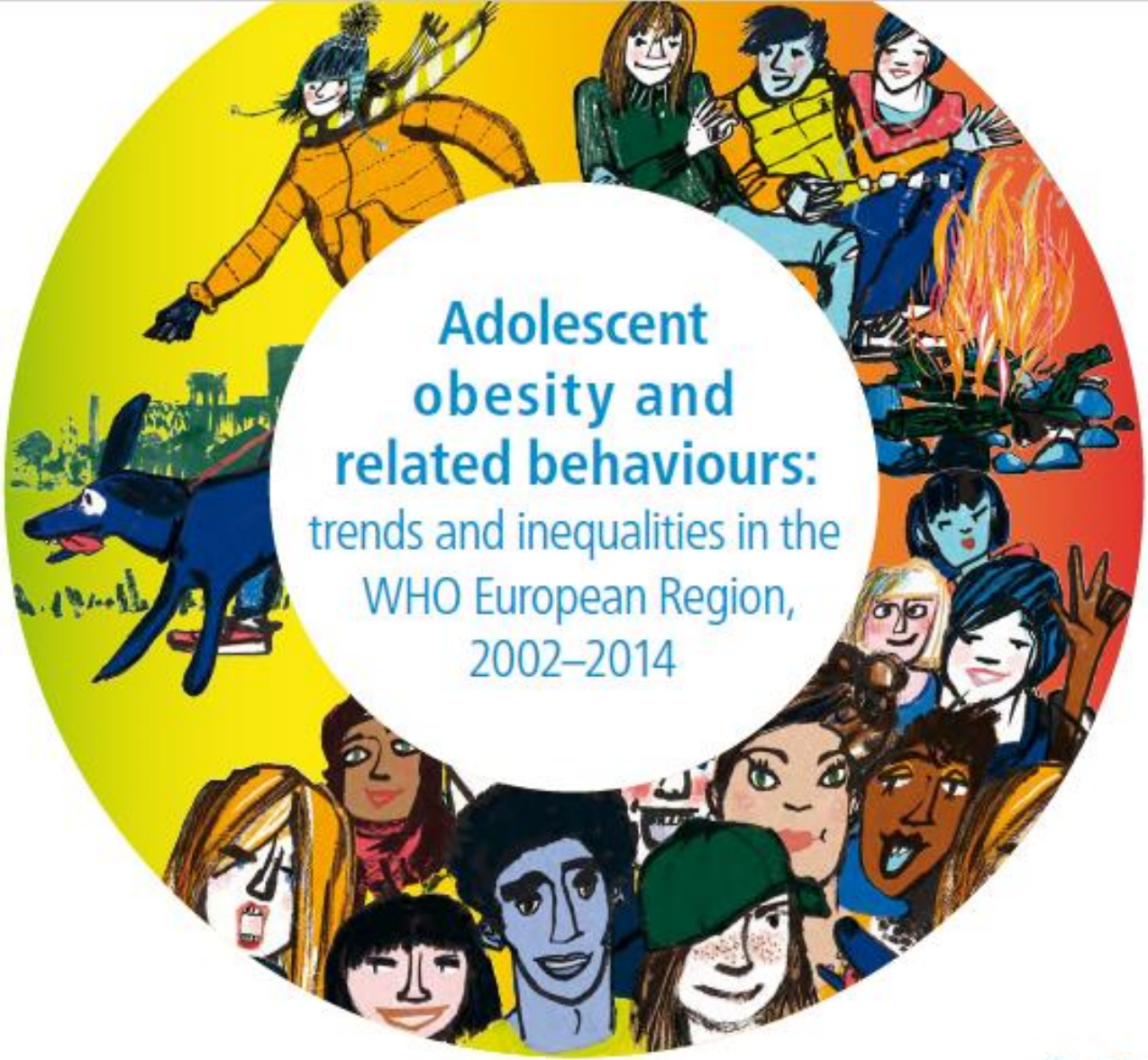


Adolescent obesity and related behaviours:

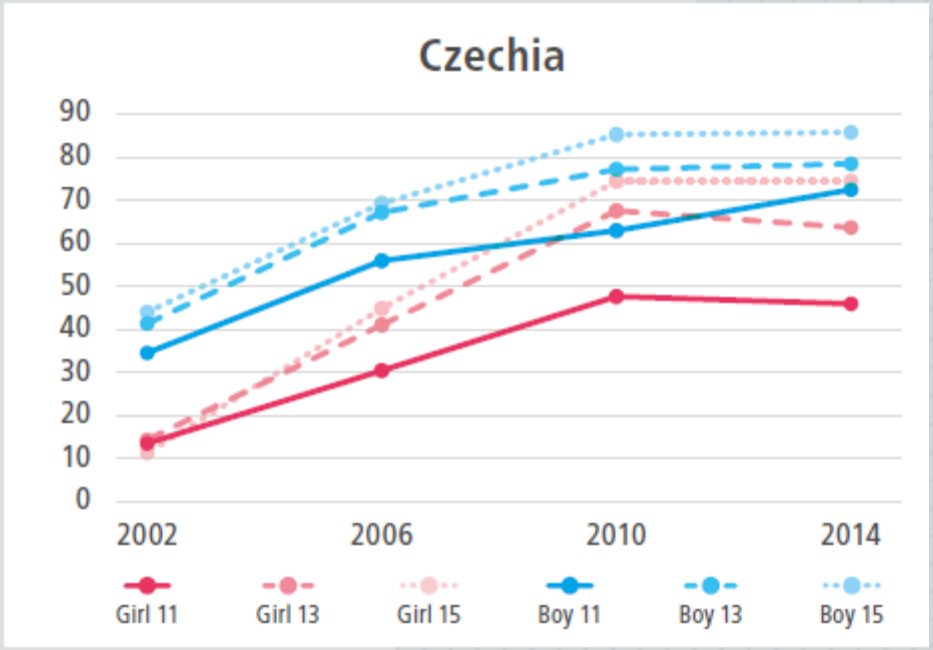
trends and inequalities in the WHO European Region, 2002–2014

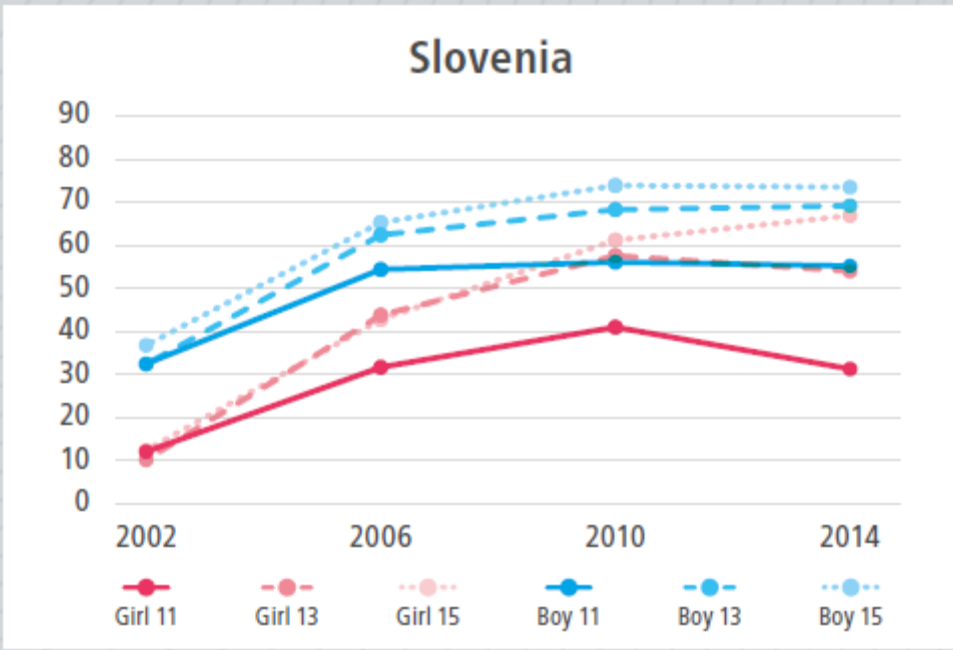
Observations from the Health Behaviour in School-aged Children (HBSC) WHO collaborative cross-national study

hbsc

VIDEO

Computer use of two hours or more on weekdays (%)

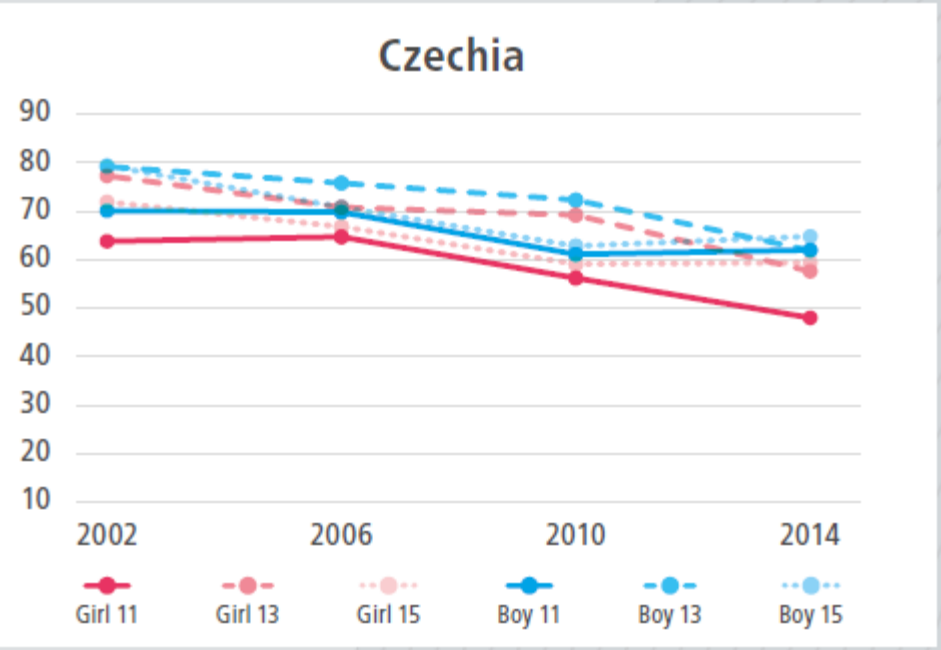


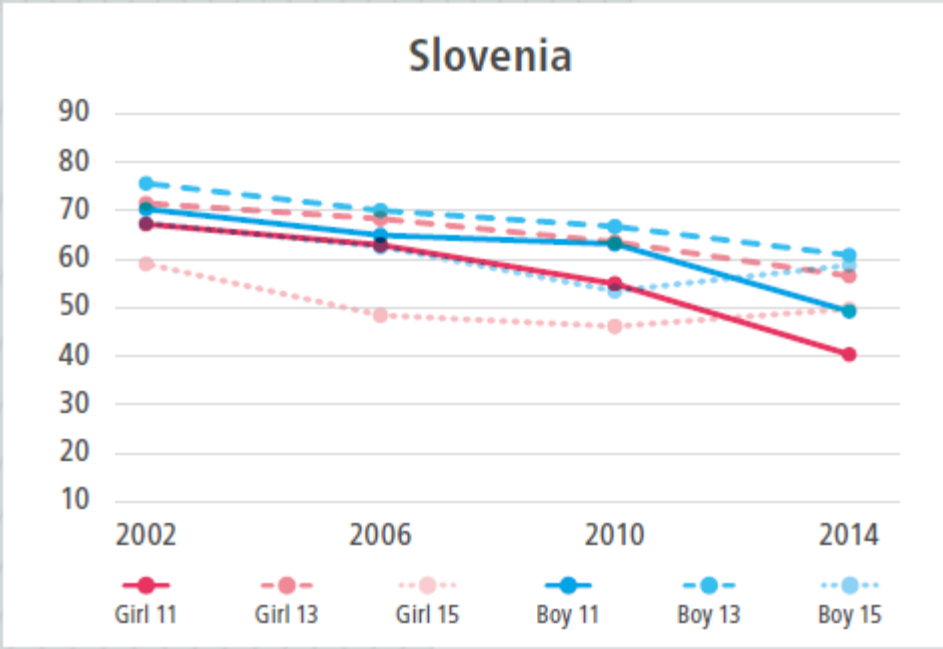


WHO, 2017

Adolescent obesity and related behaviours: trends and inequalities in the WHO European Region, 2002–2014

TV-viewing two hours or more on weekdays (%) contd

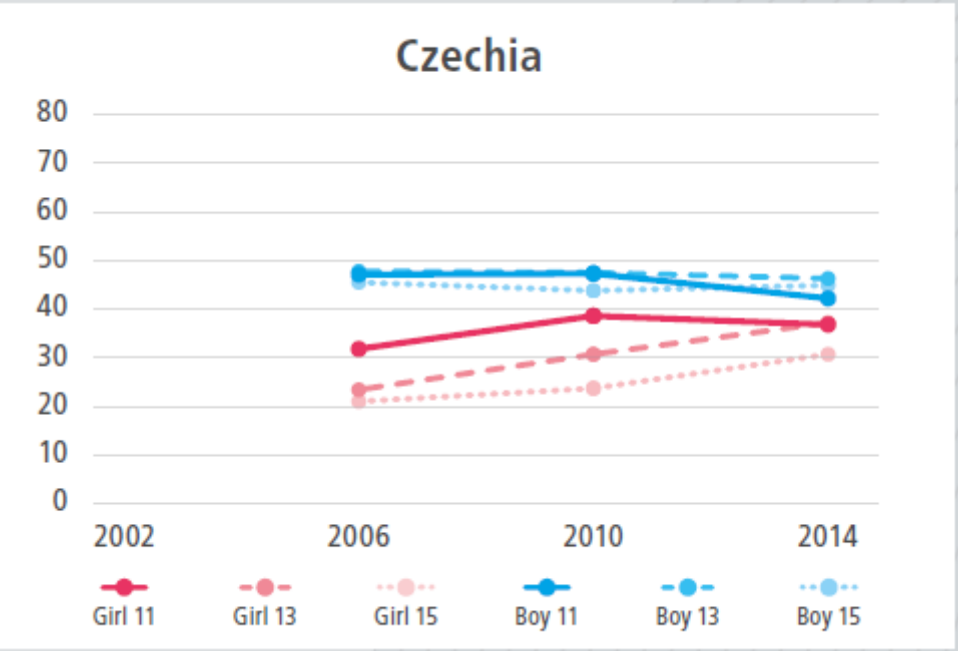


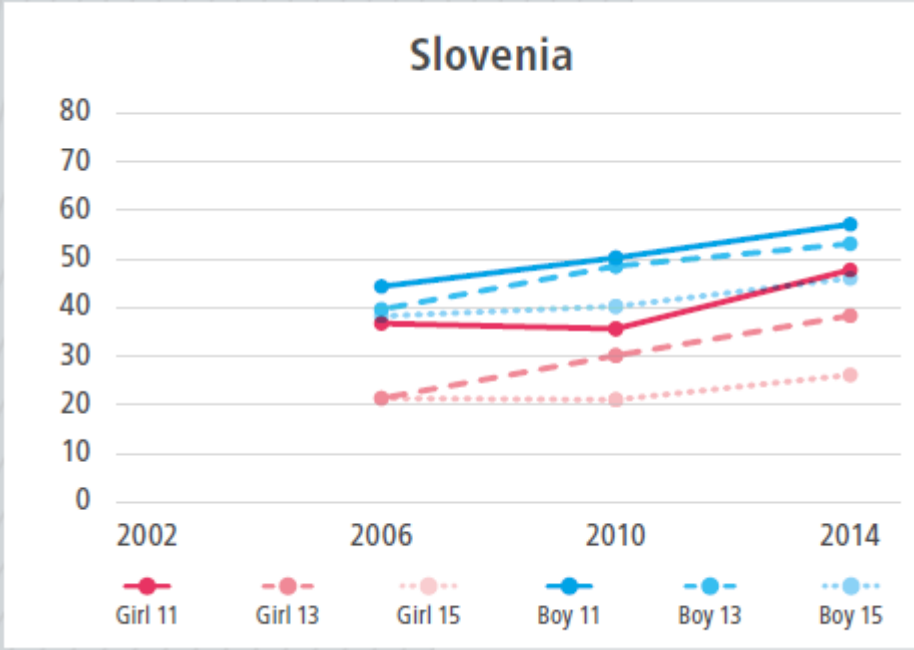


WHO, 2017

Adolescent obesity and related behaviours: trends and inequalities in the WHO European Region, 2002–2014

Vigorous-intensity physical activity four or more times a week (%) contd





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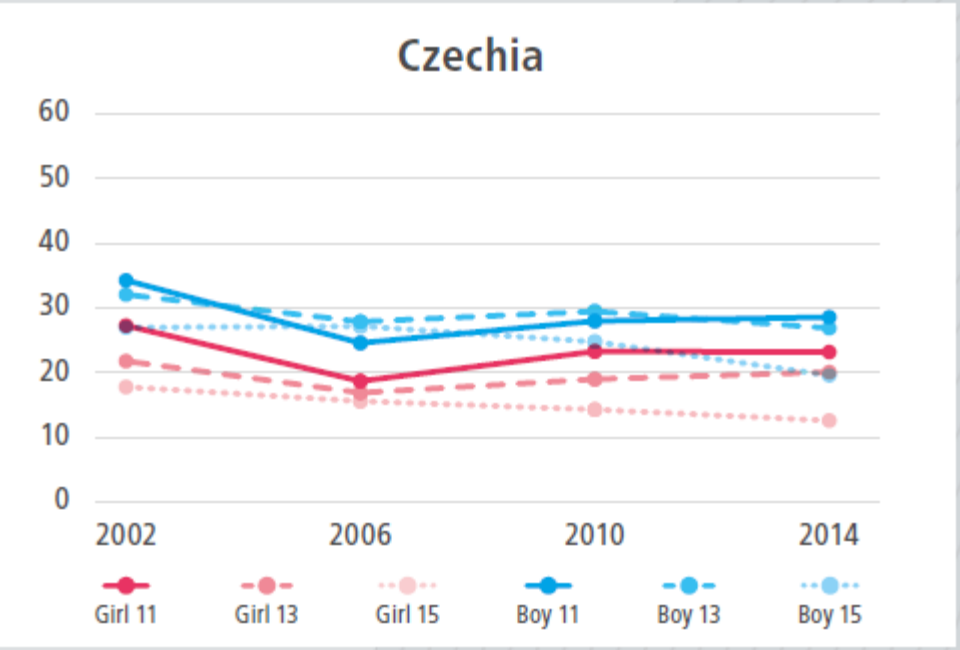
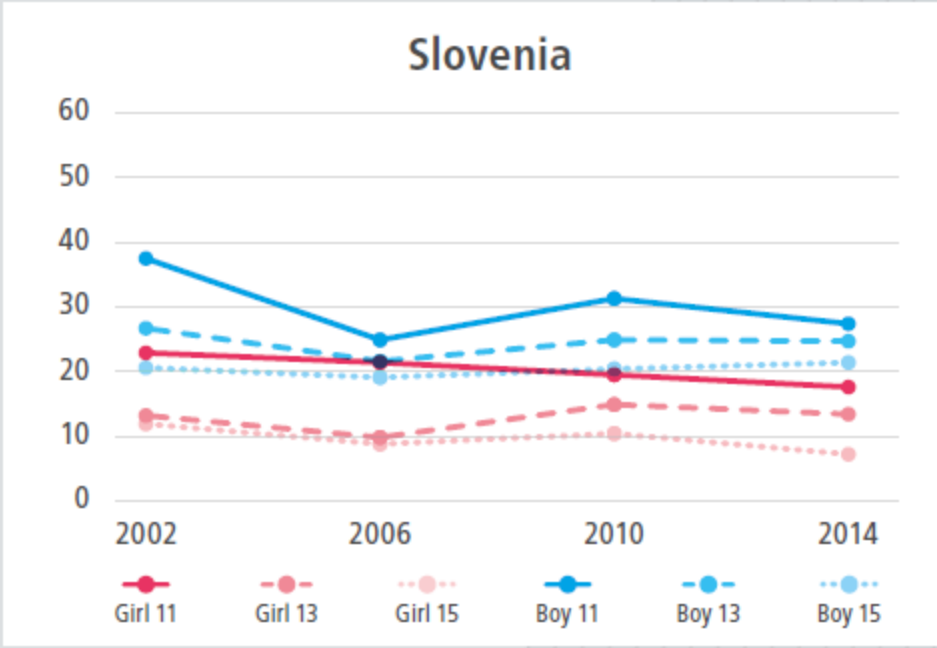
Moderate-to-vigorous-intensity physical activity of 60 minutes or more daily (%) contd

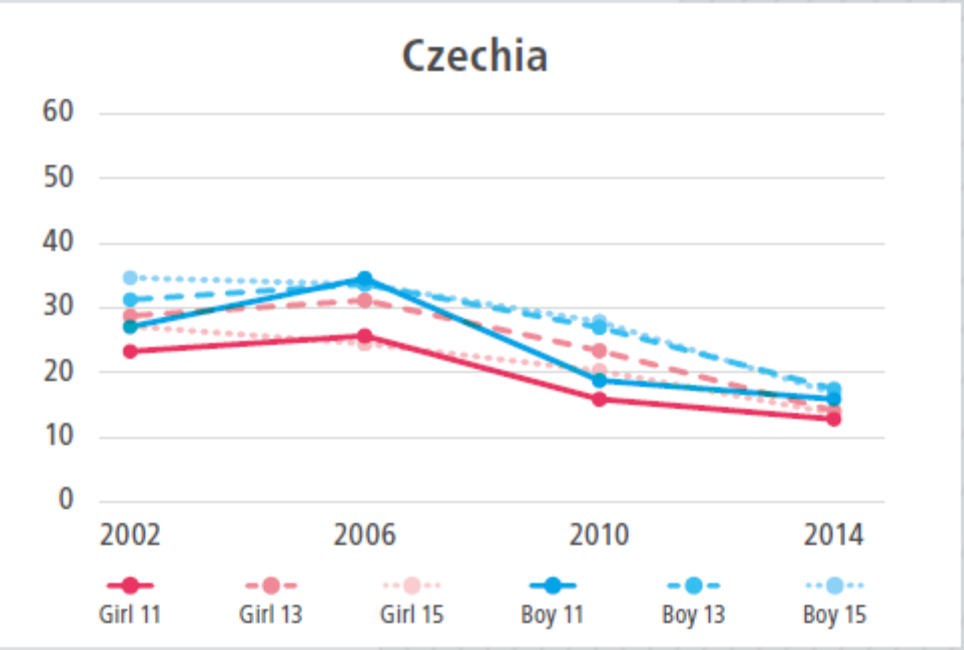


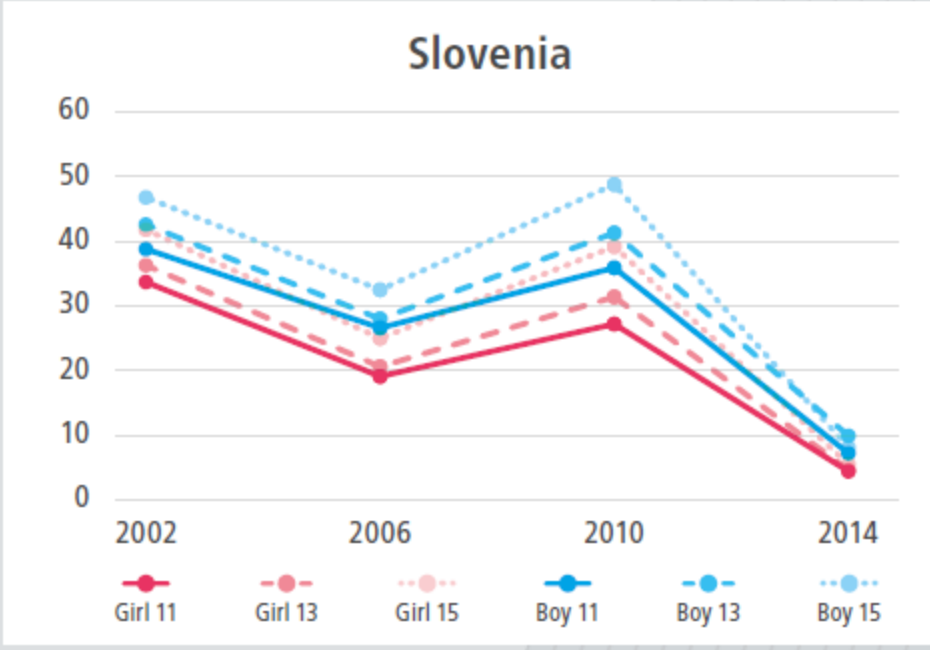


WHO, 2017

Adolescent obesity and related behaviours: trends and inequalities in the WHO European Region, 2002–2014

Daily soft-drinks consumption (%) contd

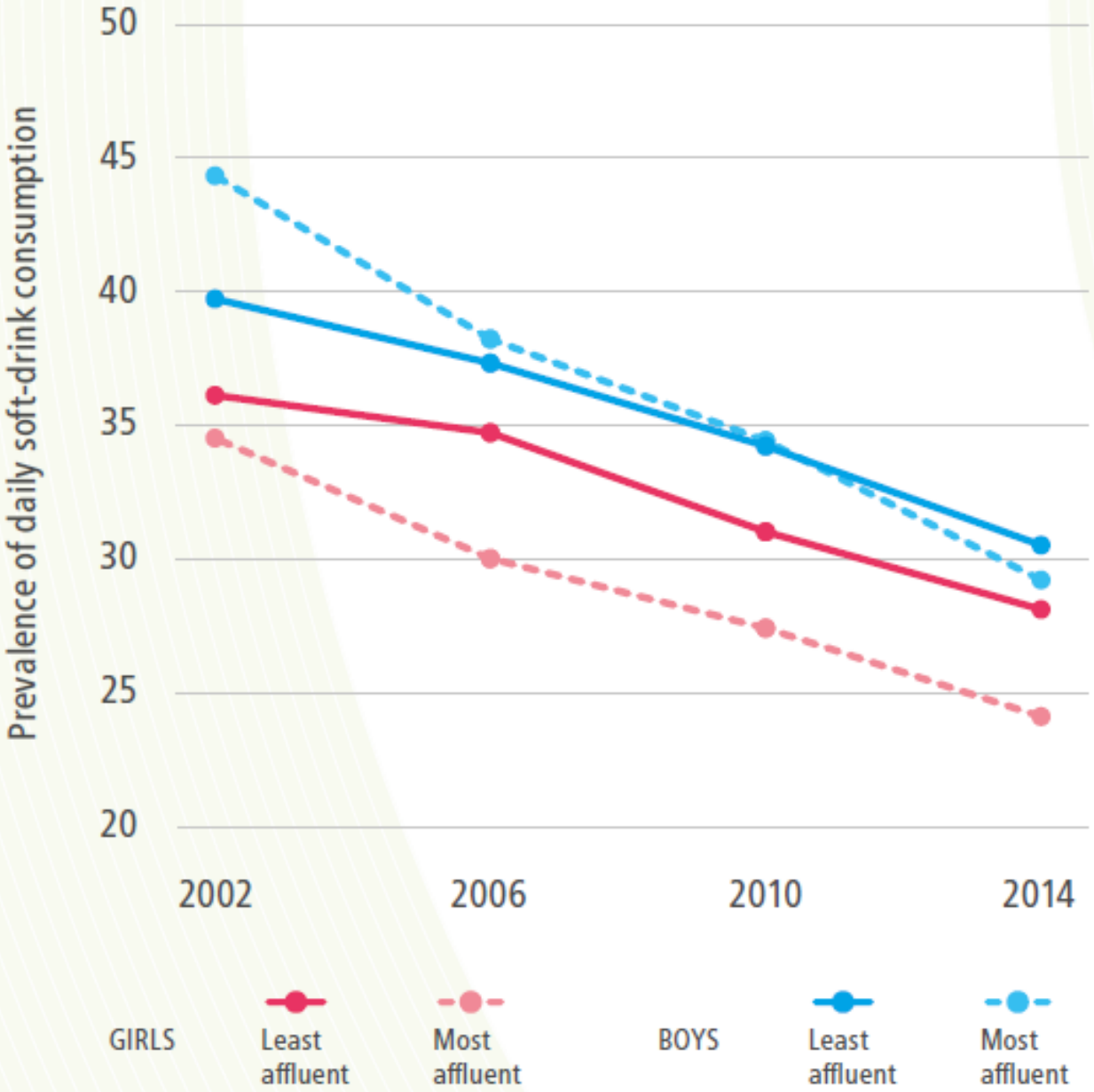




WHO, 2017

Adolescent obesity and related behaviours: trends and inequalities in the WHO European Region, 2002–2014

Trends in inequalities in daily soft-drink consumption, 2002–2014, all countries combined (%)



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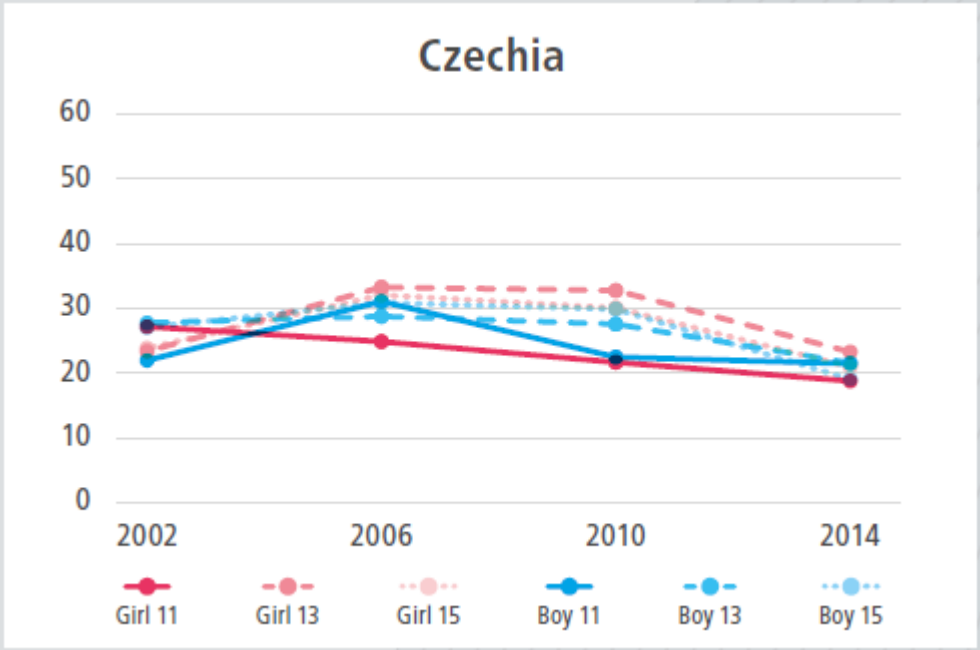
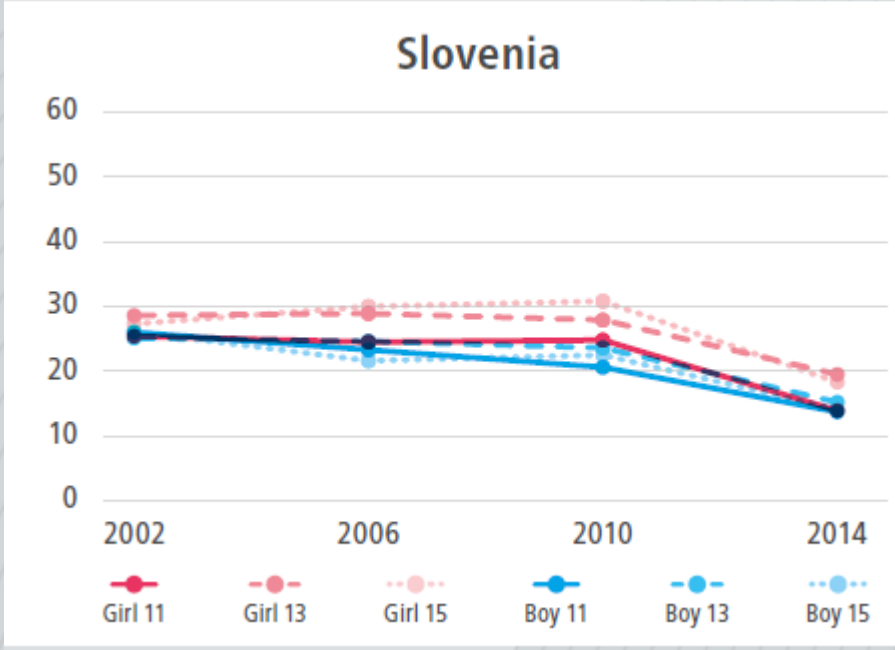
Adolescent obesity and related behaviours: trends and inequalities in the WHO European Region, 2002–2014

Daily sweets consumption (%) contd

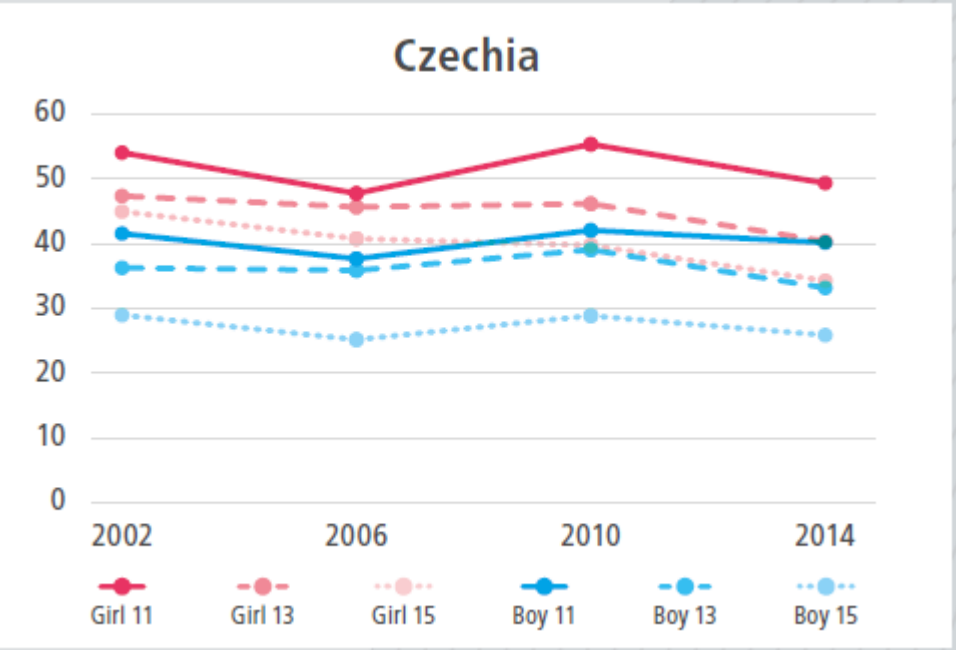


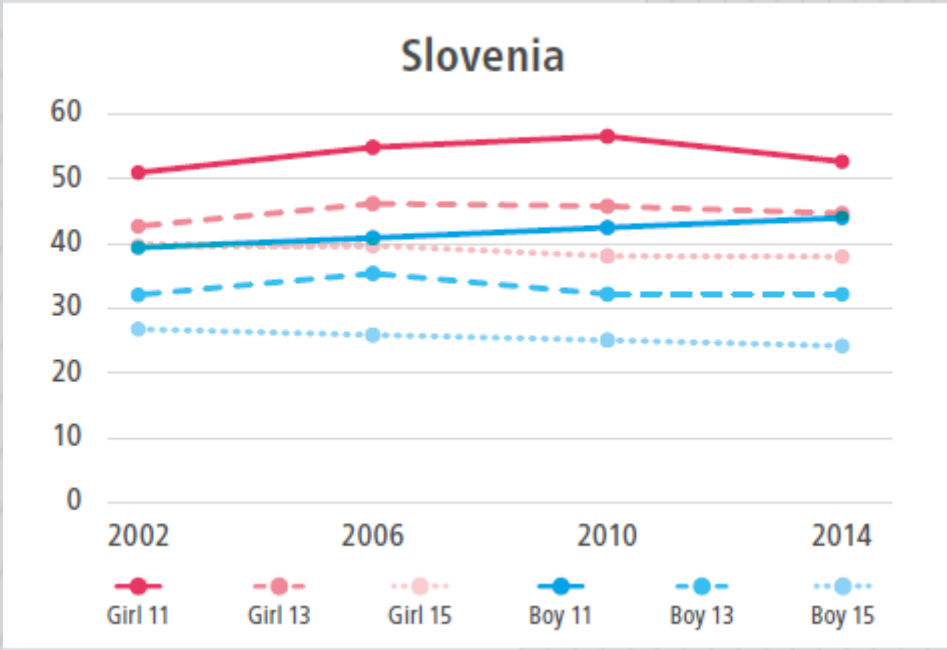


WHO, 2017

Adolescent obesity and related behaviours: trends and inequalities in the WHO European Region, 2002–2014

Daily fruit consumption (%)





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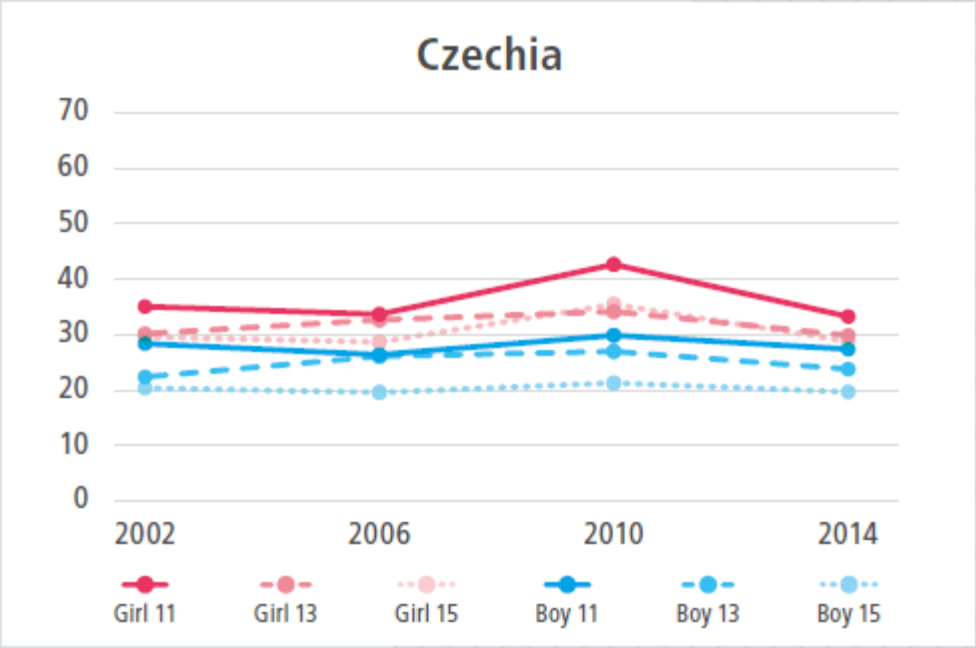
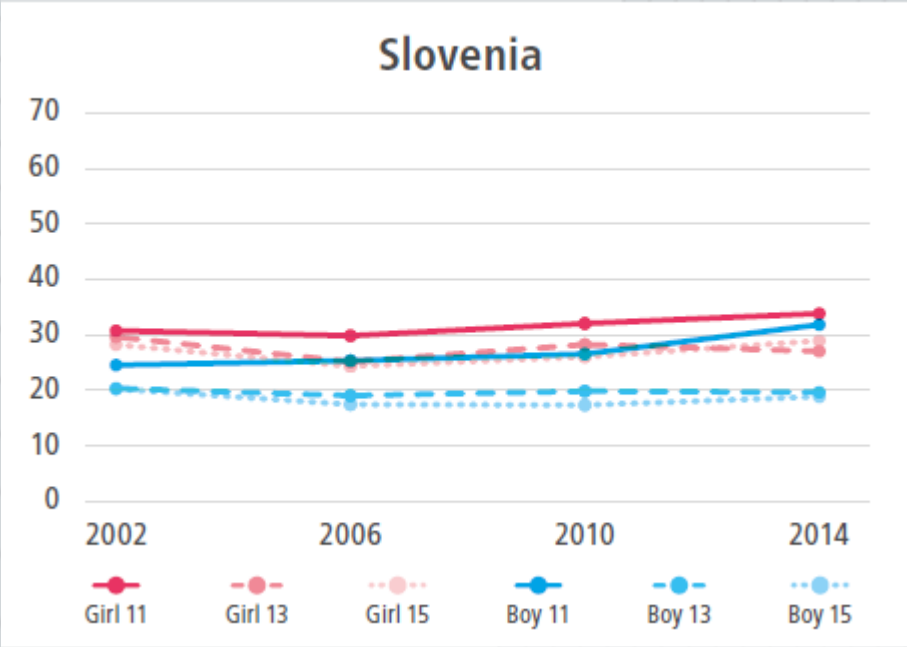
Daily vegetable consumption (%) contd





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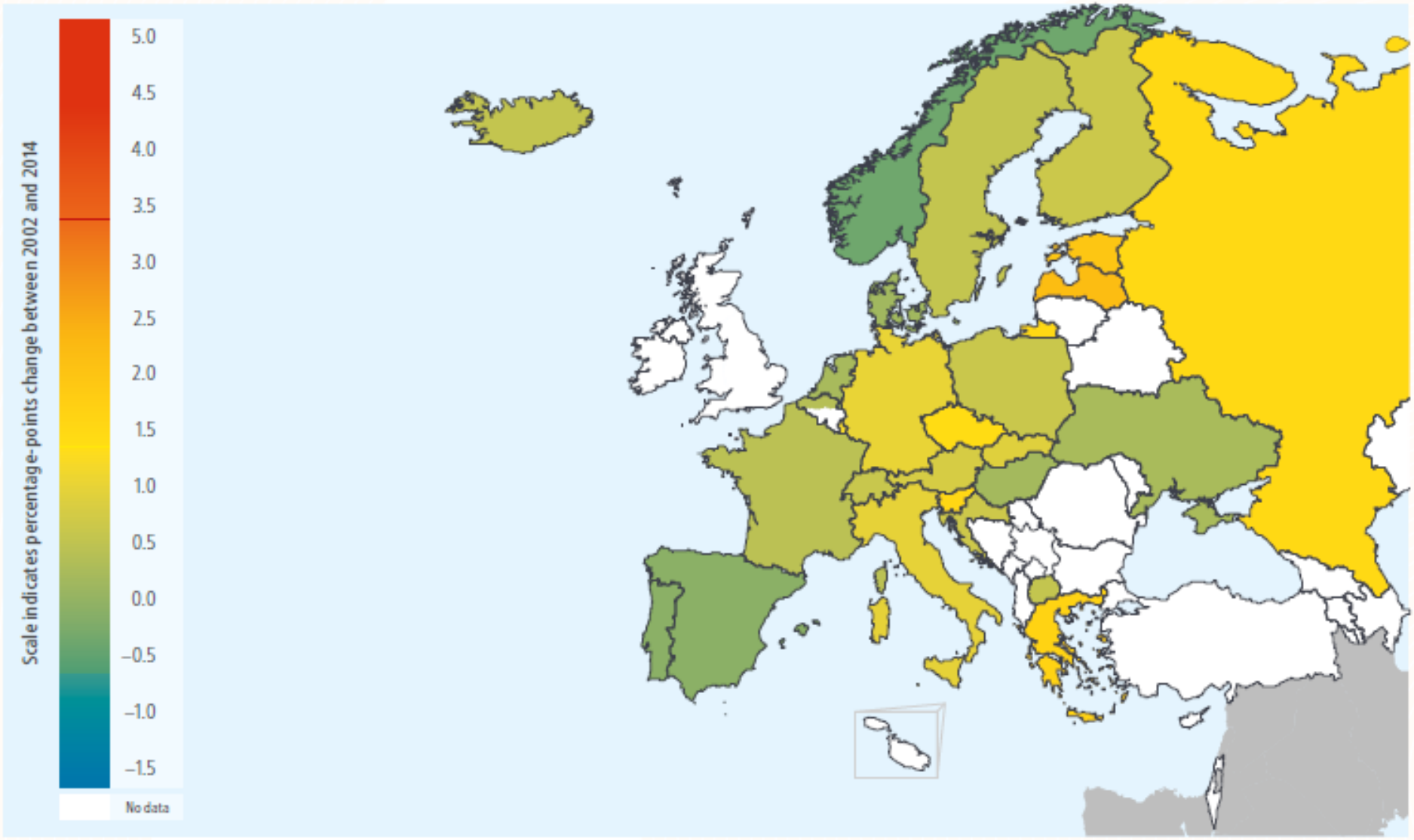
Adolescent obesity and related behaviours: trends and inequalities in the WHO European Region, 2002–2014

Fig. 2.2.

Difference in obesity prevalence between 2002 and 2014, girls

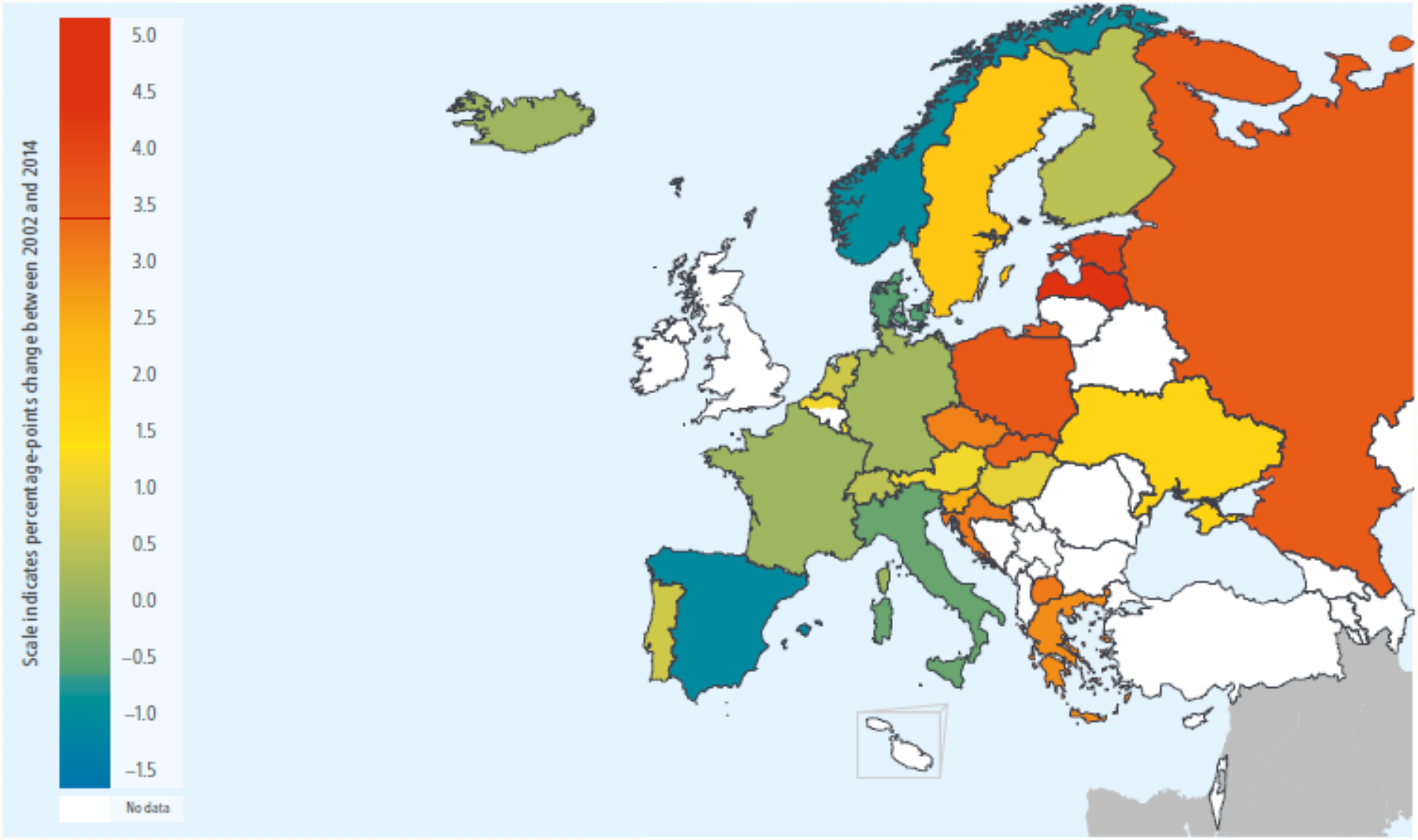


Note: data from 2006 are used as the baseline for countries with no 2002 data (Iceland, Luxembourg and Slovakia). Data excluded as missing values >30% for Belgium (French), Ireland, Israel, Lithuania, Malta, Romania, United Kingdom (England), United Kingdom (Scotland) and United Kingdom (Wales). No trend data were available for Albania, Armenia, Bulgaria, Republic of Moldova and Turkey.

WHO, 2017

Fig. 2.3.

Difference in obesity prevalence between 2002 and 2014, boys



Note: data from 2006 are used as the baseline for countries with no 2002 data (Iceland, Luxembourg and Slovakia). Data excluded as missing values >30% for Belgium (French), Ireland, Israel, Lithuania, Malta, Romania, United Kingdom (England), United Kingdom (Scotland) and United Kingdom (Wales). No trend data were available for Albania, Armenia, Bulgaria, Republic of Moldova and Turkey.

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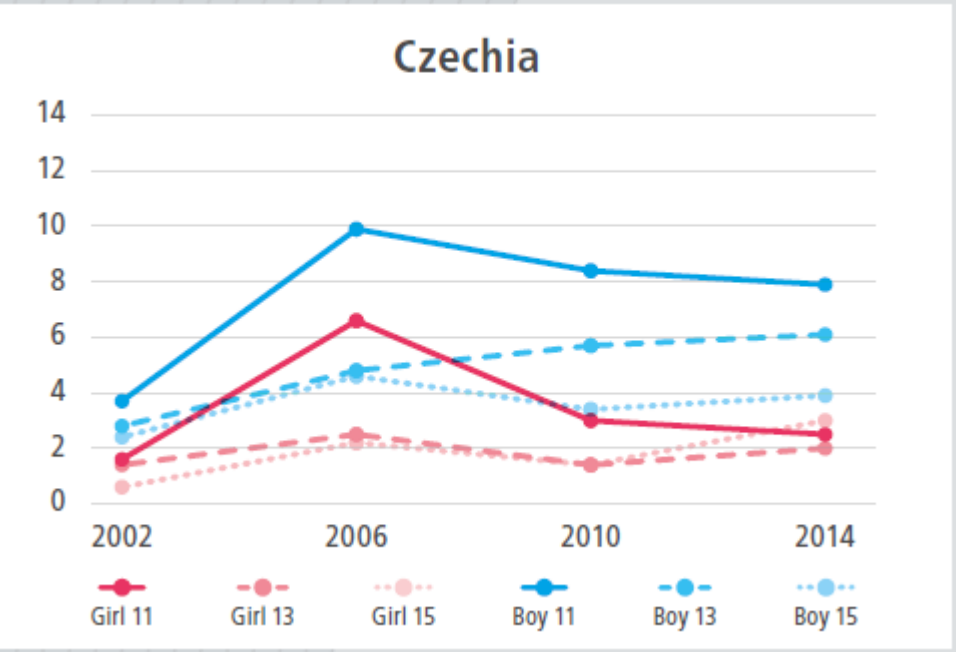
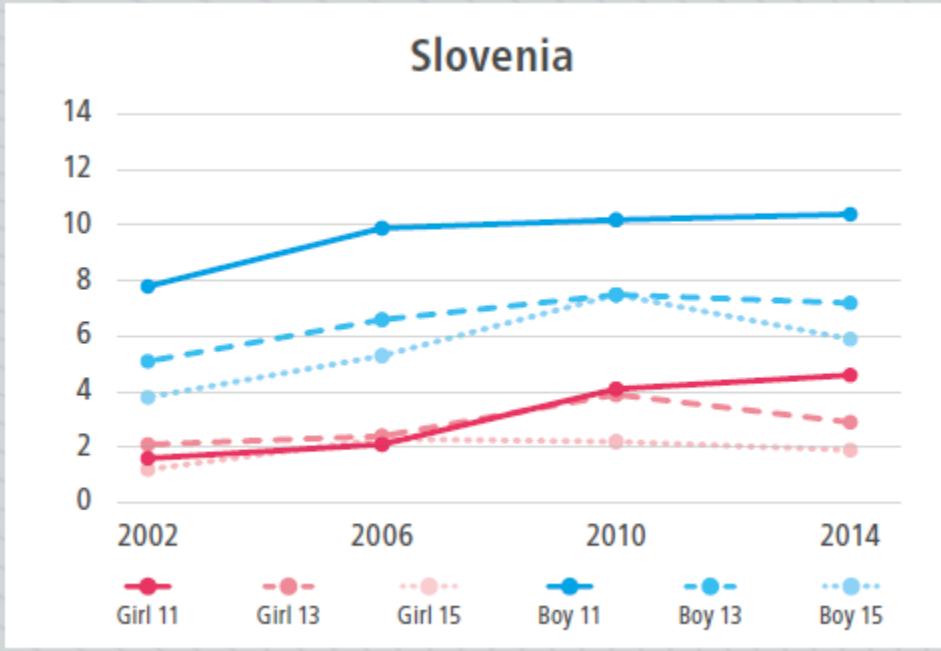
Obesity prevalence (%) contd





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Adolescent obesity and related behaviours: trends and inequalities in the WHO European Region, 2002–2014

Body composition and energy needs

Body composition (%, kg)?

Sex: men
Body weight: 70 kg

	Kg	%
Protein		
Water		
Bone		
Fat		

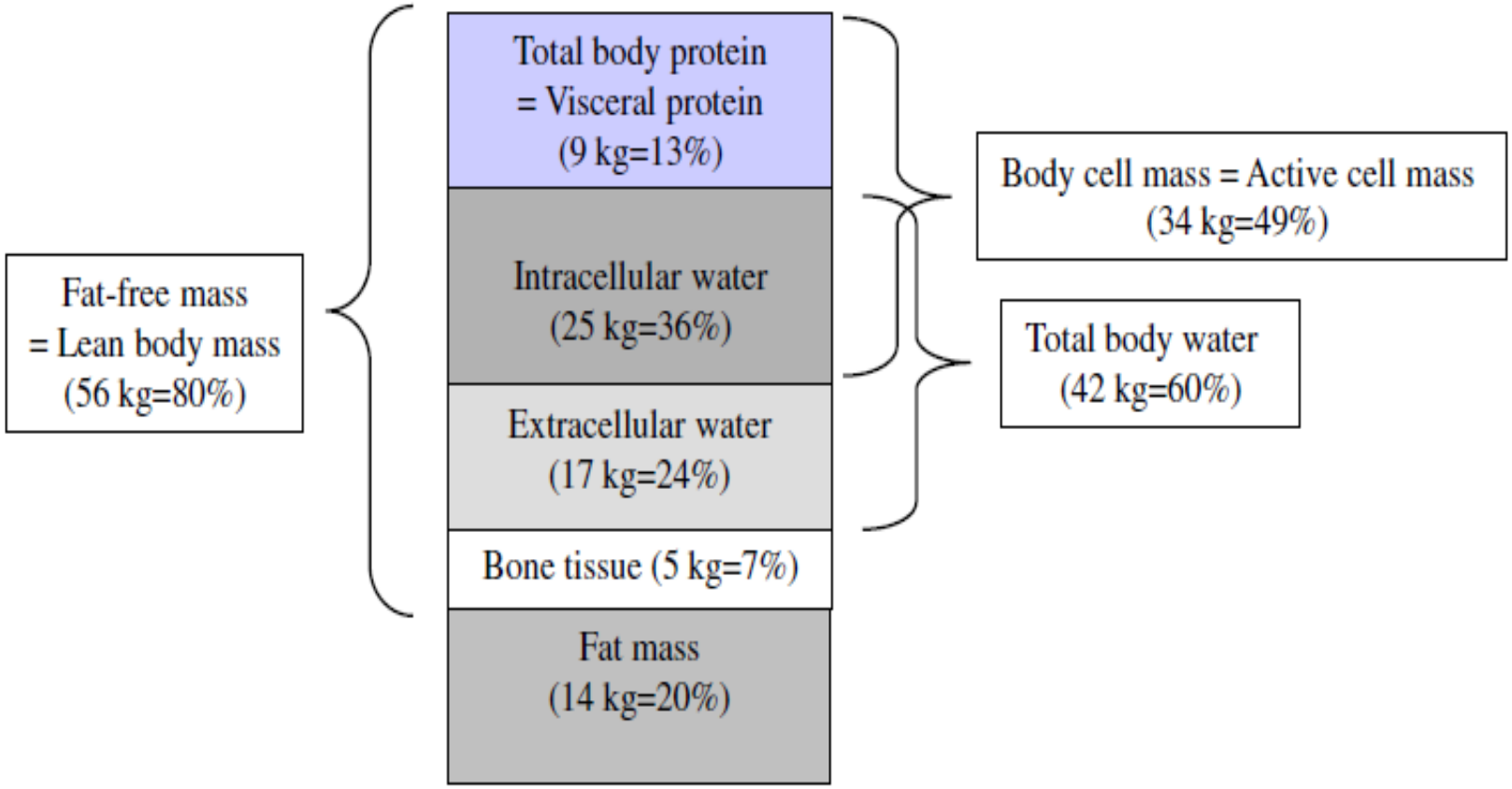


Fig. 1. Mean values of body composition compartments in an healthy human subject of 70 kg (adapted with the permission of the publishers from Kyle et al.[30]).

Body mass index (BMI) = Queteletov index

BMI = body mass (kg) / height² (m²)

Example: BMI = 70 kg / (1.75 m^2) = 70 / 3.06 = 22.9

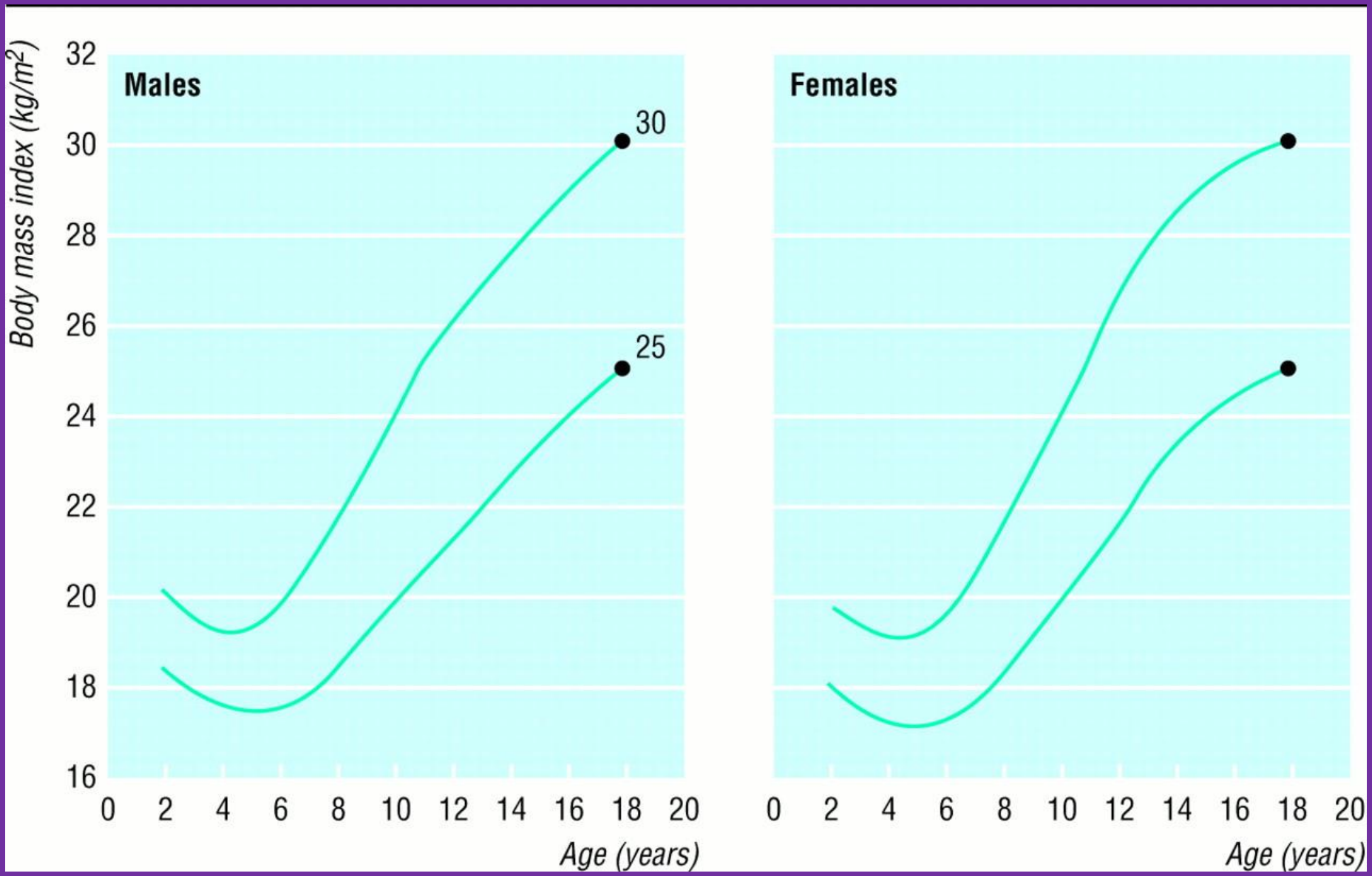
What is my BMI?

Table: The International Classification of adult underweight, overweight and obesity according to BMI

Classification	BMI(kg/m^2)	
	Principal cut-off points	Additional cut-off points
Underweight	**<18.50**	**<18.50**
Severe thinness	<16.00	<16.00
Moderate thinness	16.00 - 16.99	16.00 - 16.99
Mild thinness	17.00 - 18.49	17.00 - 18.49
Normal range	**18.50 - 24.99**	**18.50 - 22.99**
		23.00 - 24.99
Overweight	**≥25.00**	**≥25.00**
Pre-obese	25.00 - 29.99	25.00 - 27.49
		27.50 - 29.99
Obese	**≥30.00**	**≥30.00**
Obese class I	30.00 - 34.99	30.00 - 32.49
		32.50 - 34.99
Obese class II	35.00 - 39.99	35.00 - 37.49
		37.50 - 39.99
Obese class III	≥40.00	≥40.00

Source: Adapted from WHO, 1995, WHO, 2000 and WHO 2004.

Body Mass Index-for-Age, 2 to 20 Years (Overweight and Obese)

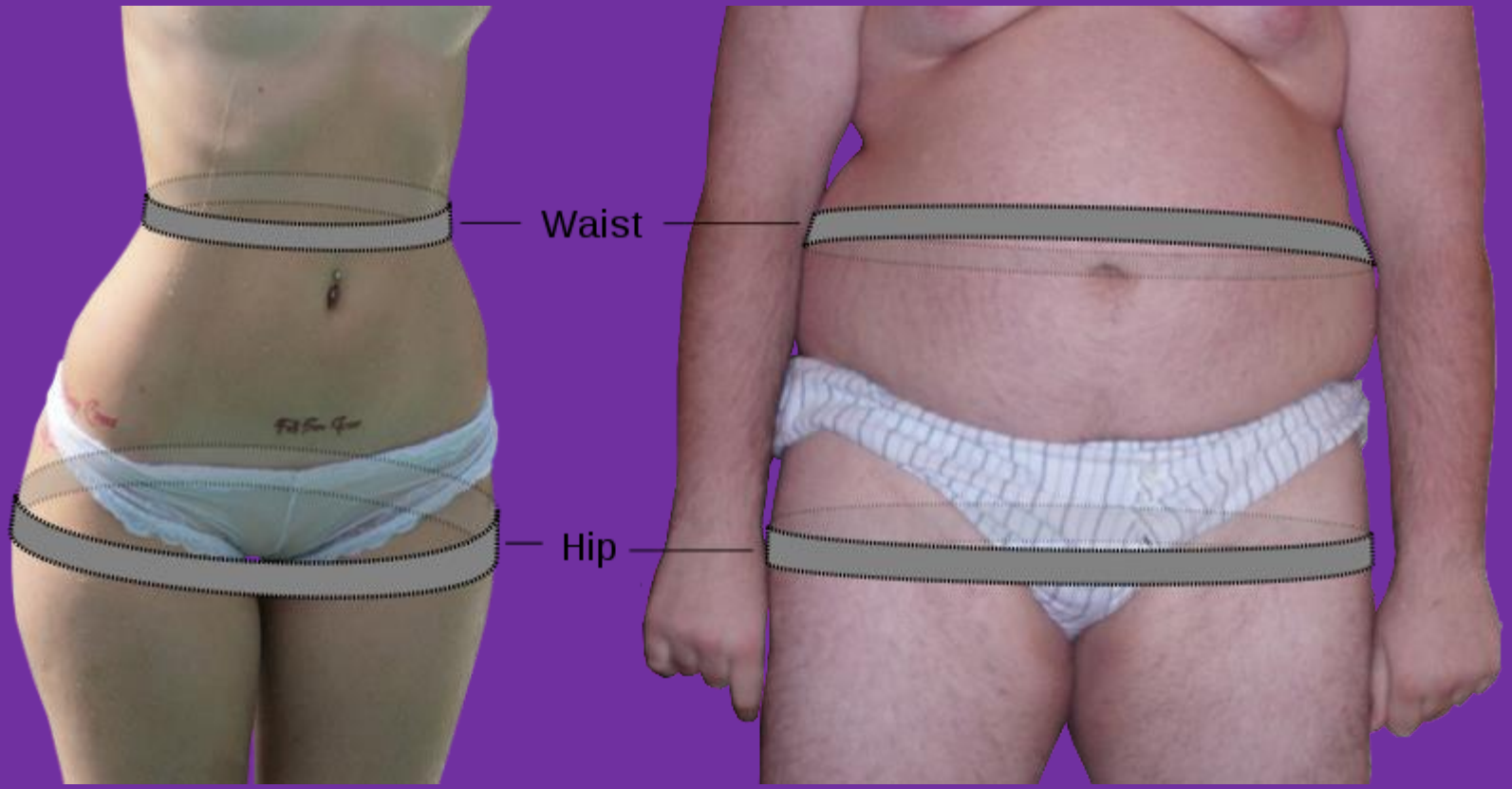


WHR = waist-hip ratio

WHR = waist (cm) / hip (cm)

Not for a children!

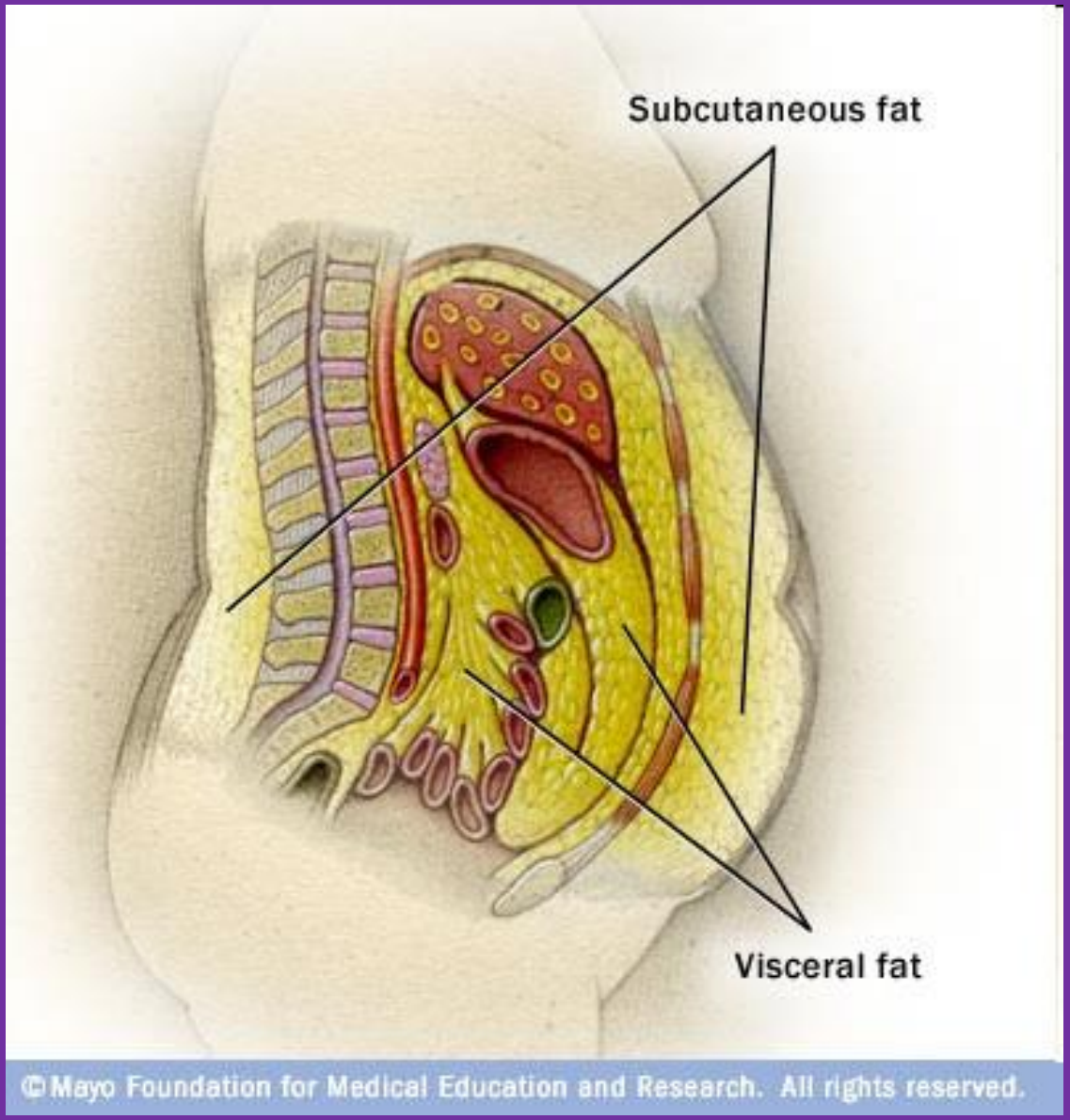
“Pear-shaped” “Apple-shaped”

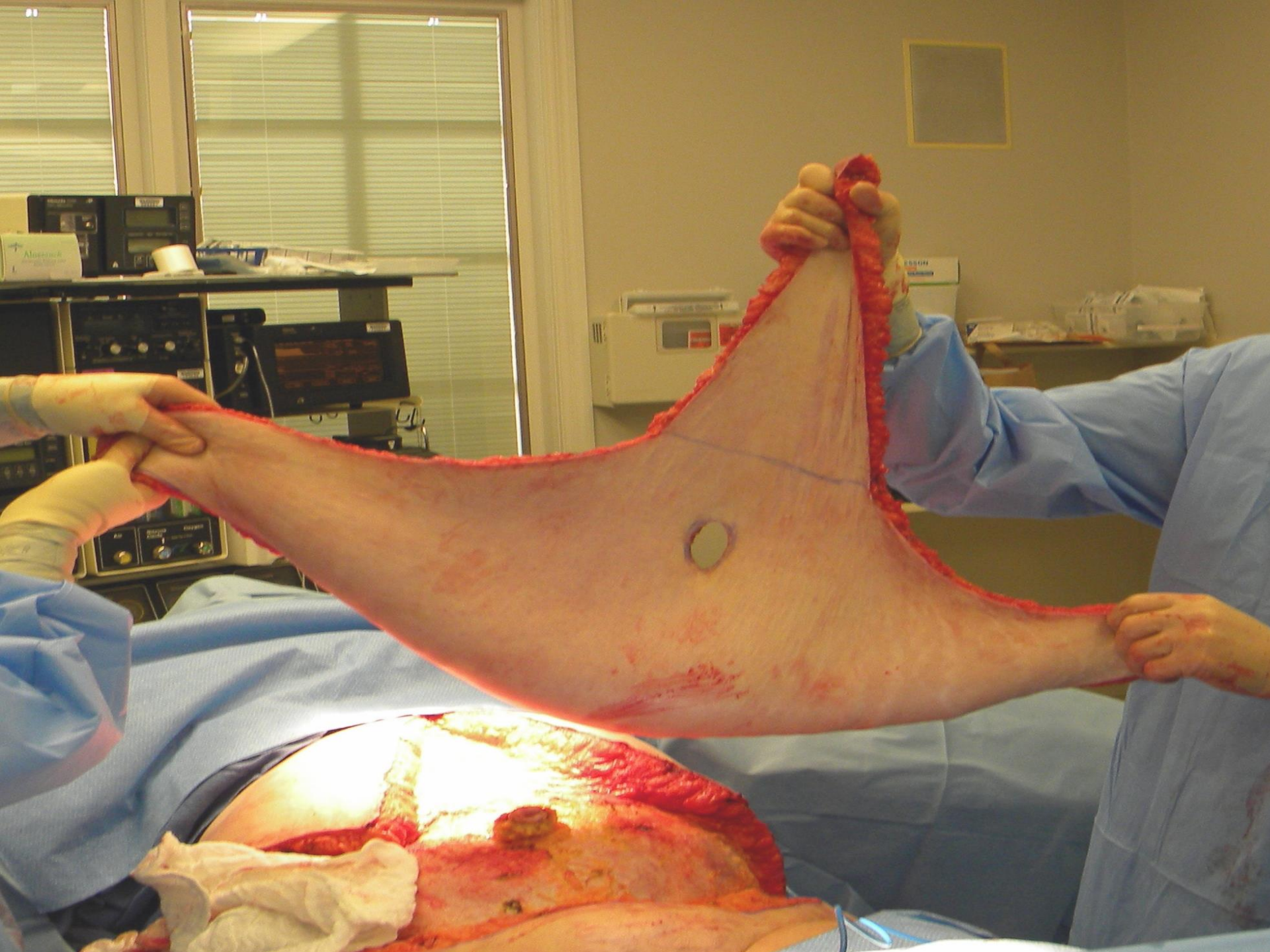


The National Institute of Diabetes, Digestive and Kidney Diseases (NIDDK) states that:

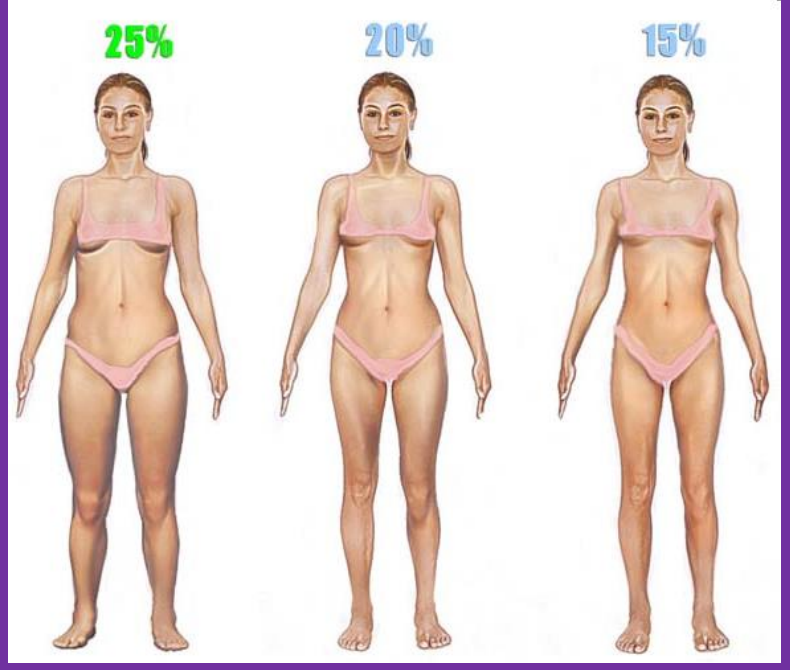
- women with waist–hip ratios of more than 0.8, and
- men with more than 1.0,

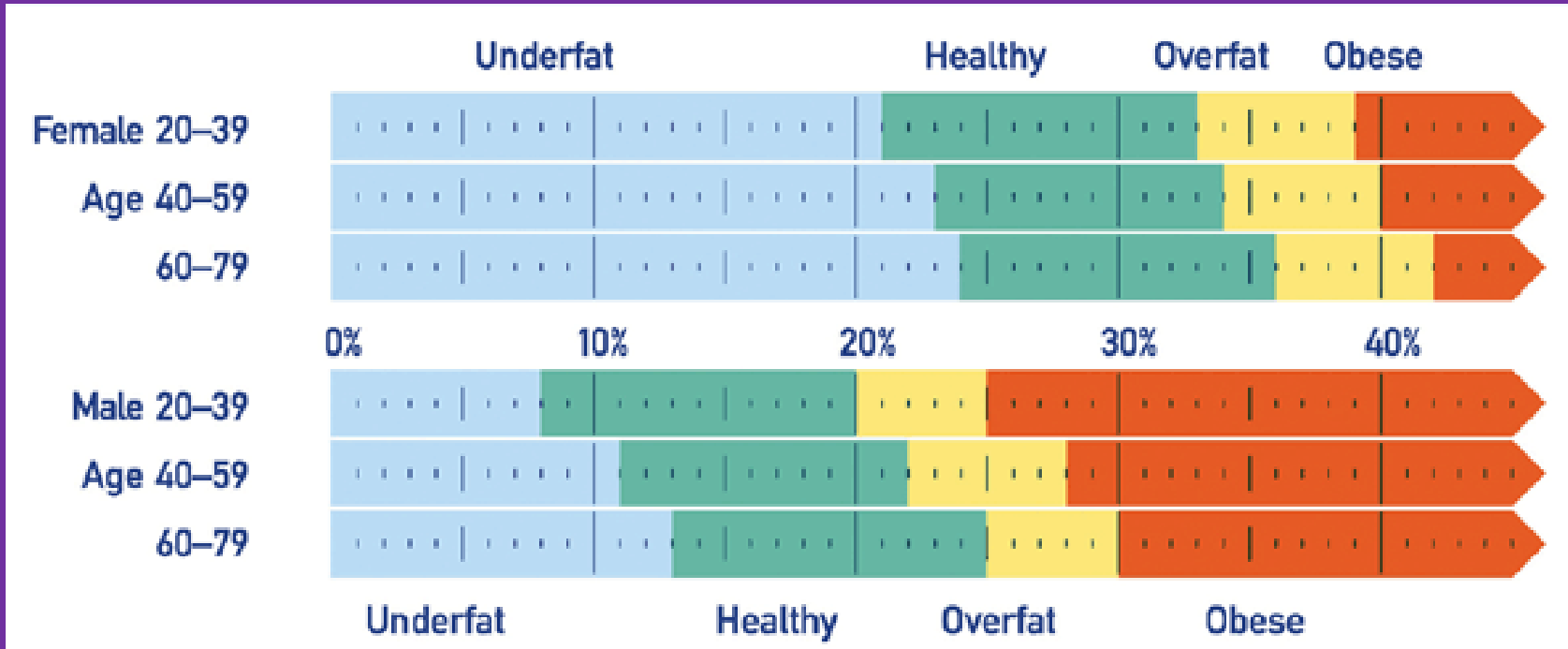
are at **increased health risk** because of their fat distribution.

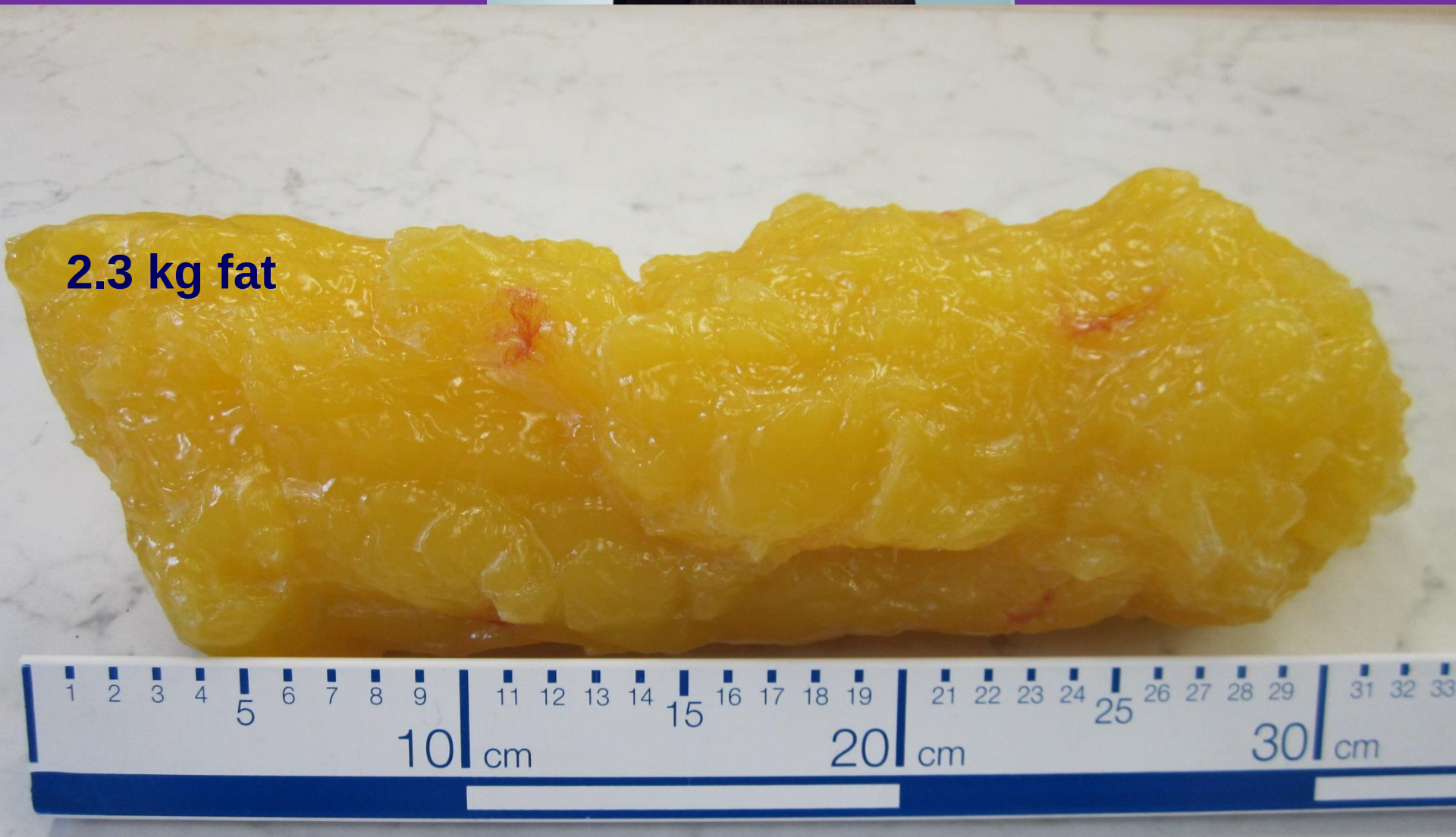





45%
40%
35%
30%


25%
20%
15%


Underfat
Healthy
Overfat
Obese
Female 20–39
Age 40–59
60–79
0%
10%
20%
30%
40%
Male 20–39
Age 40–59
60–79
Underfat
Healthy
Overfat
Obese


2.3 kg fat
1 2 3 4 5 6 7 8 9 10 cm
11 12 13 14 15 16 17 18 19 20 cm
21 22 23 24 25 26 27 28 29 30 cm
31 32 33

2.3 kg fat

Energy expenditure (EE)

Energy

1 J = 1W/s

1kJ = 1000 J

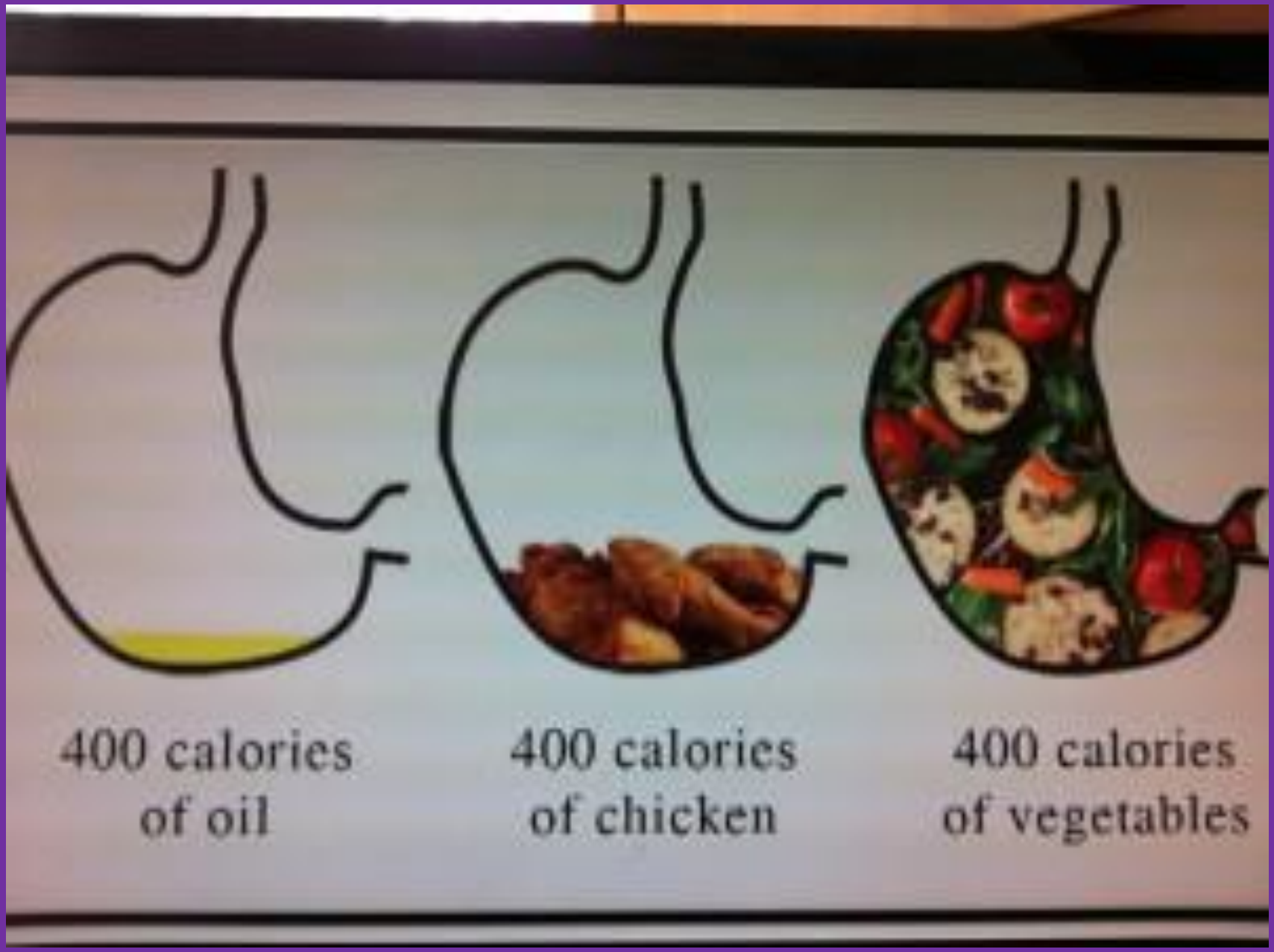
1 MJ = 1 000 000 J

1 kcal (kcal = Cal) = 4,184 kJ (~ 4,2 kJ)

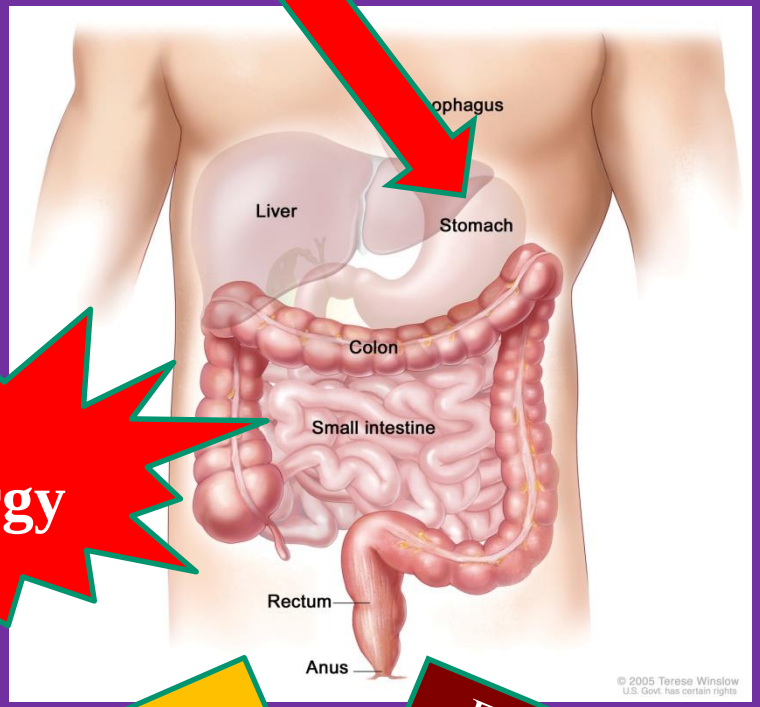
1kJ = 0,239 kcal

- **A small calorie** (sympbol: cal) - 1cal is the amount of energy required to raise **one gram of water by one degree Celsius**.

- **A large calorie** (symbol: Cal, kcal) **-** 1Cal is the amount of energy required to raise **one kilogram of water by one degree Celsius**.


400 calories
of oil
400 calories
of chicken
400 calories
of vegetables

Energy value of food



Energy

Energy lost in urine

Energy lost in feces

Energy value in food

Gross energy of food (heat of combustion) (kcal/g)	
Carbohydrates	4.10
Fat	9.45
Protein	5.20
Alcohol	7.10

Metabolizable energy (kcal/g)	
Carbohydrates	4.0
Fat	9.0
Protein	4.0
Alcohol	7.0

Basal Metabolic Rate (BMR or BM)

*"The minimum amount of energy required to **maintain vital functions** in an organism at complete rest, measured by the basal metabolic rate in a fasting individual who is **awake and resting in a comfortably warm environment.**"*

- 60 to 75% of the daily energy

Source: *http://www.thefreedictionary.com/basal+metabolism*

Harris–Benedict equatio

- method used to estimate an individual's basal metabolic rate (BMR) and daily calorie requirements

Men

BM = 66 + (13,8 x weight (kg)) + (5 x height (cm)) – (6,8 x age (years))

Women

BM = 655 + (9,6 x weight (kg)) + (1,8 x height (cm)) – (4,7 x age (years))

What is your BMR?

Harris-Benedict Principle

Little to no exercise	Daily calories needed = BMR x 1.2
Light exercise (1–3 days per week)	Daily calories needed = BMR x 1.375
Moderate exercise (3–5 days per week)	Daily calories needed = BMR x 1.55
Heavy exercise (6–7 days per week)	Daily calories needed = BMR x 1.725
Very heavy exercise (twice per day, extra heavy workouts)	Daily calories needed = BMR x 1.9

EE = BM x PAL

PAL	Source: *http://www.dukandiet.co.uk/en/756-this-months-file.html*
1	Sleep and siesta, resting in a reclined
1.5	In a sitting position: resting, TV, computer, video games, board games, reading, writing, office work, sewing, using transport, mealtimes...
2.2	Standing up: getting washed and dressed, going around the house, cooking, house work, shopping, laboratory work, working as a sales assistant, driving machinery etc.
3	Women: walking, gardening or equivalent, gymnastics, yoga Men: manual work when standing up and moderately intense (e.g. chemical industry, carpentry, etc.)
3.5	Men: walking, gardening, work with high physical intensity (e.g. building, plastering, car repairs etc.)
5	Sport, intense work (e.g. excavation work, work in forests etc.)

My Energy Expenditure

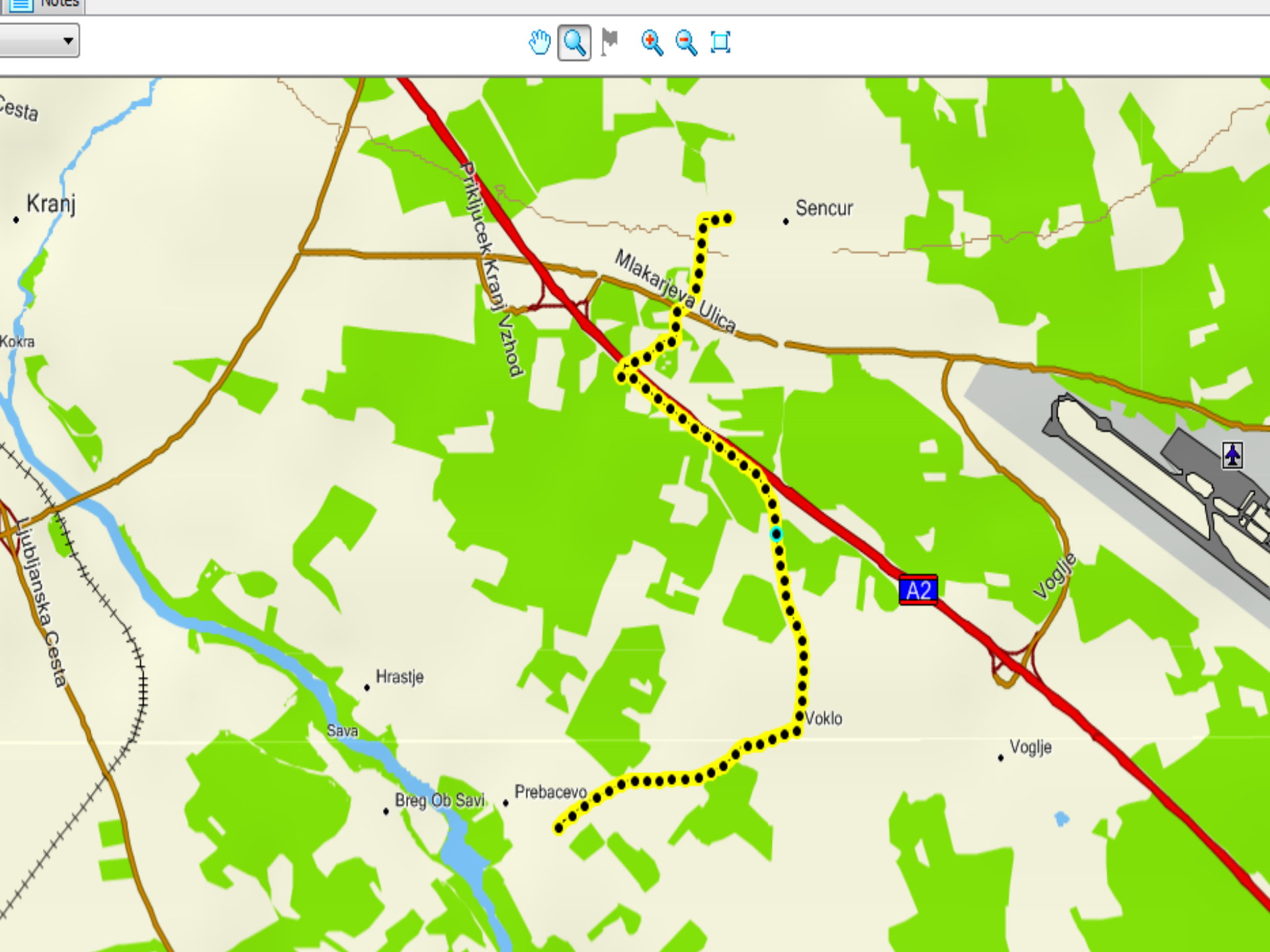
Activity	BM factor	Duration (h)	Energy expenditure (kkal/kJ)
Sleeping			
Learning			
Walking			
Watching TV			
Running			
…			
Total			

Table: Physical Activity Level

INTENSITY	HEART RATE (beat/min)	VO_2 (l/min)	kcal/min	MET*
Low	100	1	5	4.0
Moderate	135	2	10	8.1
High	170	3	15	12.2

*MET – **Metabolic Equivalent of Task** = 3.5 ml O_2/kg/min)

**** MET is defined as oxygen uptake in ml/kg/min with one MET equal to the oxygen cost of sitting quietly, equivalent to 3.5 ml/kg/min.***


Kranj
Sencur
Mlakarjeva Ulica
Priključek Kranj Vzhod
Kokra
Ljubljanska Cesta
A2
Voglje
Hrastje
Sava
Voklo
Voglje
Breg Ob Savi
Prebacevo

17.1.2010

Walking (5.1 km/h)

Distance: 5.74 km

Time: 1h 7min

Energy Expenditure: 259 kcal

17.1.2010 14:...	5.74 km	1:07:4...	11:48 ...	5.1 km/h	17.7 km/h	259 cal
Lap 1 - 14:31:04	1.00 km	11:42.99	11:42 ...	5.1 km/h	6.6 km/h	44 cal
Lap 2 - 14:42:48	1.00 km	10:39.65	10:39 ...	5.6 km/h	7.2 km/h	cal
Lap 3 - 14:53:28	1.00 km	10:53.62	10:53 ...	5.5 km/h	6.3 km/h	
Lap 4 - 15:04:21	1.00 km	13:40.03	13:40 ...	4.4 km/h	6.9 km/h	
Lap 5 - 15:18:01	1.00 km	11:55.47	11:55 ...	5.0 km/h	17.7 km/h	49 ca
Lap 6 - 15:29:57	739.45 m	8:56.90	12:06 ...	5.0 km/h	6.3 km/h	33 cal

4,1 kcal/min

12.1.2010

Running (13.17 km/h)

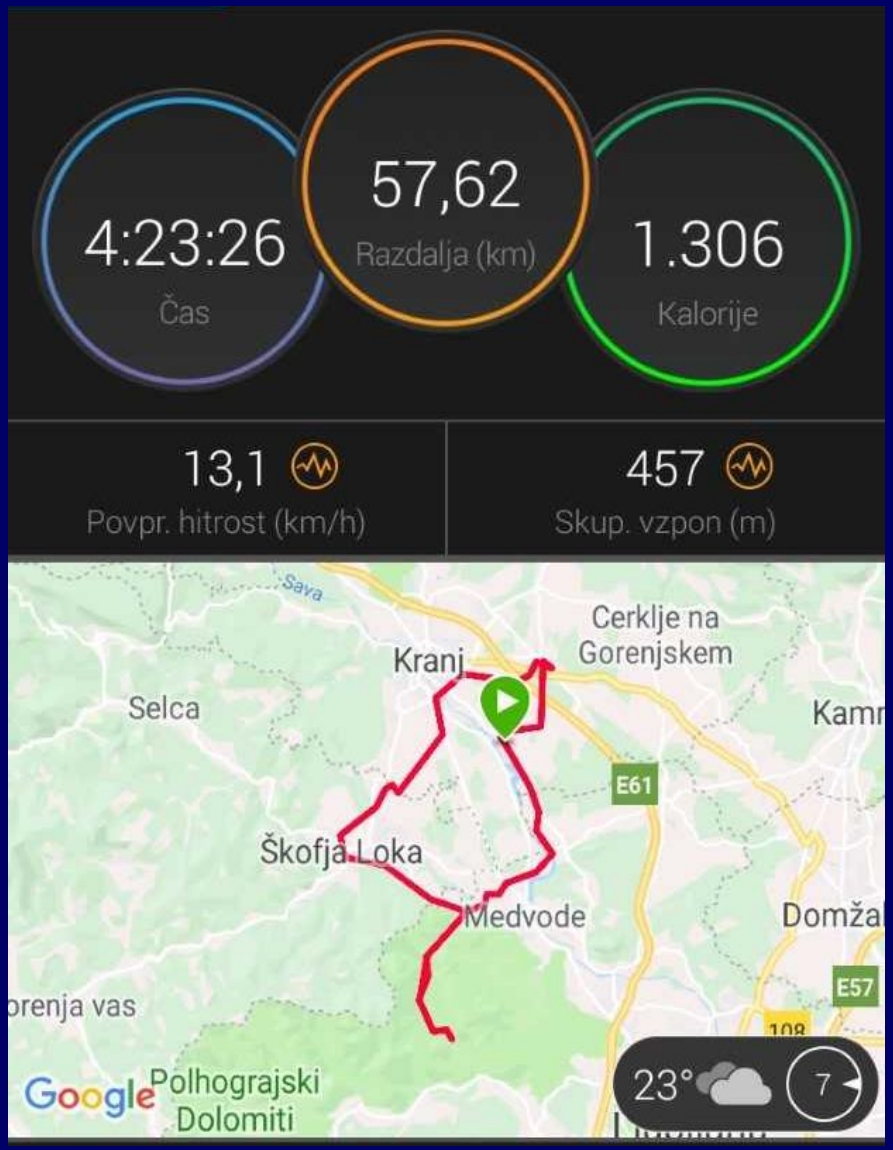
Distance: 6.58 km

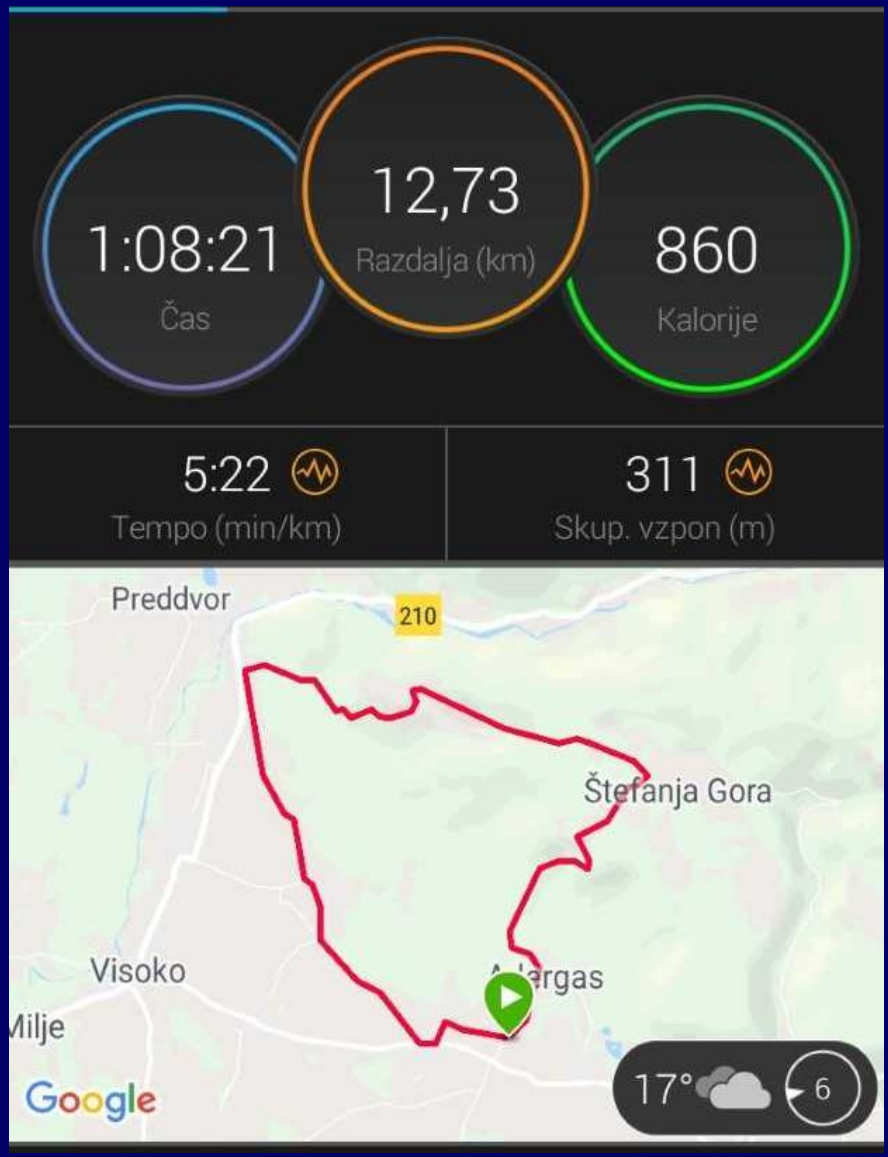
Time: 28min 53s

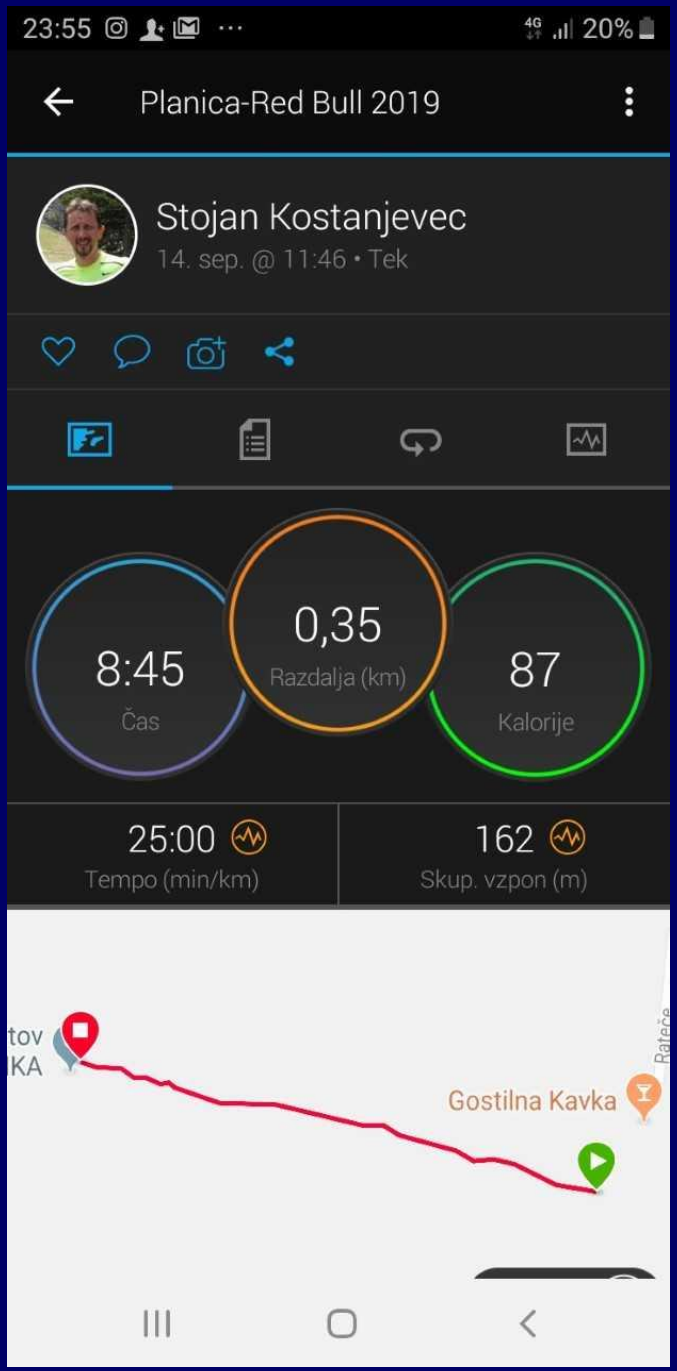
Energy Expenditure: 423 kcal

Name	Total Distance	Total Time	Avg Pace	Avg Speed	Max Speed	Total Calories	Avg Heart Rate	Max Heart
12.1.2010 18:...	6.58 km	28:53.07	4:23 /km	13.7 km/h	15.8 km/h	423 cal	159 bpm	185
Lap 1 - 18:53:55	1.00 km	4:27.49	4:27 /km	13.5 km/h	14.7 km/h	65 cal	169 bpm	185
Lap 2 - 18:58:23	1.00 km	4:27.75	4:27 /km	13.4 km/h	14.8 km/h	65 cal	158 bpm	169
Lap 3 - 19:02:51	1.00 km	4:30.42	4:30 /km	13.3 km/h	14.5 km/h	65 cal	158 bpm	159
Lap 4 - 19:07:22	1.00 km	4:20.57	4:20 /km	13.8 km/h	14.9 km/h	62 cal	153 bpm	160
Lap 5 - 19:12:19	1.00 km	4:16.36	4:16 /km	14.0 km/h	15.8 km/h	65 cal	51 bpm	162
Lap 6 - 19:16:35	1.00 km	4:19.60	4:19 /km	13.9 km/h	14.7 km/h	64 cal	161 bpm	167
Lap 7 - 19:20:55	580.10 m	2:30.88	4:20 /km	13.8 km/h	14.6 km/h	37 cal	162 bpm	164

14,3 kcal/min


4:23:26
Čas
57,62
Razdalja (km)
1.306
Kalorije
13,1
Povpr. hitrost (km/h)
457
Skup. vzpon (m)
Sava
Cerklje na Gorenjskem
Kranj
Selca
E61
Škofja Loka
Medvode
E57
Polhograjski Dolomiti
Google
23°
7


1:08:21
Čas
12,73
Razdalja (km)
860
Kalorije
5:22
Tempo (min/km)
311
Skup. vzpon (m)
Preddvor
210
Štefanja Gora
Visoko
Google
17°
6


23:55
20%
Planica-Red Bull 2019
Stojan Kostanjevec
14. sep. @ 11:46 • Tek
8:45
Čas
0,35
Razdalja (km)
87
Kalorije
25:00
Tempo (min/km)
162
Skup. vzpon (m)
Gostilna Kavka

Activities	Energy expenditure (kcal/h)
Walking	200 – 300
Dancing	200 – 400
Gymnastic	200 – 500
Cycling	250 – 700
Step aerobics	300 – 500
Swimming	300 – 700
Tenis	400 – 500
Running	600 – 900

Burn Calories, Not Electricity

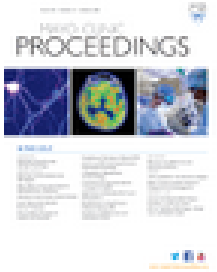
Take the Stairs!

Walking up the stairs just 2 minutes a day helps prevent weight gain. It also helps the environment.

Mayo Clinic Proceedings

Available online 4 September 2018

In Press, Corrected Proof



Original article

Various Leisure-Time Physical Activities Associated With Widely Divergent Life Expectancies: The Copenhagen City Heart Study

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Patients and Methods

The Copenhagen City Heart Study (CCHS) is a prospective population study that included detailed questionnaires regarding participation in different types of sports and leisure-time physical activity. The 8577 participants were followed for up to 25 years for all-cause mortality from their examination between October 10, 1991, and September 16, 1994, until March 22, 2017. Relative risks were calculated using Cox proportional hazards models with full adjustment for confounding variables.

Results

Multivariable-adjusted life expectancy gains compared with the sedentary group for different sports were as follows: tennis, 9.7 years; badminton, 6.2 years; soccer, 4.7 years; cycling, 3.7 years; swimming, 3.4 years; jogging, 3.2 years; calisthenics, 3.1 years; and health club activities, 1.5 years.

Conclusion

Various sports are associated with markedly different improvements in life expectancy. Because this is an observational study, it remains uncertain whether this relationship is causal. Interestingly, the leisure-time sports that inherently involve more social interaction were associated with the best longevity—a finding that warrants further investigation.