



PREVENTION OF OBESITY ON PRIMARY, SECONDARY AND TERTIARY LEVELS OF CHILDREN'S HEALTH CARE

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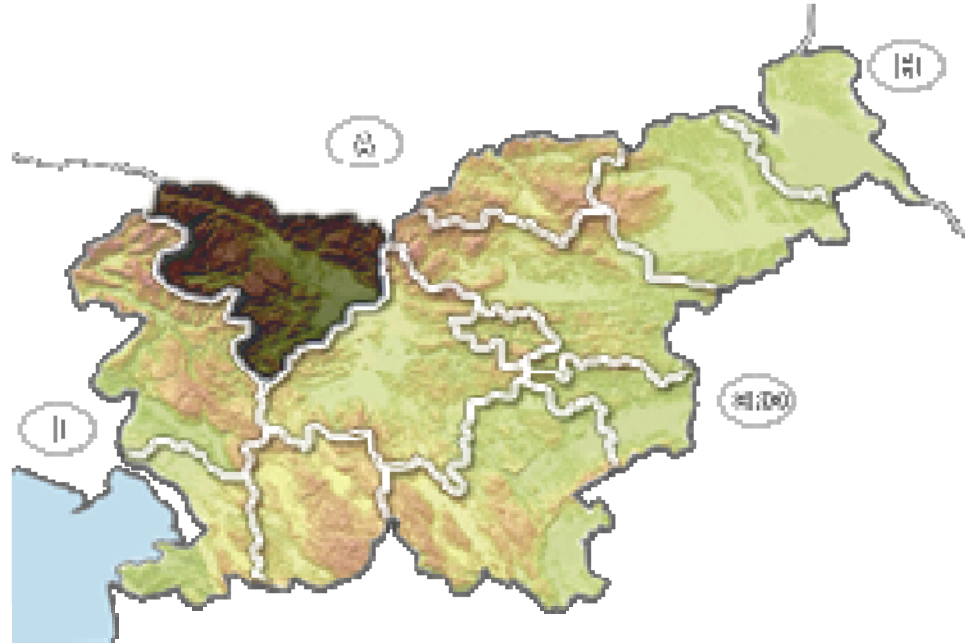
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XIV. Congress ISGA 2017, Buenos Aires, Argentina



Slovenia





Maribor

is the second largest city in Slovenia
area:147,5 km²

Waether: 20 0C, Wind SW at 11 km/h
35% humidity; 270 m altitude



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The hospital employs approximately 2800 staff members, 450 of whom are physicians and 1300 healthcare workers.

The hospital is a 1266-bed facility. Approximately 60,000 patients are treated annually. More than 390,000 outpatients are treated at 270 different outpatient clinics.

UNIVERSITY MEDICAL CENTER MARIBOR



Obesity

- ▶ Obesity and complications of obesity in children and adolescents are one of the most important public health problems of the Republic of Slovenia.
- ▶ The National Institute of Public Health formed a Working Group where experts from various fields played an important role in the problem (doctors-pediatricians from all levels of treatment, nutritionists, psychologists, kinesiologists, IT professionals).
- ▶ A common denominator of the measures envisaged is that the healthcare system necessarily needs a digitized platform for the implementation of a successful preventive programs (1).

1. Working group National Institute of Public Health. Prevention of obesity and a healthy lifestyle of children and youth in Slovenia. In the press.

Obesity II

- ▶ Parallel to the setting up of a digital platform, it is also necessary to establish and adequately support (financially and HR) for multidisciplinary teams, which will treat children and adolescents with obesity and complications at the primary and secondary levels equally, and implement preventive programs of a healthy lifestyle.
- ▶ It is also essential to endorse (financially and HR) the multidisciplinary teams, which at secondary and tertiary level already address and treat children and adolescents with obesity, since the professional treatment of these children has progressed significantly in recent years

Definition

For the statistical purposes of monitoring the prevalence of over-nutrition, it is advised to use

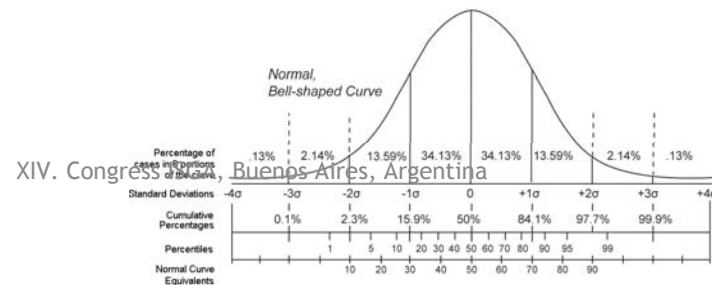
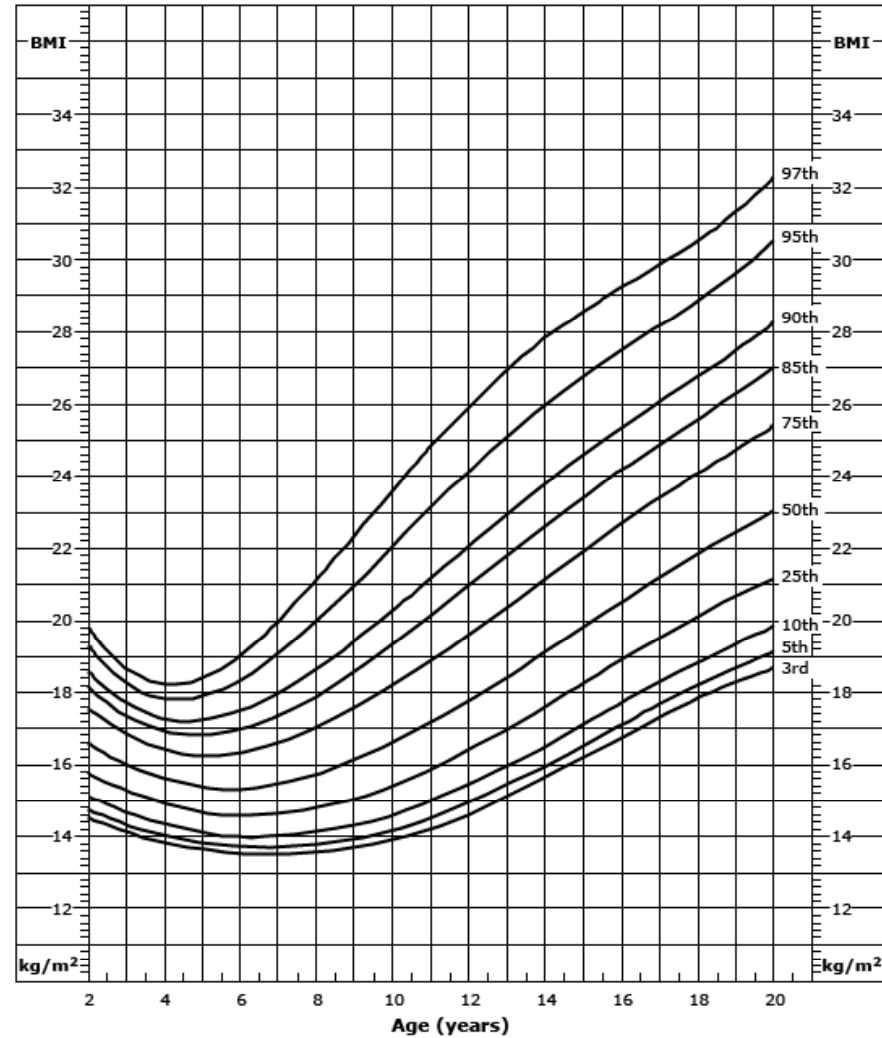
- ▶ BMI > 85th percentile for excessive nutrition (overweight) and /
- ▶ BMI > 95th percentile for obesity or criteria of IOTF.

For the purpose of clinical definition of children / adolescents who have an increased likelihood of developing complications of obesity, BMI > 91 percent of excessive nutrition and over 98 percentile (with $z > 2$) for obesity and severe obesity (2).

2. Stegenga H, Haines A, Jones K, Wilding J. Identification, assessment and management of overweight and obesity: a summary of updated NICE guidance. BMJ 2014; 349: g6608.

Definition II

- ▶ Excessive nutrition (overweight) :
 - ▶ BMI 85 - 95.p ekv. $> 25 \text{ kg/m}^2$
- ▶ Obesity:
 - ▶ BMI $> 95.\text{p}$ ekv. $> 30 \text{ kg/m}^2$
- ▶ Severe obesity:
 - ▶ BMI $> 99.\text{p}$ ekv. $> 35 \text{ kg/m}^2$
 - ▶ BMI $z > 2$



Trends of obesity in Slovenia - pre-school girls and boys

	2001			2004			2009		
	n	%	95%CI	n	%	95%CI	n	%	95%CI
Overweight girls	209/1325	15.8	13.9–17.8	387/2317	16.7	15.2–18.2	486/2666	18.2	16.8–19.7
Δ od 2001					+0.9	-1.6–3.5		+2.4	0.0–5.0
Overweight boys	178/1417	12.6	10.9–14.4	297/2367	12.6	11.3–13.9	362/2740	13.2	12.0–14.5
Δ od 2001					0.0	-2.2–2.2		+0.6	-1.5–2.8
Obesity girls	71/1325	5.4	4.3–6.7	110/2317	4.7	4.0–5.7	164/2666	6.2	5.3–7.1
Δ od 2001					-0.8	-2.2–0.9		+0.8	-0.8–2.4
Obesity boys	55/1417	3.9	3.0–5.0	97/2367	4.1	3.4–5.0	119/2740	4.3	3.6–5.2
Δ od 2001					+0.2	-1.1–1.6		+0.4	-0.9–1.8

ITM > 85.p
ITM > 95.p

Trends of obesity in Slovenia - school girls and boys

ITM > 95.p ITM > 85.p

	2004			2009		
	N	%	95%CI	N	%	95%CI
Overweight girls	239/1.363	17,5	15,6-19,6	756/3.452	21,9	20,6-23,3
Δ od 2004					+4,4*	
Overweight boys	248/1.187	20,9	18,7-23,3	1004/3.303	30,4	28,9-32,0
Δ od 2004					+9,5*	
Obesity girls	49/1.363	3,6	2,7-4,7	205/3.452	5,9	5,2-6,8
Δ od 2004					+2,3*	
Obesity boys	46/1.187	3,9	2,9-5,1	321/3.303	9,7	8,8-10,8
Δ od 2004					+5,8*	

Primary prevention

- ▶ The family, kindergarten, school, local community, pediatric health service, media, sports associations, civil associations are included.
- ▶ Measures should be implemented at all levels and in different environments.
- ▶ Measures should cover the local, national and international levels. By doing so, individuals should be encouraged to take responsibility for actively exploiting the opportunities offered.

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2. nacionalna konferenca o prehrani in telesni dejavnosti za zdravje

DÓBER TEK
Slovenija

KONGRESNI CENTER BRDO
18. oktober 2017



Predlog kazalnikov in vprašalnikov, ki naj bodo vključeni v protokole preventivnih zdravstvenih pregledov



Disk Preprečevanje debelosti in zdrav življenjski slog otroka in družine



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Julij 2016

Slovenian
guidelines for
systematic
preventive
examination
including
guidelines for
prevention of
obesity and
supported
healthy lifestyle
of children and
youth.



WHO European Ministerial Conference on Counteracting Obesity

Diet and physical activity for health

Istanbul, Turkey, 15-17 November 2006



Evropska deklaracija o preprečevanju debelosti

Z namenom, da se lotimo obravnave vse večjega izziva, ki ga epidemija debelosti predstavlja tako za zdravje kakor tudi za gospodarstvo in razvoj, ministri in delegati, udeleženci Evropske ministrske konference SZO o preprečevanju debelosti (Istanbul, Turčija, od 15.-17. 11. 2006), skupaj z regionalnim direktorjem Urada za Evropo pri SZO, v navzočnosti evropskega komisarja za zdravje in varstvo potrošnikov, sprejemamo naslednjo evropsko deklaracijo o preprečevanju debelosti. Pri pripravi te deklaracije so v razpravah in posvetovanjih sodelovali različni vladni sektorji, mednarodne organizacije, strokovnjaki, civilna družba in zasebni sektor.

SUPPLEMENT ARTICLE

Expert Committee Recommendations Regarding the Prevention, Assessment, and Treatment of Child and Adolescent Overweight and Obesity: Summary Report

Sarah E. Barlow, MD, MPH and the Expert Committee

Division of Pediatric Gastroenterology, Nutrition, and Hepatology, Department of Pediatrics, Baylor College of Medicine, Texas Children's Hospital, Houston, Texas

The author has indicated she has no financial relationships relevant to this article to disclose.

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Secondary prevention

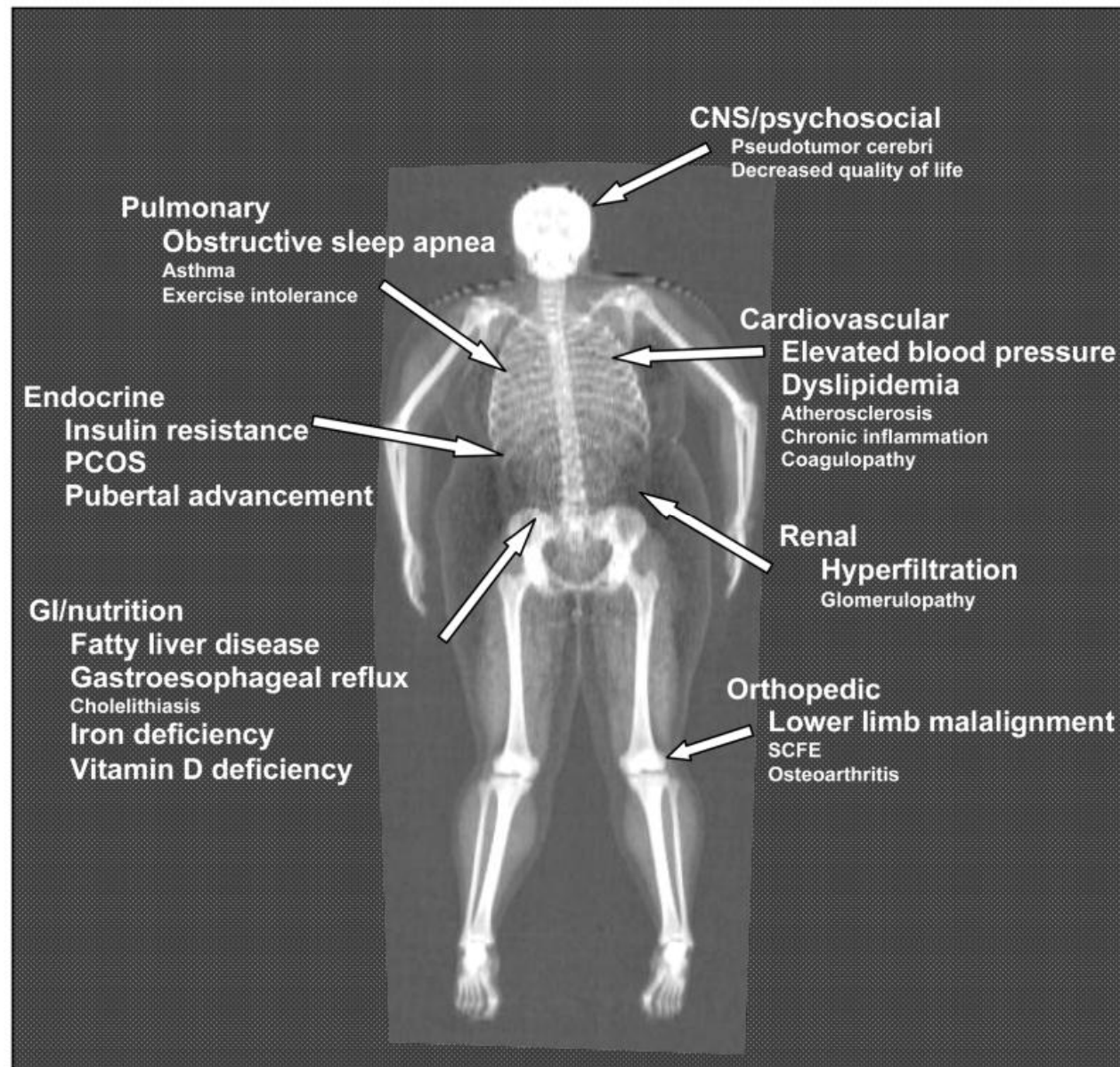
- ▶ After defining obesity with BMI > 85 and < 95 and / or > 95 without co-morbid signs, involve a child / adolescent pediatrician and his family in an outpatient treatment programme for obesity.
- ▶ The pediatrician and nurse devote themselves to education and explanation of the disease, the importance of necessary changes in nutrition and physical activity, and prepare together with the family a plan of treatment.
- ▶ The goal is to reduce body weight or at least maintain the same weight to the achieved target weight, which should be below <85 pc for age and sex (3).

3. Sketton JA. Management of Childhood Obesity in primary care settings. www.UpToDate, 2012.

Tertiary prevention

- ▶ Dietetics, psychologists, kinesiotherapists/sports pedagogues, informatics are involved in the treatment.
- ▶ Comprises activities and measures to prevent progression of metabolic diseases and obesity (glucose metabolism (diabetes typ 2, hyperinsulinism), menstrual cycle disorder and / or overeating, hyperlipidemia (total cholesterol above 5.0 mmol / l), hypertension, fatty liver infiltration, respiratory disorders, sleep disorders, orthopedic complications).

Comorbid diseases of obesity



School for Healthy Nutrition and Lifestyle

- ▶ We use the School for Healthy Nutrition and Lifestyle, which covers the holistic treatment of children with obesity and comorbid diseases within the family and its wider surroundings.
- ▶ The school is run by psychologists, biopsychologists, dietitians, nurses, sports pedagogues, kinesiotherapists and informatics.

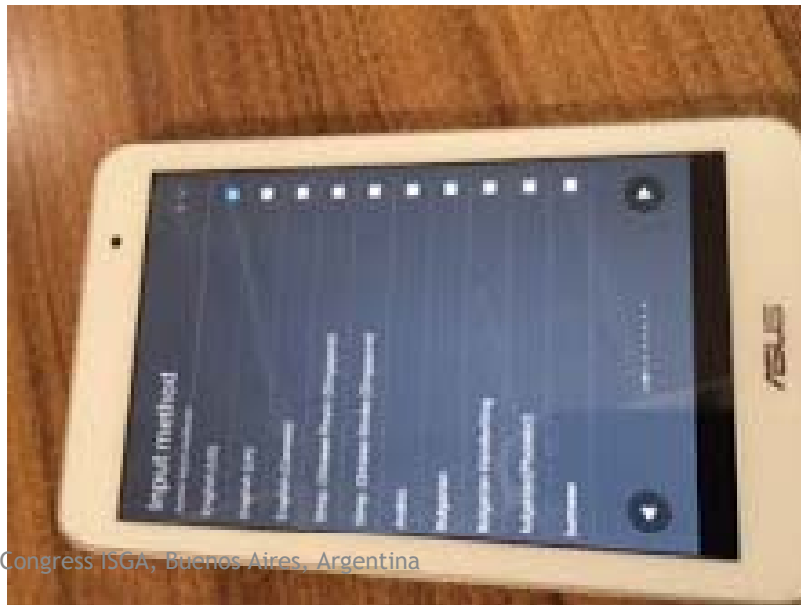
Camp Method for Treatment Obesity With Comorbidity

- ▶ We use the Camp method (4), which means that the children find themselves in therapy camps in a youth camp, separated from their families for 10-14 days, and learn how to plan a diary, exercise, and organize a daily schedule.
- ▶ Later, parents are also involved in education.

4. Lindelof A et al .. Obesity treatment * more than food and exercise. Int J Qualitative Stud Health Well-Being 2010, 5-14.

Electronic devices we help with for following the changes of body weight and physical activity

- Pedometers
- USB diagnostic Bluetooth scales
- Tablets



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The making of the informatic system

- ▶ The Institute of Jozef Stefan, University of Ljubljana
- ▶ Apps for mobile phones, tablets and personal computers
- ▶ The connection of pedometers and wireless scales with computers and mobile phones
- ▶ The making of online platform/website for:
 - The therapists - electronic material, monitoring, control check-ups
 - Parents - daily instructions and advising
 - Children - in the shape of collecting healthy coins or points for achieving goals
- ▶ Frequent monitoring
- ▶ Evaluation

School for Healthy Nutrition and Lifestyle, Youth Camp, VIRC Poreč, 2016



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In a summer camp, where children usually go on organized vacation, is integrated the therapeutic team with special programme and children with obesity and comorbid diseases.

Educating and therapeutic team



- psychologists,
- biopsychologists,
- dieticians,
- nurses,
- sports pedagogues,
- kinesiotherapists and
- informatics.

School for Healthy Nutrition and Lifestyle, Poreč, 2016



The daily programme and activities are presented every morning:

- Kinesiotherapist's part
- Psychologist's part
- Nutritious-dietary part
- Medical part
- Informatic and technologic part
- Fun and entertainment in the camp

Kinesiotherapeutic educational programme



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Our results after treatment at the School for healthy eating and lifestyle, VIRC Poreč 2017

After the school: Healthy points



Once per week therapists with parents and their children accomplish recreative goals.

Second phase of the School for Healthy Nutrition and lifestyle - Miloš Zidanšek - Pohorje 2016

- ▶ Therapeutic team prepares a three-day restoration school
- ▶ Parents and professional cooks are cooperating
- ▶ Analysis of two months work
- ▶ Teaching course of cooking for parents
- ▶ Conversations with the psychologist
- ▶ Recreation with kinesiotherapists
- ▶ Discussion about electronic data

Second phase of the School for Healthy Nutrition and lifestyle - Miloš Zidanšek - Pohorje 2016



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Second phase of the School for Healthy Nutrition and lifestyle - Miloš Zidanšek - Pohorje 2016



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The third phase: continuing of the preventing treatment at home with controlled check-ups and electronic following

- ▶ Follow-up in intensive outpatient and telemedicine monitoring of children (digital scales, pedometers, smart clocks and special applications on phones and tablets) over the next 6 months and a repeating school.
- ▶ The entire duration of the program is 2 years. The aim is to reduce body weight below 85 percent for age and sex and to improve laboratory and psychological health indicators (5).

5. European Charter on Counteracting Obesity Adopted at the WHO European Ministerial Conference on Counteracting Obesity, Istanbul, Turkey, 15-17 November 2006.

Controlled check-ups every two months

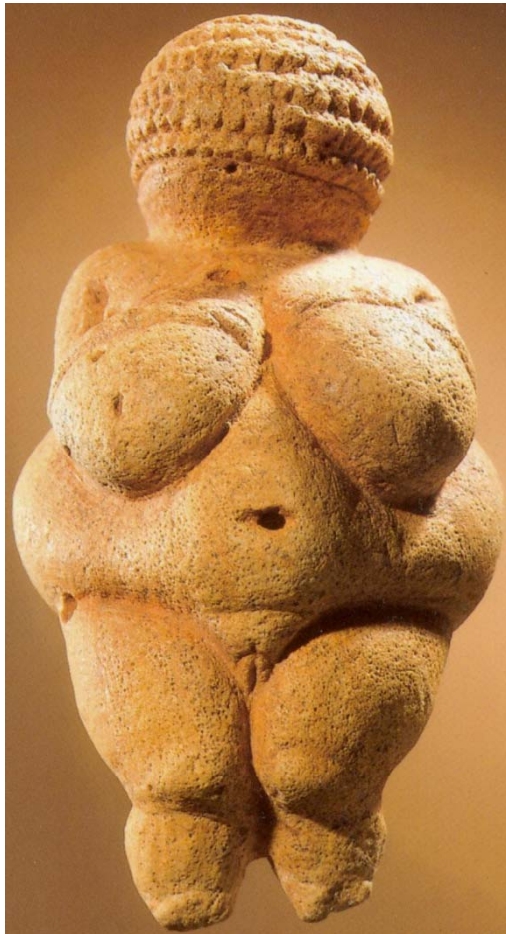
- ▶ Psychologist
- ▶ Dietician
- ▶ Kinesiotherapist
- ▶ Nurse



Conclusion

- ▶ We are introducing new methods of the approach to tertiary prevention of obesity: multitherapeutic team approach, education of children and families, Internet technology, continuous monitoring => early and on-going action).
- ▶ We need additional methods for detecting risk factors for co-morbid diseases in BMI with $z > 2$ (visceral fat measurement with Us, 3D body scanning, measurement of body compartments, ?).
- ▶ We use the telemedicine method of monitoring body weight (body pressure, . . .) with the help of informative technology.
- ▶ We want to influence the lifestyle of the family with obese children through behavioral cognitive therapy.
- ▶ We want to prevent and reduce co-morbidity.
- ▶ By reducing body weight (BMI < 85 pc) and changing the family's lifestyle to improve the child's health indicators.

And now ?

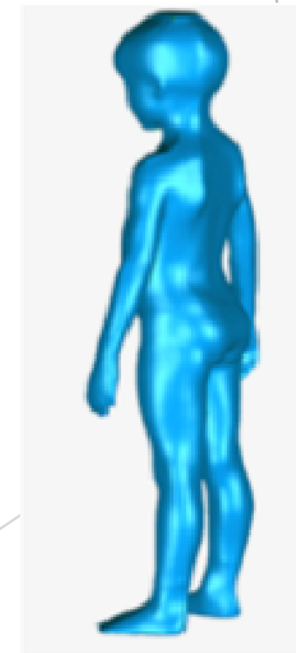
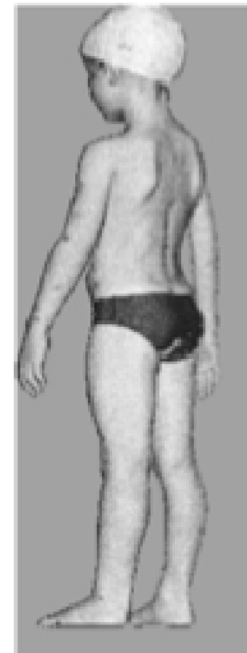


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Which method will prove to be for children:

reliable,
acceptable,
easy accurate

for the early detection,
identification and monitoring
of risk factors for obesity, co-
morbidity clients diseases
and metabolic syndrome



- ▶ Growth of visceral fat, subcutaneous abdominal fat, and total body fat in children.
[Huang TT](#), [Johnson MS](#), [Figueroa-Colon R](#), [Dwyer JH](#), [Goran MI](#). [Obes Res](#). 2001 May;9(5):283-9.
- ▶ A technique for the measurement of visceral fat by ultrasonography: comparison of measurements by ultrasonography and computed tomography.
[Hirooka M](#), [Kumagi T](#), [Kurose K](#), [Nakanishi S](#), [Michitaka K](#), [Matsuura B](#), [Horiike N](#), [Onji M](#). [Intern Med](#). 2005 Aug;44(8):794-9.
- ▶ Ultrasound measurements of intraabdominal fat estimate the metabolic syndrome better than do measurements of waist circumference.
[Ronald P Stolk](#), [Rudy Meijer](#), [Willem PTM Mali](#), [Diederick E Grobbee](#), [Yolanda van der Graaf](#)
- ▶ Methods for antropometric analysis of 3D Body Scanner data.
[Christian Lovato](#): Graduate School of Sciences Engineering Medicine Ph.D. Program in Multimodal Imaging in Biomedicine, Verona.
- ▶ Body Volume Index: the body volume of the body parts and body composition can be analysed. This allows BVI to differentiate between people with the same Body Mass Index (BMI) rating.

Thank you for your attention!



Thanks for the opportunity that we organized XIII. International Congress of Human Growth and Clinical Auxology 2014 in Maribor, Slovenia



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