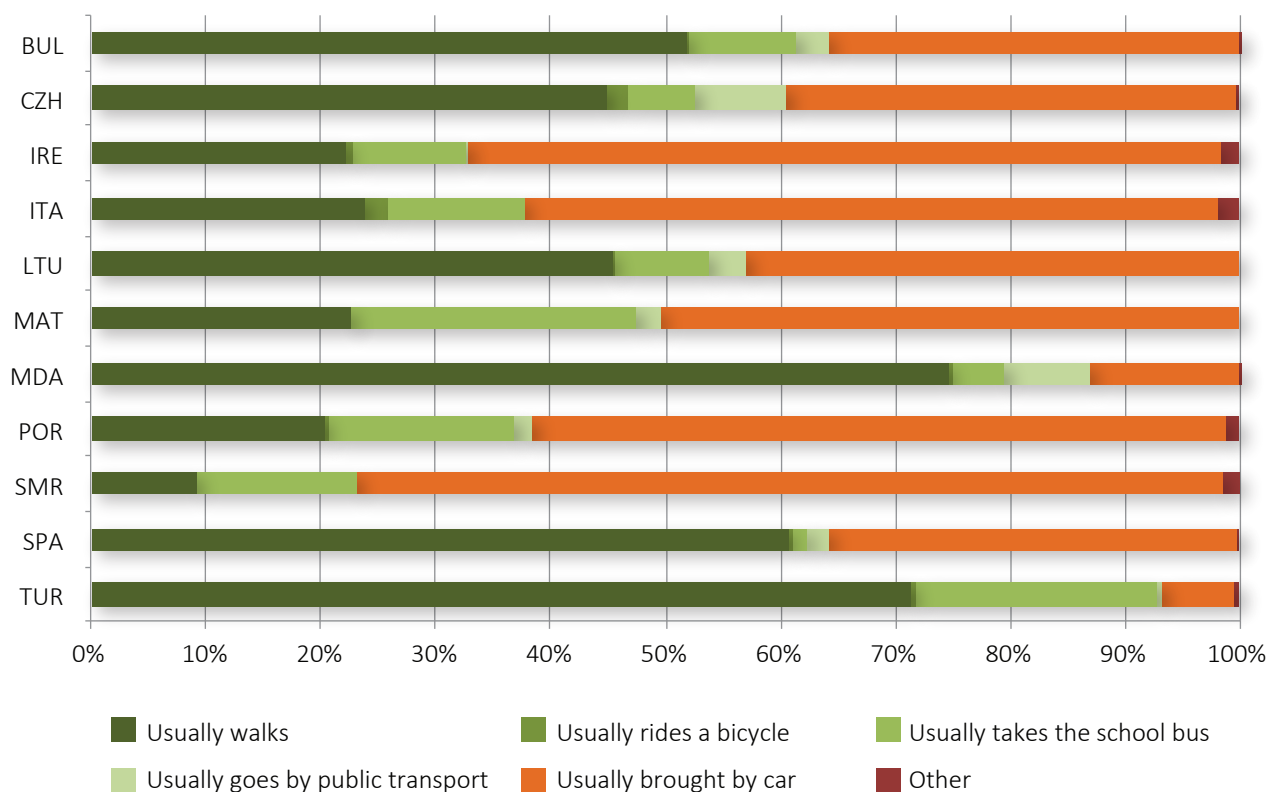


* Italy and San Marino used only the question on screen time.

Mode of transport to and from school

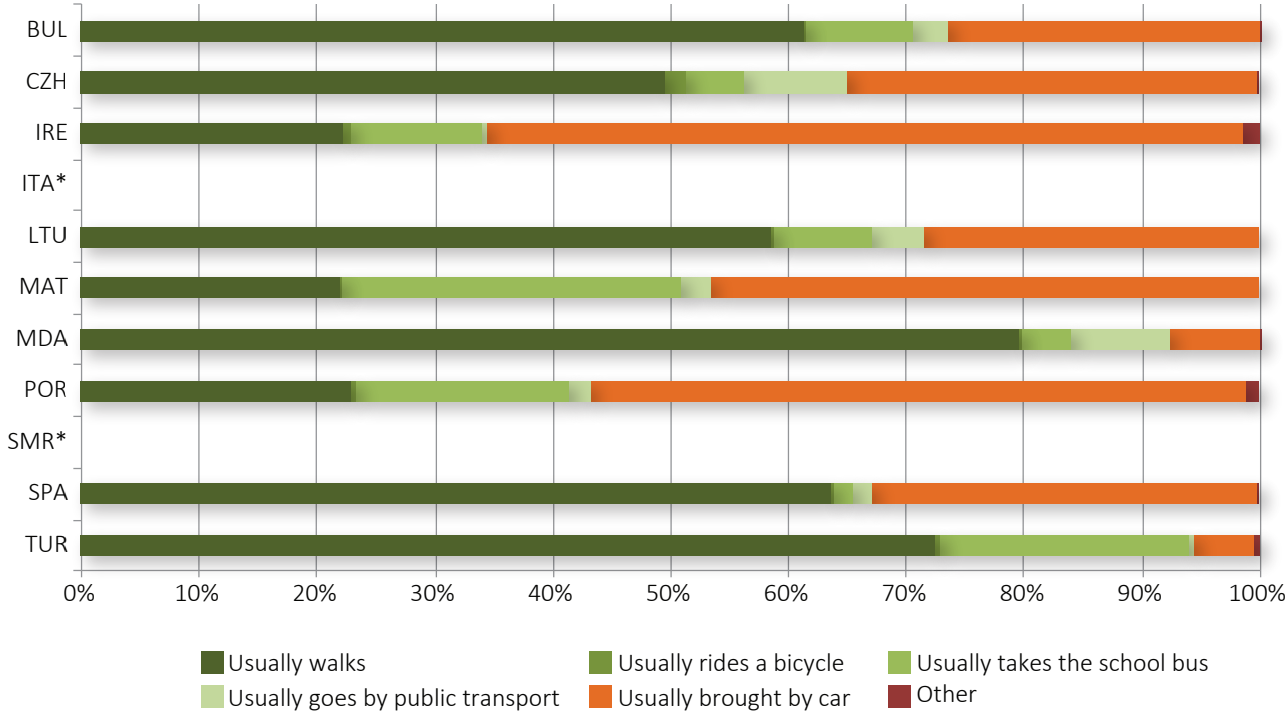
Fig. 10 shows the distribution of the usual mode of transport to school, by country. In the Republic of Moldova, 75% of children used an active mode of transport (walking or riding a bike) regularly to go to school. In San Marino, only 9% of children walked to school, and none went by bike.

Fig. 10. Distribution of usual mode of transport to school, by country, COSI round 3 (2012–2013)



The distribution of usual mode of transport between home and school is shown by country in Fig. 11. Generally, the proportions were similar, but fewer children were picked up by car after school than those taken to school by car. Correspondingly, the proportion of children who walked home was higher than that of children who walked to school, except in Malta, where the proportions were about equal, i.e. 22.5% walked to school and 22.0% walked home.

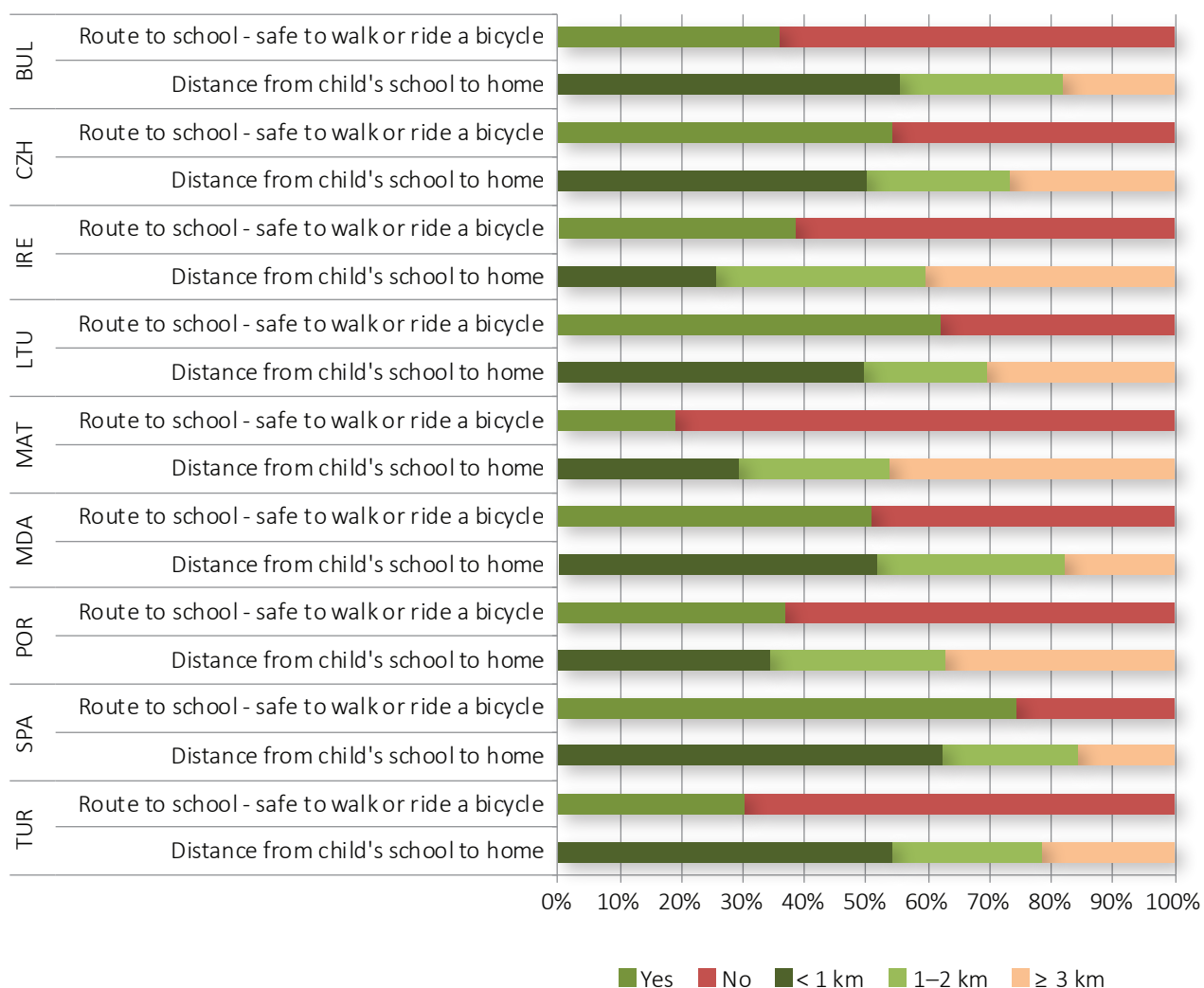
Fig. 11. Distribution of usual mode of transport between home and school, by country, COSI round 3 (2012–2013)



* Question not asked in this country.

Fig. 12 presents parents' opinions about the safety of the route to school for walking or riding a bicycle, by country. In Spain, 75% of parents considered that the route to school was safe, as did over 50% of parents in Czechia, Lithuania and the Republic of Moldova. In Malta, only 19% of parents agreed. In Bulgaria, the Republic of Moldova and Spain, over 80% of children lived less than 2 km from their schools. In Malta, 46% of children lived ≥ 3 km from school.

Fig. 12. Safety of route to school for walking or cycling and distance by country, COSI round 3 (2012–2013)



The perceived safety of the route to and from school and the distance to school appeared to be associated with the mode of transport, i.e. whether the child walked to school or rode a bicycle, as indicated in Figs 13 and 14. In all countries, the proportion of children who walked or cycled to school was higher when the route was perceived as safe than when it was perceived as unsafe (Fig. 13).

The proportion of children who walked or cycled to school decreased with distance from the school, although differences were observed between countries. While in Czechia only 2% of children walked or cycled to school if the distance was ≥ 3 km, in Turkey $< 30\%$ used active transport (Fig. 14).

Fig. 13. Proportion of children who walked or cycled to and from school by perceived safety of the route, by country, COSI round 3 (2012–2013)

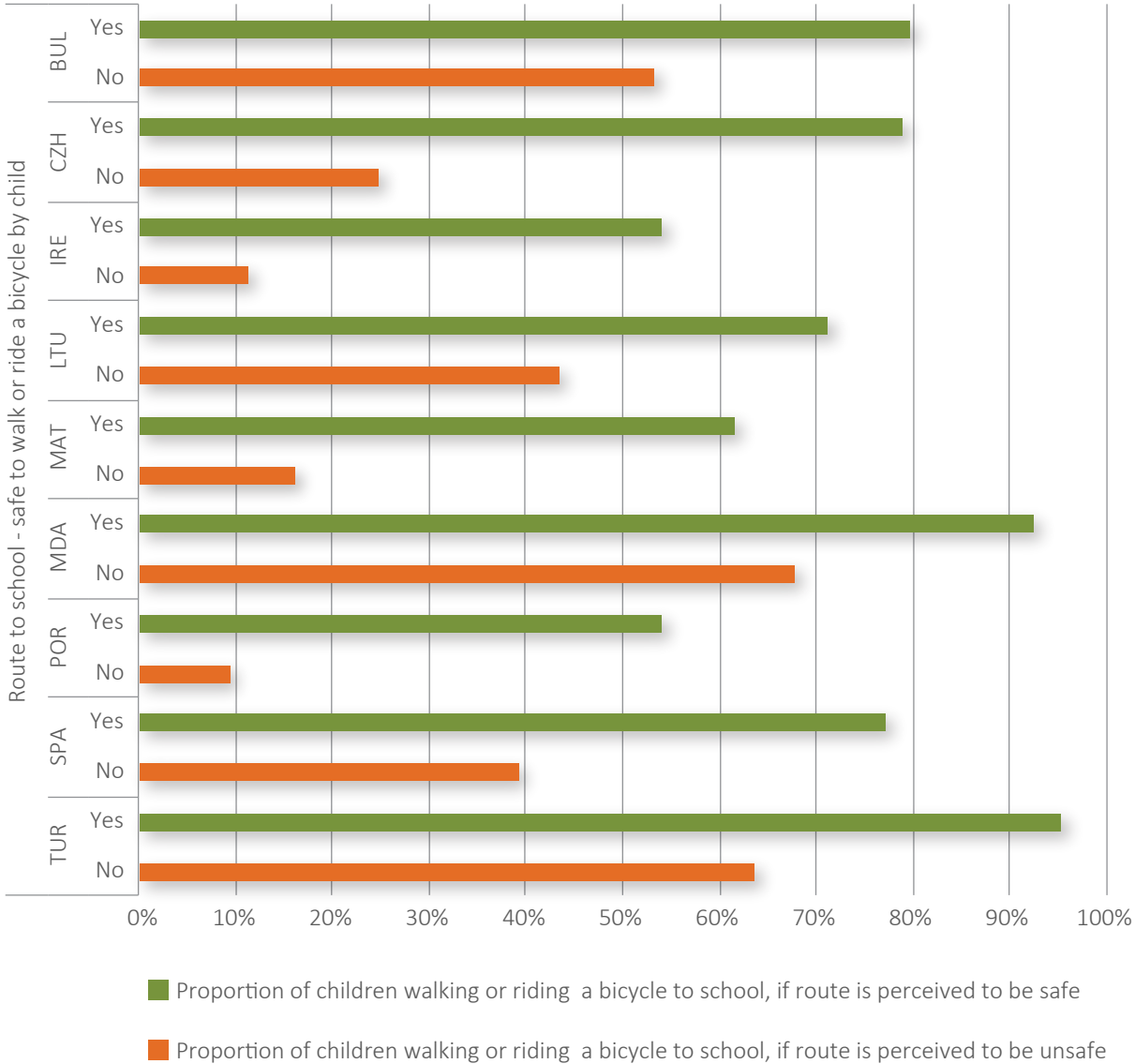
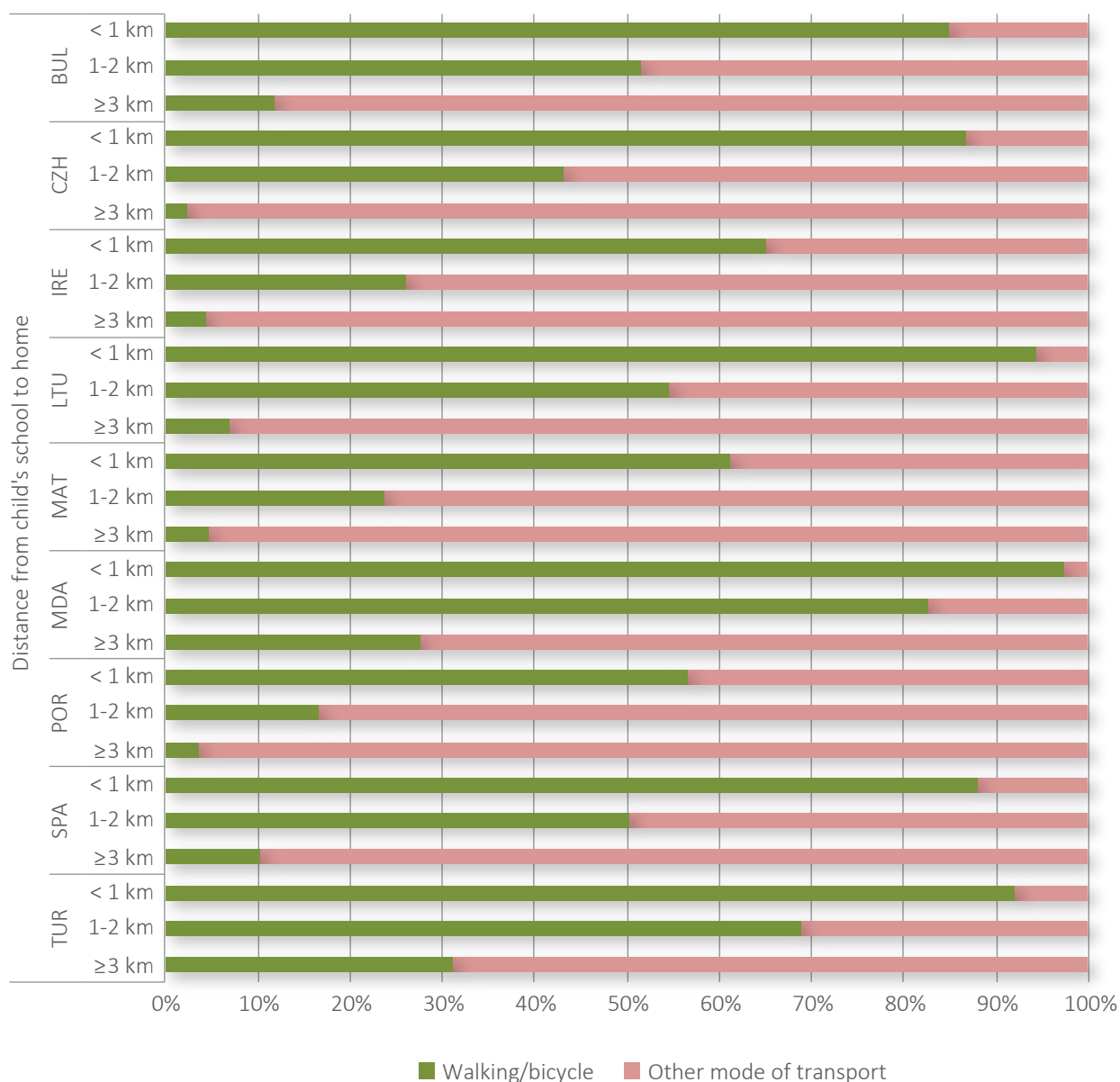


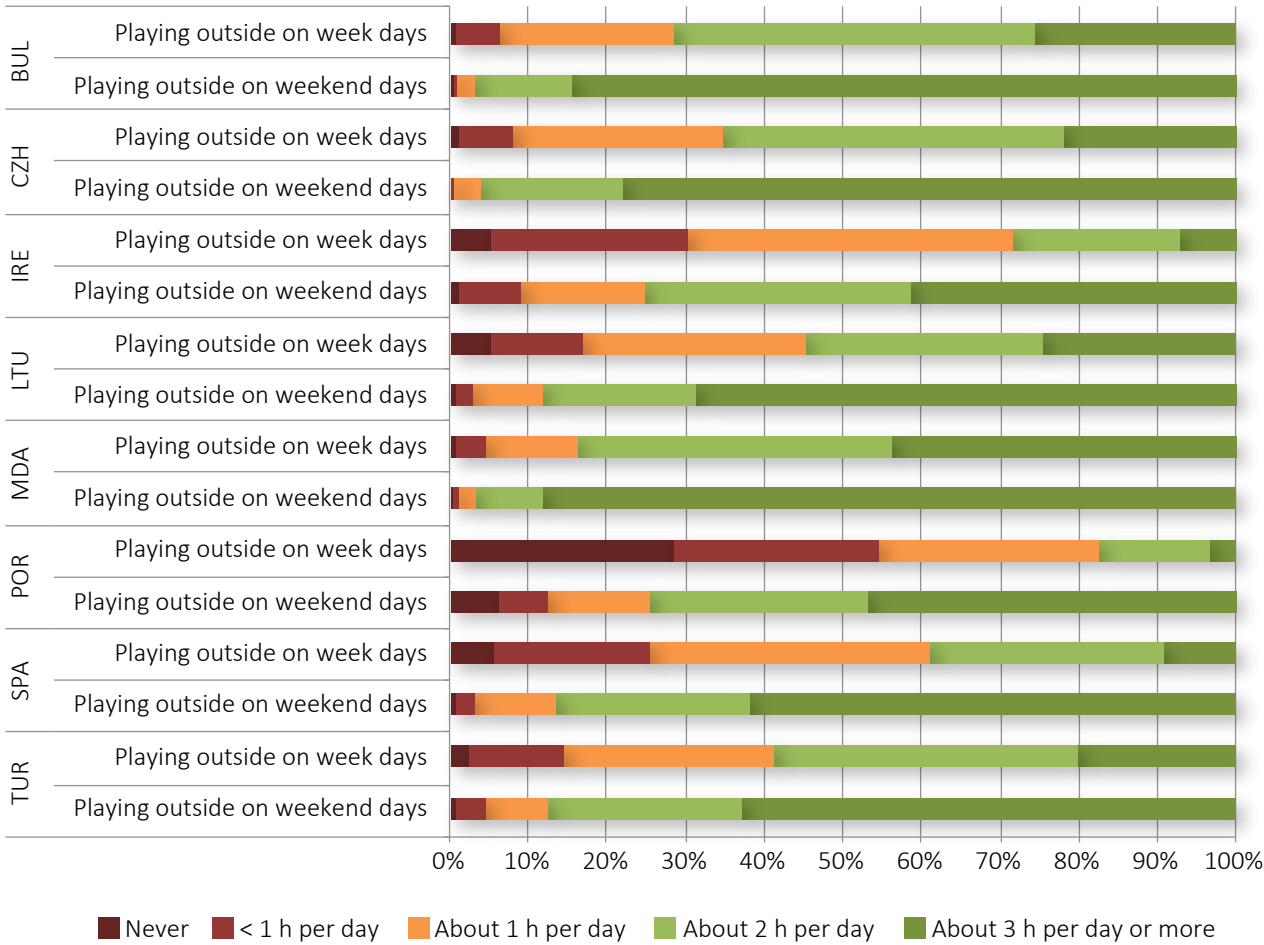
Fig. 14. Proportion of children who walked or cycled to and from school and distance to school by country, COSI round 3 (2012–2013)



Playing outside and membership in sports or dancing clubs

In all countries, more time was spent playing outside on weekends than during the week, with considerable variation among countries (Fig. 15). In Portugal, 55% of children played outside on a week day for < 1 h or never (28%). This proportion was only 12% during the weekend. Thus, Portugal was the country in which the highest proportion of children spent < 1 h playing outdoors.

Fig. 15. Distribution of daily duration of playing outside by country, COSI round 3 (2012–2013)



Membership in a sports or dancing club varied from 21% in Turkey to 83% in Ireland (Fig. 16). Correspondingly, 53% of Turkish children had zero or at least one day attendance in a sport or dancing club per week. In Lithuania over 16% of the children attended sport or dancing clubs on four or more days per week.

Fig. 16. Membership in sports or dancing clubs and distribution of weekly frequency by country, COSI round 3 (2012–2013)

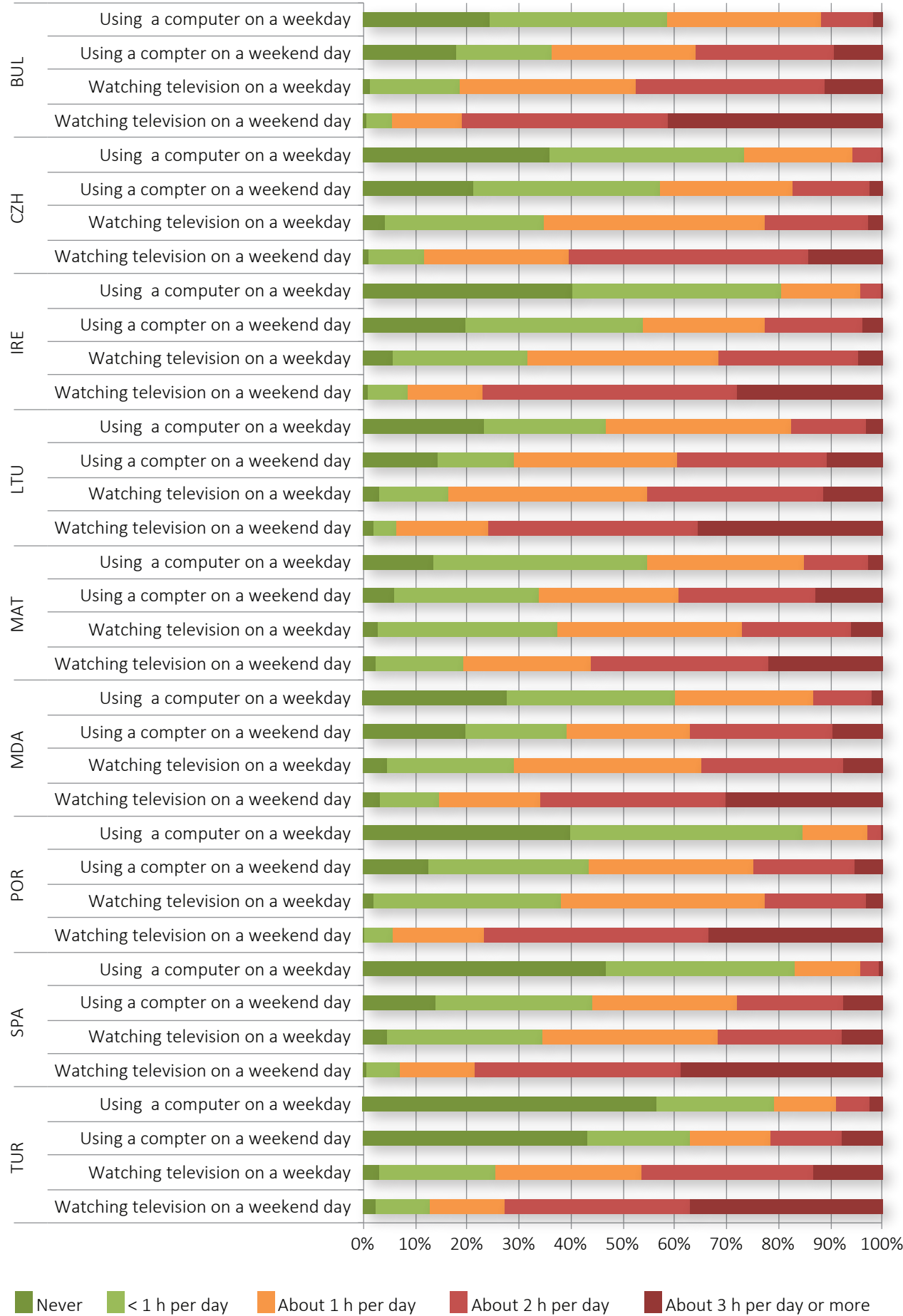


* Question not asked in this country.

Screen time

As observed for playing outside, children used a computer or watched television less often on weekdays than on weekends (Fig. 17). Nearly 85% of children in Portugal used a computer never or for < 1 h per day on a weekday. In Lithuania, about 71% of children used a computer for about 1 h or more on weekends and 53% on weekdays. The same trend was observed for watching television. Fewer children watched television for < 1 h per day on weekends than on weekdays.

Fig. 17. Distribution of frequency of computer usage and watching television on week days and weekends by country, COSI round 3 (2012–2013)



5. School environment

The important role of schools in promoting child health and establishing lifelong healthy habits is widely recognized (2,47-49). The third round of COSI data collection therefore sought information on school characteristics relating to nutrition and physical activity.

Schools can promote healthy lifestyles both in the teaching curriculum and the school environment, and comprehensive, multifaceted initiatives are likely to have the best results (50,51). Creating a healthier school nutrition environments, by, for example, increasing access to fruit, vegetables or milk or limiting access to sugar-sweetened beverages and sweet or salty snacks, can change children's eating habits and improve the nutritional quality of their diets, with some evidence of an effect on bodyweight (51-53).

Schools can also promote physical activity, by providing physical education classes and creating an environment that supports active play and other forms of activity. There is good evidence that school programmes can increase children's moderate-to-vigorous physical activity (54), and more frequent physical education sessions are a common component of effective interventions for preventing childhood obesity (51). More specifically, regular, good-quality physical education can help children to meet the global recommendations for physical activity and may also improve fitness and reduce adiposity (55).

5.1 Data elaboration

As described in section 2.2, the third round of COSI data collection included a mandatory form for collection of information on the school environment with respect to nutrition and physical activity. The analysis presented in this report includes the following characteristics: possibility of obtaining five specific food items and beverages on the school premises (fresh fruit, cold drinks containing sugar, sweet snacks, salted snacks and milk), frequency of physical education classes and organization of school initiatives to promote a healthy lifestyle (e.g. physical activity and/or healthy eating). These aspects are potentially modifiable by national or local governments or by the schools themselves and thus present opportunities for improving children's eating and physical activity patterns (56).

In accordance with Wijnhoven et al. (56), the answers to the five items on food and beverages were used to calculate a school nutrition environment score. A score of 0 or 1 was given according to whether each of the items could be obtained on the school premises: the answer was graded 1 when it was considered supportive of a healthy school nutrition environment (presence of fresh fruit and milk; absence of cold drinks containing sugar, sweet snacks and salted snacks) and 0 when it was considered unsupportive (absence of fresh fruit and milk; presence of cold drinks containing sugar, sweet snacks and salted snacks). A nutrition environment score was calculated by adding the five food and beverage item scores for each school that provided information on all the characteristics. A school score of 0 indicates that all the characteristics were graded as unsupportive, while a score of 5 indicates that all the characteristics were graded as supportive.

Table 8 shows the number of schools included in the analysis and the data available on school nutrition environment by country. All the countries except Belgium and Spain used the mandatory school form in the third round of COSI data collection.

Table 8. Schools included in the analysis and availability of data on school nutrition environment, COSI round 3 (2012–2013), by country

Country	No. of schools	Physical education lessons	Food items and beverages that could be obtained on the school premises					School initiatives to promote a healthy lifestyle
			Fresh fruit	Milk	Cold drinks with sugar	Sweet snacks	Salted snacks	
Albania	104	✓	✓	✓	✓	✓	✓	✓
Bulgaria	185	✓	✓	✓	✓	✓	✓	✓
Czechia ^a	810	✓	✓	✓	✓	✓	✓	
Greece	181	✓	✓	✓	✓	✓	✓	✓
Ireland	159	✓	✓	✓	✓	✓	✓	✓
Italy	2 355	✓						✓
Lithuania ^b	122	✓	✓		✓			✓
Latvia	140	✓	✓	✓	✓	✓	✓	✓
Malta	92	✓	✓	✓	✓	✓	✓	✓
Norway	126	✓	✓	✓	✓	✓	✓	✓
Portugal	196	✓	✓	✓	✓	✓	✓	✓
Republic of Moldova	203	✓	✓	✓	✓	✓	✓	✓
Romania	205	✓	✓	✓	✓	✓	✓	✓
San Marino	14	✓						✓
Slovenia	232	✓	✓	✓	✓	✓	✓	✓
The former Yugoslav Republic of Macedonia	109	✓	✓	✓	✓	✓	✓	✓
Turkey	216	✓	✓	✓	✓	✓	✓	✓

^a Data on school initiatives to promote a healthy lifestyle were not included in the analysis because of many missing responses.

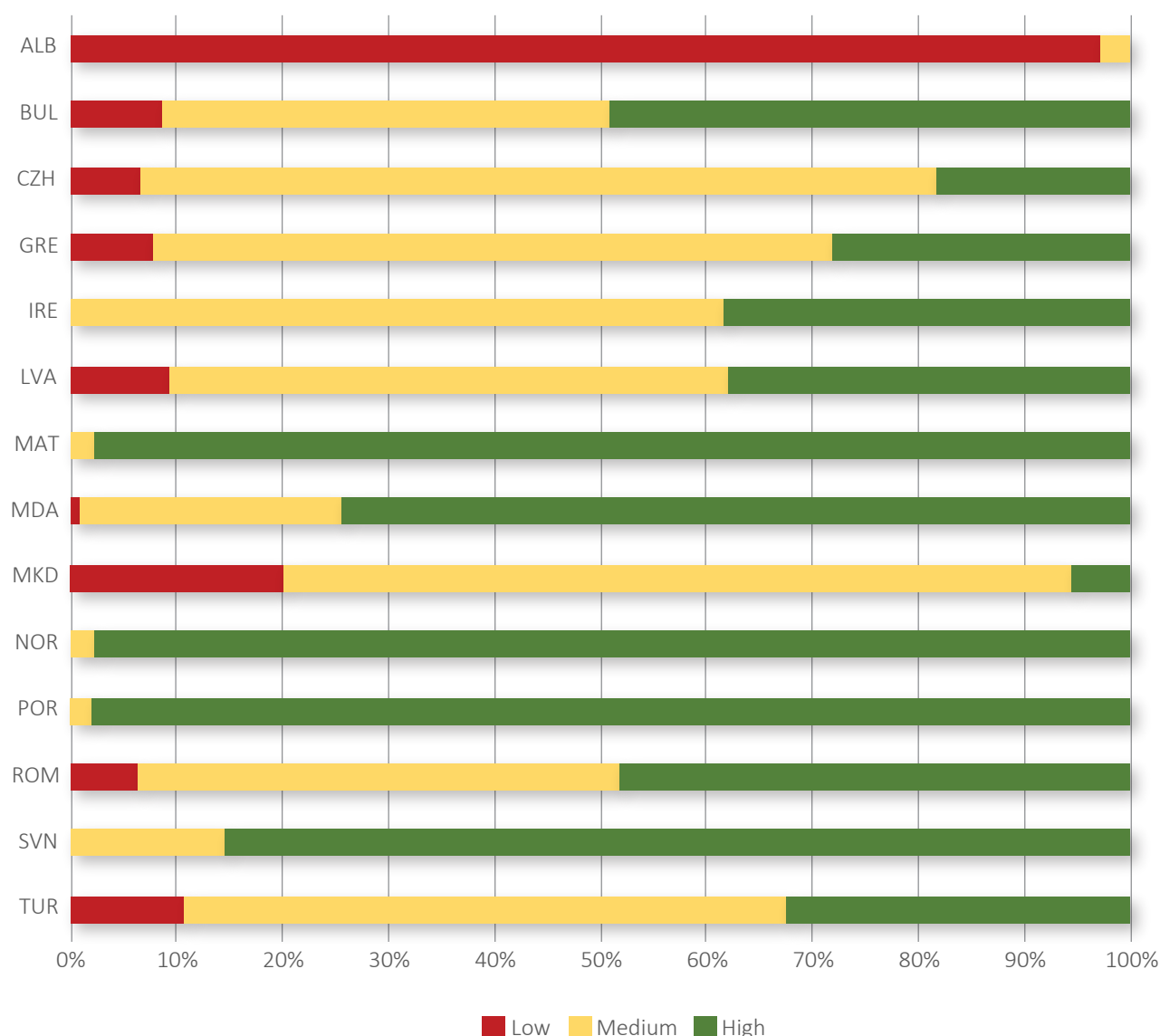
^b Data on milk, sweet snacks and salted snacks were not included in the analysis because of many missing responses.

5.2 School characteristics

Nutrition environment

The school nutrition environment score based on the possibility of obtaining two “healthy” items (milk, fresh fruit) and three “unhealthy” food items (cold drinks containing sugar, sweet snacks and salted snacks) at school varied widely by country (Fig. 18). Schools in Ireland, Malta, Norway, Portugal and Slovenia all had medium to high nutritional environment scores, while 97% of Albanian schools had low scores.

Fig. 18. School nutrition environment score, by country, COSI round 3 (2012–2013)



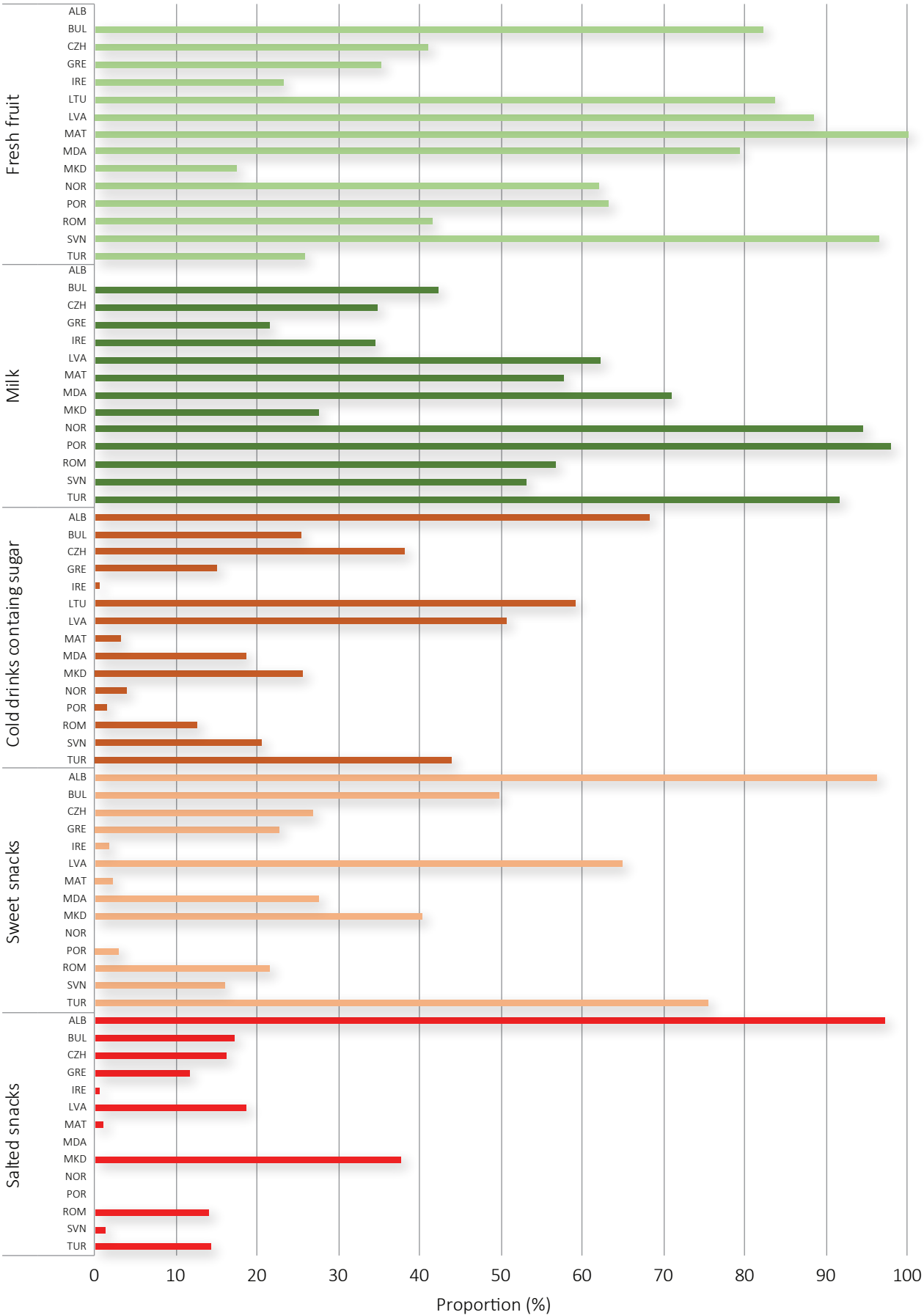
The score is based on the possibility of obtaining five food and beverage items at school (fresh fruit, milk, cold drinks containing sugar, sweet snacks and salted snacks). The score ranges from 0 to 5. A higher score corresponds to a more supportive school environment for healthy behaviour. Values 0 and 1 correspond to a low score, values 2 and 3 to a medium score and 4 and 5 to a high score.

Fig. 19 shows the proportions of food items that were available on school premises by country. The lowest proportions of schools that provided fresh fruit on their premises were in Albania (0%), the former Yugoslav Republic of Macedonia (17%) and Ireland (23%) and the highest in Malta (100%) and Slovenia (97%). Albania is the only country in which milk could not be purchased on any school premises. In the other countries, milk could be obtained in 22–95% of schools.

There was wide variation in the availability of cold drinks containing sugar on school premises, from < 5% in Ireland (1%), Portugal (2%), Malta (3%) and Norway (4%) to > 50% in Latvia (51%), Lithuania (59%) and Albania (68%).

Heterogeneity among countries was also observed for sweet and salted snacks. The highest proportions of schools in which sweet snacks were accessible were in Albania (96%), Turkey (75%), Latvia (65%) and Bulgaria (50%) and the lowest in Ireland (2%), Malta (2%) and Portugal (3%). Fewer schools made salted snacks available on their premises than sweet snacks (none in Norway, Portugal and the Republic of Moldova and about 1% in Ireland, Malta and Slovenia), with the exception of Albania, where 97% of schools made salted snacks available on their premises, the former Yugoslav Republic of Macedonia (38%) and Latvia (19%). Norway was the only country that did not make sweet and salted snacks available to pupils on school premises.

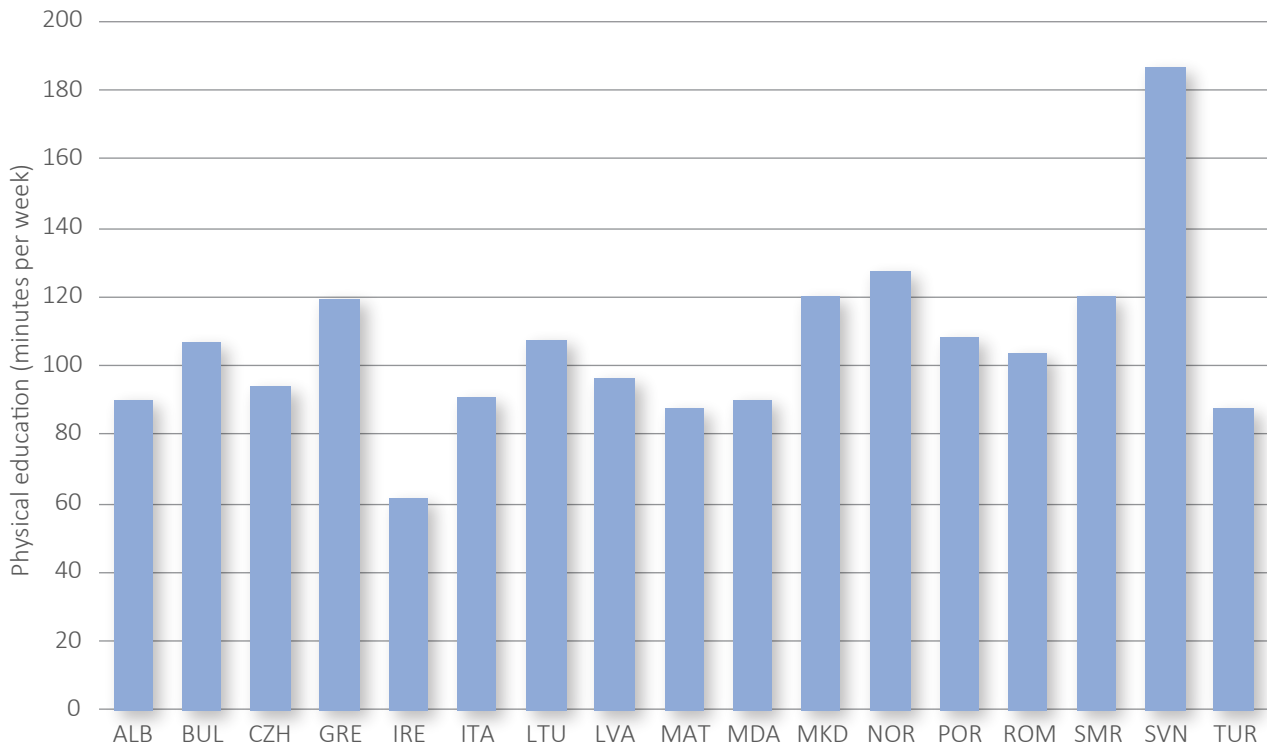
Fig. 19. Proportions of schools in which healthy and unhealthy food and beverage items were available, by country, COSI round 3 (2012–2013)



Physical activity environment

In Albania, the Republic of Moldova and the former Yugoslav Republic of Macedonia, the duration of physical education lessons was the same in all schools (90 min in the first two countries and 120 min in the last). In all other countries, the mean ranged from 62 min in Ireland to 187 min in Slovenia (Fig. 20).

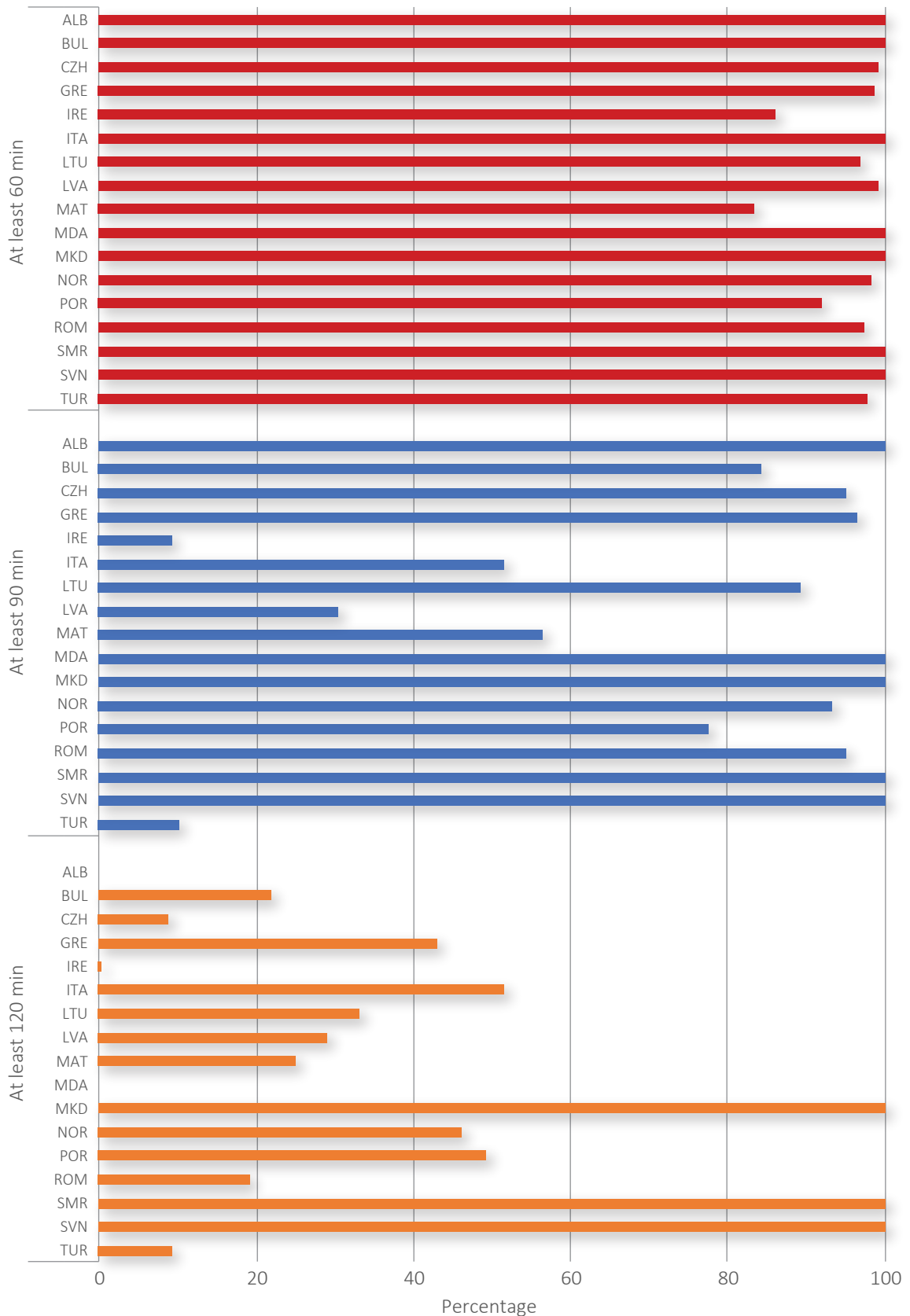
Fig. 20. Mean duration of physical education classes per week by country, COSI round 3 (2012–2013)



In Albania, the Republic of Moldova and the former Yugoslav Republic of Macedonia, the duration of physical education lessons was the same in all schools.

In, San Marino, Slovenia and the former Yugoslav Republic of Macedonia, all pupils received at least 2 h of physical education per week (Fig. 21), while in Albania, Ireland and the Republic of Moldova, no schools provided this amount of physical education. In several countries, not all schools provided at least 1 h per week, Malta and Ireland having the lowest percentages of schools that met this goal (84% and 86%, respectively).

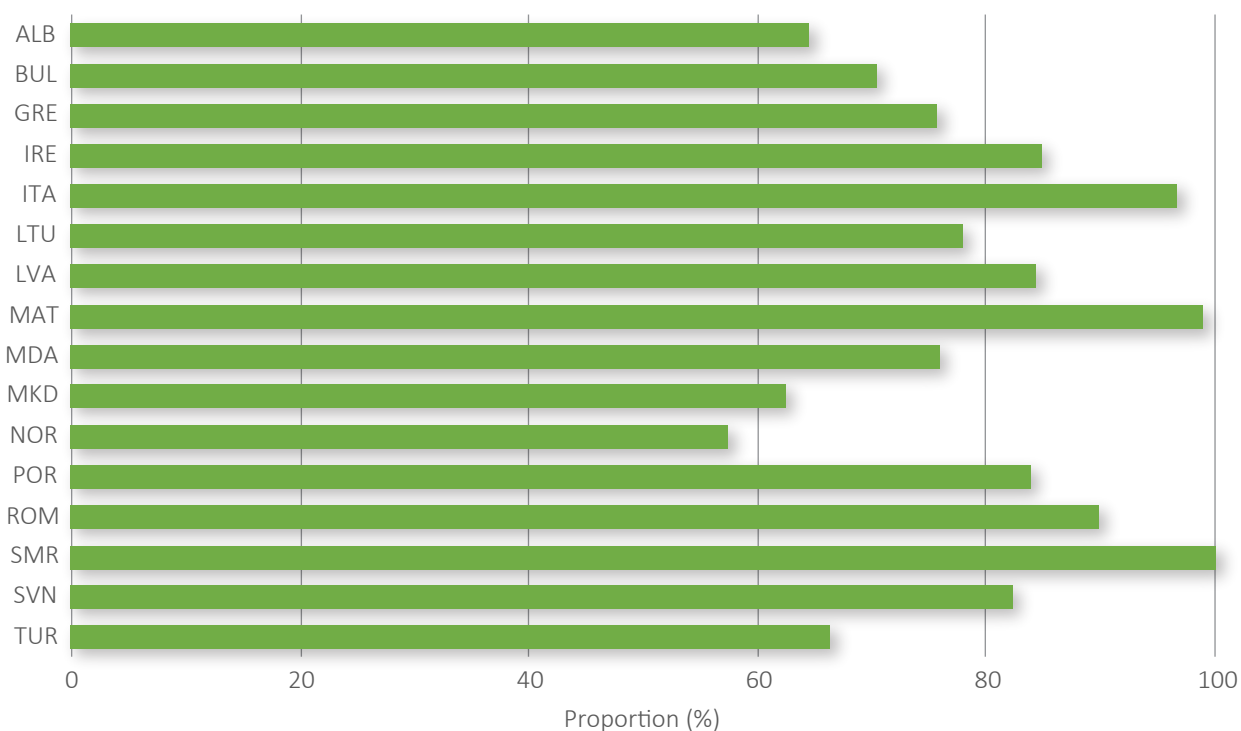
Fig. 21. Weekly provision of physical education classes: percentage of schools providing at least 60, 90 and 120 min of physical education, by country, COSI round 3 (2012–2013)



Promotion of a healthy lifestyle

The proportion of schools that introduced initiatives or projects to promote a healthy lifestyle (with a focus on physical activity and/or healthy eating) was as low as 57% in Norway, followed by the former Yugoslav Republic of Macedonia (62%) and Albania (64%) (Fig. 22). In Italy, Malta, Romania and San Marino, over 90% of schools had introduced initiatives or projects to promote a healthy lifestyle.

Fig. 22. Proportion of schools with initiatives or projects to promote a healthy lifestyle, by country, COSI round 3 (2012–2013)



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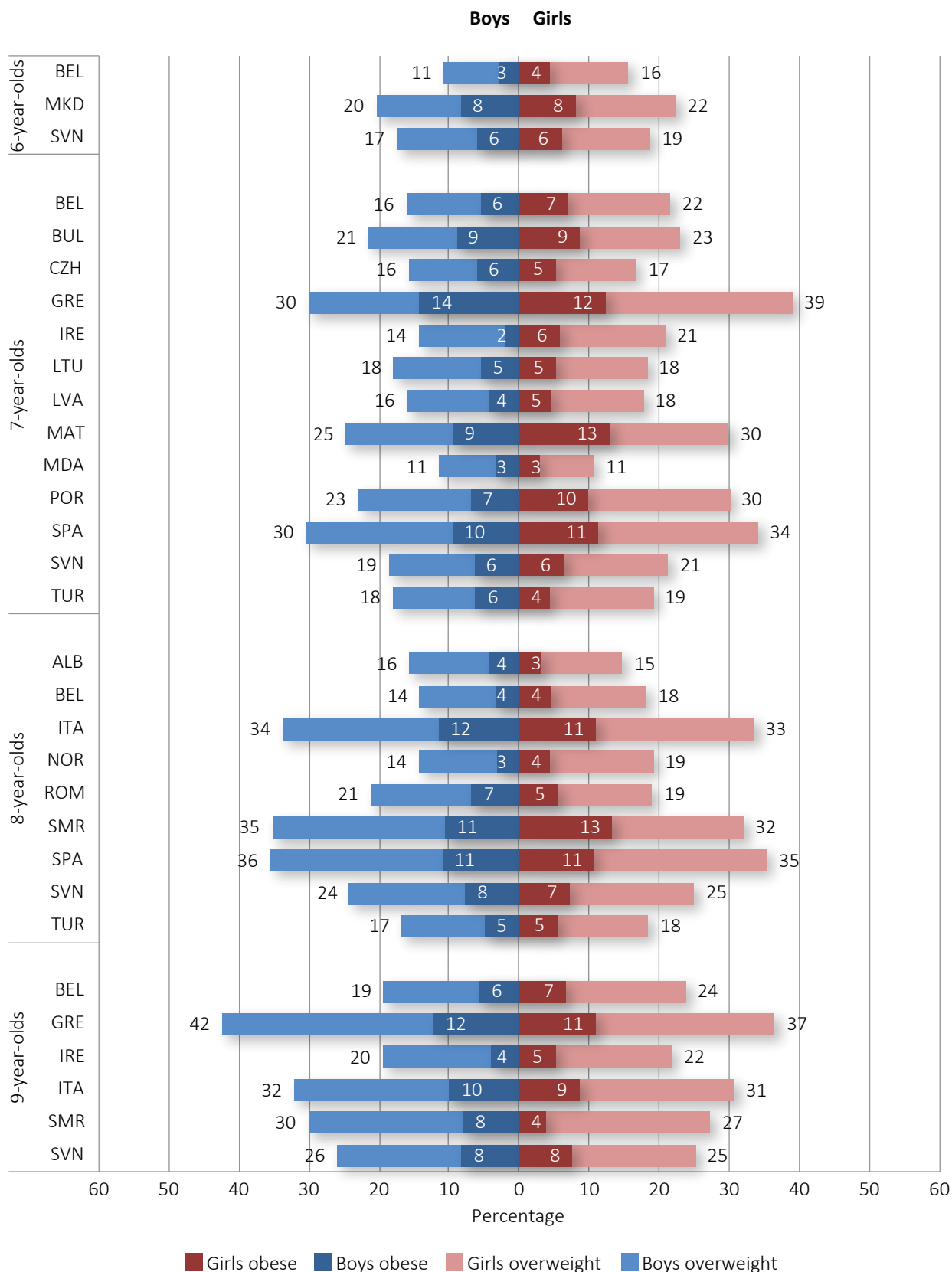
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Annex 1.


Prevalence of overweight (including obesity) and obesity (International Obesity Task Force definition) in boys and girls aged 6–9 years, by age and country, COSI round 3 (2012–2013)



Annex 2.

COSI record forms

Examiner's record form, page 1: mandatory items only

 REGIONAL OFFICE FOR	World Health Organization Europe	European Childhood Growth Surveillance Initiative	Examiner's Record Form Page 1/3 October 2012
IDENTIFICATION, CHILD			
(1) Form code		EXAMINER	
(2) Country code		<input type="text"/> <input type="text"/> <input type="text"/>	
(3) What is your name?			
First name		Surname	
(4) Child's code			
(5) Child's sex			
<input type="checkbox"/> Boy <input type="checkbox"/> Girl			
(6) Child's date of birth			
<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>			
		Day / Month / Year	
(7) Categorize the child's place of residence according to the country's urbanization grade.			
<input type="checkbox"/> Urban			
<input type="checkbox"/> Semi-urban			
<input type="checkbox"/> Rural			
IDENTIFICATION, CHILD'S SCHOOL			
(8) In what grade/class level are you?		<input type="text"/> <input type="text"/>	
(9) Class code		<input type="text"/> <input type="text"/> <input type="text"/>	
(10) School code		<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
REMARKS			

 World Health Organization <small>REGIONAL OFFICE FOR Europe</small>	European Childhood Growth Surveillance Initiative	Examiner's Record Form Page 2/3 October 2012
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(2) Country code	<input type="text"/> <input type="text"/> <input type="text"/>	(4) Child's code	<input type="text"/> <input type="text"/> <input type="text"/>
(9) Class code	<input type="text"/> <input type="text"/> <input type="text"/>	(10) School code	<input type="text"/> <input type="text"/> <input type="text"/>

ANTHROPOMETRIC EXAMINATION

(11) **Date of measurement**
 / /
 Day / Month / Year

(12) **Time of measurement**
 Before lunch
 After lunch

(13) **Now I would like to weigh you and measure your height. I will explain to you how I am going to do this. May I take these measurements?**
 Yes, child agrees to be measured (take the measurements and continue with question 15)
 No, child does not agree to be measured (complete question 14, enter your (18) code and sign the form)


(14) **Can you tell me why you don't want to be measured?**
 Child is not feeling well or is in pain
 Child is anxious/nervous
 Child has a physical disability
 Other reason (please specify).....

Measurement items

(15) **Body weight** kg .

(16) **Body height** cm .

(17) **Describe the clothes the child is wearing when measured (select one option only).** Please, remember to take off any kind of shoes, socks or stockings as well as any heavy objects (phone, wallet, belt, etc.).
 Underwear only
 Gym clothes (e.g. shorts and t-shirt only)
 Light clothing (e.g. t-shirt, cotton trousers or skirt)
 Heavy clothing (e.g. sweater and jeans)
 Other (please specify).....

 World Health Organization REGIONAL OFFICE FOR Europe		European Childhood Growth Surveillance Initiative		Examiner's Record Form Page 3/3 October 2012	
(2) Country code	<input type="text"/> <input type="text"/> <input type="text"/>	(4) Child's code	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		
(9) Class code	<input type="text"/> <input type="text"/> <input type="text"/>	(10) School code	<input type="text"/> <input type="text"/> <input type="text"/>		
(18) Weight scale code			<input type="text"/> <input type="text"/>		
(19) Height stadiometer code		<input type="text"/> <input type="text"/> <input type="text"/>			
(20) Examiner's code	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>				
Signature		Date			
OBSERVATIONS BY SUPERVISOR					




IDENTIFICATION, CHILD

- (1) **Form code** EXAMINER
- (2) **Country code**
- (3) **What is your name?**
First name Surname
- (4) **Child's code**
- (5) **Child's sex**
 Boy Girl
- (6) **Child's date of birth**
 / /
Day / Month / Year
- (7) **Categorize the child's place of residence according to the country's urbanization grade.**
 Urban
 Semi-urban
 Rural
- (7a) Child's place of residence
- (7b) Child's postal code

IDENTIFICATION, CHILD'S SCHOOL

- (8) **In what grade/class level are you?**
- (9) **Class code**
- (10) **School code**

REMARKS

 <p style="margin: 0;">World Health Organization REGIONAL OFFICE FOR Europe</p>	<p style="margin: 0;">European Childhood Growth Surveillance Initiative</p>	<p style="margin: 0;">Examiner's Record Form Page 2/3 October 2012</p>
<p>(2) Country code <input type="text"/> <input type="text"/> <input type="text"/></p> <p>(9) Class code <input type="text"/> <input type="text"/> <input type="text"/></p>	<p>(4) Child's code <input type="text"/> <input type="text"/> <input type="text"/></p> <p>(10) School code <input type="text"/> <input type="text"/> <input type="text"/></p>	
<p>ANTHROPOMETRIC EXAMINATION</p> <p>(11) Date of measurement <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Day / Month / Year</p> <p>(12) Time of measurement <input type="checkbox"/> Before lunch <input type="checkbox"/> After lunch</p> <p>(12a) Hour / Minute <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> Hour / Minute</p> <p>(13) Now I would like to weigh you, measure your height and take your waist and hip circumferences. I will explain to you how I am going to do this. May I take these measurements? <input type="checkbox"/> Yes, child agrees to be measured (take the measurements and continue with question 15) <input type="checkbox"/> No, child does not agree to be measured (complete question 14, enter your (21) code and sign the form)</p> <p>(14) Can you tell me why you don't want to be measured? <input type="checkbox"/> Child is not feeling well or is in pain <input type="checkbox"/> Child is anxious/nervous <input type="checkbox"/> Child has a physical disability <input type="checkbox"/> Other reason (please specify)</p>		
<p>Measurement items</p> <p>(15) Body weight kg <input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/></p> <p>(16) Body height cm <input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/></p> <p>(17) Waist circumference cm <input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/></p> <p>(18) Hip circumference cm <input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/></p> <p>(19) Weight scale code <input type="text"/> <input type="text"/> <input type="text"/></p> <p>(20) Height stadiometer code <input type="text"/> <input type="text"/> <input type="text"/></p>		



(2) **Country code**

(4) **Child's code**

(9) **Class code**

(10) **School code**

(21) **Describe the clothes the child is wearing when measured (select one option only).** Please remember to take off any kind of shoes, socks or stockings as well as any heavy objects (phone, wallet, belt, etc.).

Underwear only

Gym clothes (e.g. shorts and t-shirt only)

Light clothing (e.g. t-shirt, cotton trousers or skirt)

Heavy clothing (e.g. sweater and jeans)

Other (please specify)

(22) **Did you have breakfast this morning?**

Yes

No

(23) **Examiner's code**

Signature

Date

OBSERVATIONS BY SUPERVISOR

IDENTIFICATION, CHILD

(1) **Form code** _____ School

(2) **Country code**

(3) **School code**

(4) **School name**

(5) **School address – street**

(6) **School address – city/town/village**

(7) **School address – region/province**

(8) **What is your function at the school?**

Headmaster/Headmistress/Principal

Teacher

Other (please specify)

(9) **Date of completion of this form**

/ /

Day / Month / Year

IDENTIFICATION, CHILD'S SCHOOL

(8) **In what grade/class level are you?**

(9) **Class code**

(10) **School code**

Class No.	Grade/level of class	No. of pupils registered	No. of pupils examined	No. of pupils absent	No. of pupils who themselves declined to be examined	No. of pupils whose parents did not give consent
1.	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> Girls	<input type="text"/> <input type="text"/> Girls	<input type="text"/> <input type="text"/> Girls	<input type="text"/> <input type="text"/> Girls	<input type="text"/> <input type="text"/> Girls
		<input type="text"/> <input type="text"/> Boys	<input type="text"/> <input type="text"/> Boys	<input type="text"/> <input type="text"/> Boys	<input type="text"/> <input type="text"/> Boys	<input type="text"/> <input type="text"/> Boys
2.	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> Girls	<input type="text"/> <input type="text"/> Girls	<input type="text"/> <input type="text"/> Girls	<input type="text"/> <input type="text"/> Girls	<input type="text"/> <input type="text"/> Girls
		<input type="text"/> <input type="text"/> Boys	<input type="text"/> <input type="text"/> Boys	<input type="text"/> <input type="text"/> Boys	<input type="text"/> <input type="text"/> Boys	<input type="text"/> <input type="text"/> Boys
3.	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> Girls	<input type="text"/> <input type="text"/> Girls	<input type="text"/> <input type="text"/> Girls	<input type="text"/> <input type="text"/> Girls	<input type="text"/> <input type="text"/> Girls
		<input type="text"/> <input type="text"/> Boys	<input type="text"/> <input type="text"/> Boys	<input type="text"/> <input type="text"/> Boys	<input type="text"/> <input type="text"/> Boys	<input type="text"/> <input type="text"/> Boys

 <p>World Health Organization REGIONAL OFFICE FOR Europe</p>	<p>European Childhood Growth Surveillance Initiative</p>	<p>School Return Form Page 2 October 2012</p>
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(2) **Country code**

(3) **School code**

INFORMATION ON SCHOOL ENVIRONMENT

(12) **For each participating class, please complete the columns below:**

Participating Class No.	In this current school year and as part of the school curriculum, for how much time each week does your school provide physical education lessons (including e.g. dancing) to the pupils of each class participating in this project?	In this current school year, have any initiatives/projects been organized in each participating class to promote a healthy lifestyle (e.g. to promote physical activity and/or healthy eating)?
1.	<input type="text"/> <input type="text"/> <input type="text"/> Minutes per week	<input type="checkbox"/> Yes <input type="checkbox"/> No
2.	<input type="text"/> <input type="text"/> <input type="text"/> Minutes per week	<input type="checkbox"/> Yes <input type="checkbox"/> No
3.	<input type="text"/> <input type="text"/> <input type="text"/> Minutes per week	<input type="checkbox"/> Yes <input type="checkbox"/> No

(13) **Does your school have outside playgrounds or inside play areas where children can usually play during school breaks?**

- Yes
 No

(14) **Which of the following kinds of food/beverage can pupils obtain on the school premises?**

Please tick all items that apply.

- | | |
|--|---|
| <input type="checkbox"/> Fresh fruit | <input type="checkbox"/> Vegetables |
| <input type="checkbox"/> 100% fruit juices without sugar | <input type="checkbox"/> Yoghurt |
| <input type="checkbox"/> Fruit juices containing sugar | <input type="checkbox"/> Milk |
| <input type="checkbox"/> Cold drinks without sugar | <input type="checkbox"/> Flavoured milk |
| <input type="checkbox"/> Cold drinks containing sugar | <input type="checkbox"/> Water |
| <input type="checkbox"/> Hot drinks without sugar | <input type="checkbox"/> Candy bars, chocolate, cakes or other sweet snacks |
| <input type="checkbox"/> Hot drinks containing sugar | <input type="checkbox"/> Potato chips, corn chips, popcorn, peanuts or other savoury snacks |
| <input type="checkbox"/> Diet or "light" soft drinks | |
| <input type="checkbox"/> Other (please specify below): | |

.....

.....

.....

 <p>World Health Organization REGIONAL OFFICE FOR Europe</p>	<p>European Childhood Growth Surveillance Initiative</p>	<p>School Record Form Page 3 October 2012</p>
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(2) **Country code**

(3) **School code**

INFORMATION ON SCHOOL ENVIRONMENT

(15) **Does your school have any vending machines with foods or beverages on its premises?**

- Yes
- No

(16) **Does your school have a shop or cafeteria where foods or beverages can be purchased?**

- Yes
- No

(17) **Does your school have a canteen?**

- Yes please continue with the next question
- No please continue with question 19

(18) **Do the meals served in the school canteen meet your country's nutrition (or healthy eating) guidelines?**

- Yes
- No
- Don't know

(19) **Does your school provide pupils with fresh fruit for free?**


- Yes, to all pupils
- Only to pupils in some grade levels (please specify the grade):.....
- No, to nobody

(20) **Does your school provide pupils with vegetables for free?**

- Yes, to all pupils
- Only to pupils in some grade levels (please specify the grade):.....
- No, to nobody

(21) **Does your school provide pupils with milk for free?**

- Yes, to all pupils
- Only to pupils in some grade levels (please specify the grade):.....
- No, to nobody

 <p>World Health Organization REGIONAL OFFICE FOR Europe</p>	<p>European Childhood Growth Surveillance Initiative</p>	<p>School Record Form Page 4 October 2012</p>
<p>(2) Country code <input type="text"/> <input type="text"/> <input type="text"/> (3) School code <input type="text"/> <input type="text"/> <input type="text"/></p>		
<p>INFORMATION ON SCHOOL ENVIRONMENT</p>		
<p>(22) Does your school provide pupils with milk at a low price?</p> <p><input type="checkbox"/> Yes, to all pupils</p> <p><input type="checkbox"/> Only to pupils in some grade levels (please specify the grade):.....</p> <p><input type="checkbox"/> No, to nobody</p>		
<p>(23) Does your school curriculum include nutrition education; either as a separate lesson or integrated into lessons on, for example, health education, biology or home economics?</p> <p><input type="checkbox"/> Yes, for all grade levels</p> <p><input type="checkbox"/> Only to pupils in some grade levels (please specify the grade):.....</p> <p><input type="checkbox"/> No, for none</p>		
<p>(24) Is your school free from advertising and marketing of any energy-dense and nutrient-poor foods and beverages that could undermine the promotion of a healthy, balanced diet?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>		
<p>(25) Does your school provide school bus transport?</p> <p><input type="checkbox"/> Yes, to all pupils</p> <p><input type="checkbox"/> Only to pupils in some grade levels (please specify the grade):.....</p> <p><input type="checkbox"/> Only to pupils from rural areas</p> <p><input type="checkbox"/> Only to pupils living far away (please specify the distance):.....</p> <p><input type="checkbox"/> No, to nobody</p>		
<p>(26) In your opinion, are the routes to and from school safe for most pupils to walk or ride a bicycle?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>		
<p>(27) Does your school curriculum include physical education lessons?</p> <p><input type="checkbox"/> Yes, for all grade levels</p> <p><input type="checkbox"/> Only for pupils in some grade levels (please specify the grade):.....</p> <p><input type="checkbox"/> No, for none</p>		



INTRODUCTION TO CAREGIVERS

This survey is conducted by the [insert name of coordinating institute] in collaboration with the World Health Organization and is called the European Childhood Growth Surveillance Initiative. Its aim is to promote the health and well-being of primary-school children and is taking place in several countries in Europe. Your child’s class has been selected to participate. This questionnaire is about your child’s health and the things s/he does that may influence his or her health. We would like to ask you to complete this form, possibly together with your child. The information you give will be used to develop better health programmes for children like yours. Your child can return the completed form to his or her teacher in the enclosed envelope, which you can seal.

The information you provide is totally confidential and will not be disclosed to anyone at the school. It will be made anonymous and will only be used for research and monitoring purposes. Your name, address and other personal information will be removed from the database. Only a code will be used to connect your name and your answers, without identifying you.

Your participation is voluntary and you are free to refuse to answer any of the questions in this questionnaire. If you have any queries about this survey you may contact [insert coordinating institution and contact details, or name the Principal Investigator].

We would like to thank you very much in advance for your kind cooperation.

Form code FAMILY **Country code**

GENERAL IDENTIFICATION, CHILD

(1) **What is your child’s name?**

First name Surname

(2) **What is your child’s date of birth?**

/ /

Day / Month / Year

(3) **Child’s sex**

Boy Girl

(4) **What was the approximate birth weight of your child (in grams)?**

grams

GENERAL IDENTIFICATION, CHILD

(5) **Was your child born at full term (in general after 37 weeks of pregnancy)?**

- Yes
- No
- Don't know

(6a) **What is your place of residence?**(6b) **Postal code?**

GENERAL IDENTIFICATION, SCHOOL

(7) **What is the name of your child's school?**

(8) **What is the location/address of your child's school?**

(9) **In which class/grade level is your child now?**

CHILD'S LIFESTYLE CHARACTERISTICS

The following are questions about some lifestyle characteristics of your child.

(10) **How does your child usually get to and from school?** Please tick one box for "Going to school" and one box for "Coming from school".

Going to school

- S/he usually takes the school bus
- S/he usually goes by public transport
- S/he is usually brought by car
- S/he usually rides a bicycle
- S/he usually walks
- Other (please specify):

Coming from school

- S/he usually takes the school bus
- S/he usually goes by public transport
- S/he is usually brought by car
- S/he usually rides a bicycle
- S/he usually walks
- Other (please specify):

(11) **In your opinion, are the routes to and from school safe for your child to walk or ride a bicycle?**

- Yes
- No



CHILD'S LIFESTYLE CHARACTERISTICS

(12) **How far is your child's school from your home?**

- Less than 1 kilometre
- 1–2 kilometres
- 3–4 kilometres
- 5–6 kilometres
- More than 6 kilometres

(13) **Is your child a member of one or more sport or dancing clubs (e.g. football, running, hockey, swimming, tennis, basketball, gymnastics, ballet, fitness, ballroom dancing, etc.)?**

- Yes please continue with the next question
- No please continue with question 15

(14) **Over a typical or usual week, on how many days does your child go to this/these sport or dancing club(s)?**

- | | |
|--|--|
| <input type="checkbox"/> 0 days a week | <input type="checkbox"/> 4 days a week |
| <input type="checkbox"/> 1 day a week | <input type="checkbox"/> 5 days a week |
| <input type="checkbox"/> 2 days a week | <input type="checkbox"/> 6 days a week |
| <input type="checkbox"/> 3 days a week | <input type="checkbox"/> 7 days a week |

(15) **What is your child's usual amount of sleep each day?**

.....hours andminutes (combining night-time sleep and naps)

(16) **In his/her free time, about how many hours per day does your child usually play outside, at home or somewhere else?** Please tick one box for weekdays and one box for weekends.

Weekdays

- Never
- Less than 1 hour per day
- About 1 hour per day
- About 2 hours per day
- About 3 or more hours per day

Weekends

- Never
- Less than 1 hour per day
- About 1 hour per day
- About 2 hours per day
- About 3 or more hours per day


CHILD'S LIFESTYLE CHARACTERISTICS

- (17) **In his/her free time, about how many hours per day does your child usually spend *doing homework or reading a book, at home or somewhere else?*** Please tick one box for weekdays and one box for weekends.

Weekdays

- Never
 Less than 1 hour per day
 About 1 hour per day
 About 2 hours per day
 About 3 or more hours per day

Weekends

- Never
 Less than 1 hour per day
 About 1 hour per day
 About 2 hours per day
 About 3 or more hours per day

- (18) **Do you have a computer at home?**

- Yes
 No

- (19) **In his/her free time, about how many hours per day does your child usually spend *using a computer for playing games (other than homework), at home or somewhere else?*** Please tick one box for weekdays and one box for weekends.

Weekdays

- Never
 Less than 1 hour per day
 About 1 hour per day
 About 2 hours per day
 About 3 or more hours per day

Weekends

- Never
 Less than 1 hour per day
 About 1 hour per day
 About 2 hours per day
 About 3 or more hours per day

- (20) **In his/her free time, about how many hours per day does your child usually spend *watching television (including videos), at home or somewhere else?*** Please tick one box for weekdays and one box for weekends.

Weekdays

- Never
 Less than 1 hour per day
 About 1 hour per day
 About 2 hours per day
 About 3 or more hours per day

Weekends

- Never
 Less than 1 hour per day
 About 1 hour per day
 About 2 hours per day
 About 3 or more hours per day



CHILD'S LIFESTYLE CHARACTERISTICS

(21) **Over a typical or usual week, how often does your child have breakfast?**

Every day Most days (4-6 days) Some days (-3 days) Never

(22) **Over a typical or usual week, how often does your child eat or drink the following kinds of foods or beverages?** Please tick one box for each line.

	Every day	Most days (4-6 days)	Some days (1-3 days)	Never
Fresh fruit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vegetables (excluding potatoes)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
100% fruit juice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Soft drinks containing sugar	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diet or "light" soft drinks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low-fat/semi-skimmed milk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Whole-fat milk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flavoured milk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cheese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Yoghurt, milk pudding, cream cheese/ quark or other dairy products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Meat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Foods like potato chips (crisps), corn chips, popcorn or peanuts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Foods like candy bars or chocolate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Foods like biscuits, cakes, doughnuts or pies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Foods like pizza, french fries (chips), hamburgers, sausages or meat pies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(23) **Was your child ever breastfed?**

Yes please continue with the next question
 No please continue with question 25

CHILD'S LIFESTYLE CHARACTERISTICS

(24) **In his/her first year of life, for how long was your child breastfed?**

- | | |
|--|---|
| <input type="checkbox"/> Less than 1 month | <input type="checkbox"/> About 4 months |
| <input type="checkbox"/> About 1 month | <input type="checkbox"/> About 5 months |
| <input type="checkbox"/> About 2 months | <input type="checkbox"/> About 6 months |
| <input type="checkbox"/> About 3 months | <input type="checkbox"/> More than 6 months |

FAMILY HEALTH CHARACTERISTICS

The following are questions about some health characteristics of yourself and your family.

(25) **During the past 12 months, have you or anyone else in your household been told by a doctor or other health worker that one of you has high blood pressure (hypertension)?**

- Yes
- No
- Don't know

(26) **During the past 12 months, have you or anyone else in your household been told by a doctor or other health worker that one of you has diabetes?**

- Yes
- No
- Don't know

(27) **During the past 12 months, have you or anyone else in your household been told by a doctor or other health worker that one of you has a high cholesterol level?**

- Yes
- No
- Don't know

FAMILY GENERAL CHARACTERISTICS

The last set of questions asks about some general characteristics of yourself and your family.



FAMILY GENERAL CHARACTERISTICS

(28) **How many people aged 18 years or older, including yourself, live in your household?**

(29) **How many people younger than 18 years live in your household?**

(30) **What is the highest level of education you and/or your spouse/partner have completed?**

Please select one answer only for each of you.

You

- Primary school
- Secondary school
- Undergraduate/Bachelor degree
- Masters degree or higher

Your spouse/partner

- Primary school
- Secondary school
- Undergraduate/Bachelor degree
- Masters degree or higher

(31) **During the past calendar year, what was the gross income of your household?** Please express it in your local currency.

(32) **Which of the following best describes your and/or your spouse's/partner's main work over the last 12 months?** Please select one answer only for each of you.

You

- Government employed
- Non-government employed
- Self-employed
- Student
- Homemaker
- Unemployed, able to work
- Unemployed, unable to work
- Retired

Your spouse/partner

- Government employed
- Non-government employed
- Self-employed
- Student
- Homemaker
- Unemployed, able to work
- Unemployed, unable to work
- Retired

(33) **In what type of housing are you currently living?**

- House/bungalow, detached
- House, semi-detached/terraced
- Apartment
- Shared house
- Shared apartment
- Other (please specify)



FAMILY GENERAL CHARACTERISTICS

(34) **Is this accommodation:**

- Owned by you?
- Rented by you?
- Other (please specify)

(35) **What is your relationship to the child?**

- I am the mother
- I am the father
- Other (please specify), I am

Date of completion of this form

/ /
Day / Month / Year

Signature

REMARKS

You may write down any remarks you would like to make in this box:

The WHO Regional Office for Europe

The World Health Organization (WHO) is a specialized agency of the United Nations created in 1948 with the primary responsibility for international health matters and public health. The WHO Regional Office for Europe is one of six regional offices throughout the world, each with its own programme geared to the particular health conditions of the countries it serves.

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