



Medical nutrition therapy Guidelines for adults and children with obesity

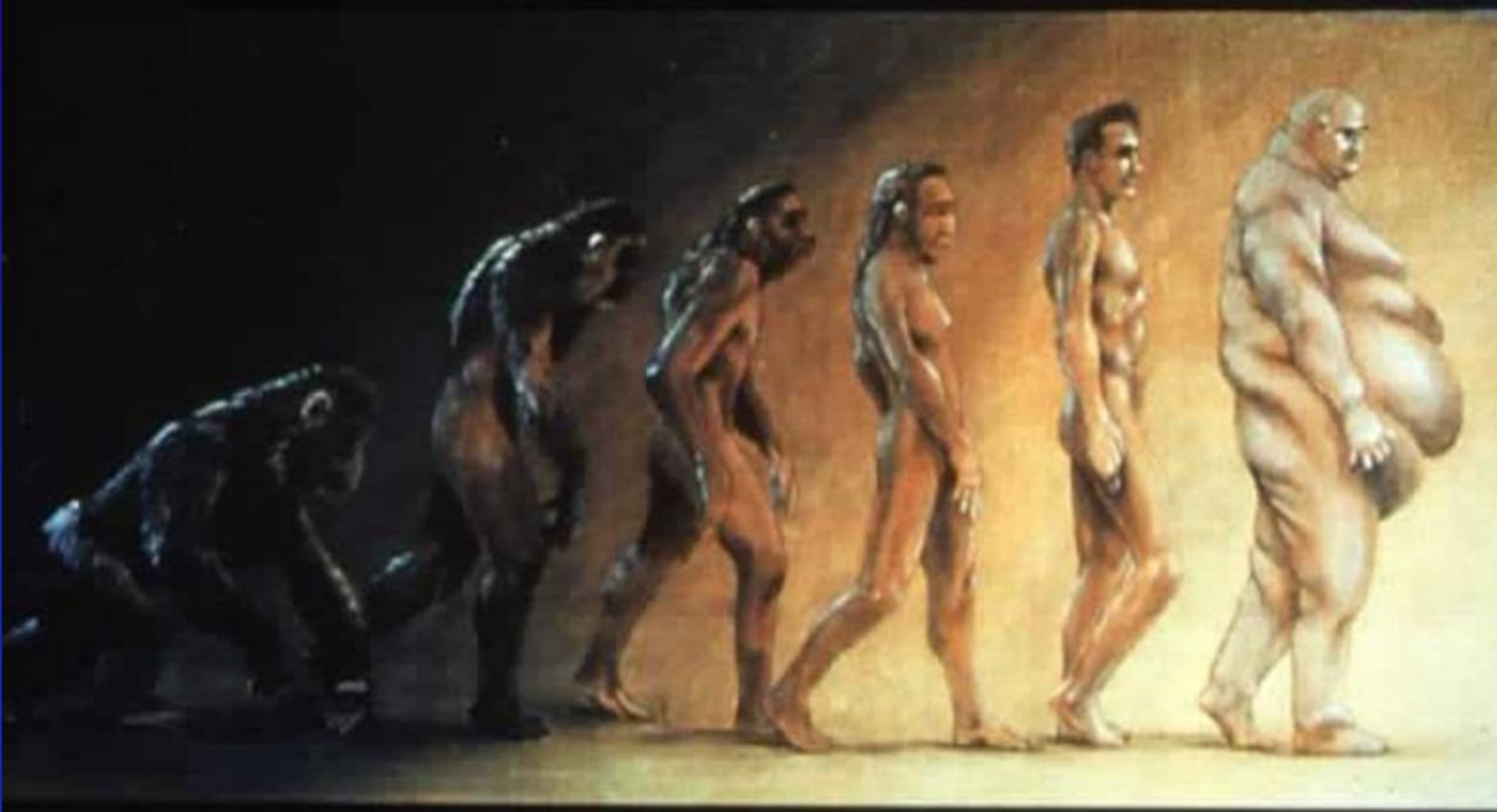
Prof. Maria Hassapidou
Department of Nutritional Sciences and Dietetics,
International Hellenic University,
Thessaloniki, Greece

“Let food be thy
medicine and
medicine be thy
food.”

[Hippocrates](#)



Aphrodite of Willendorf
(23000 bc, paleolithic era)



Obesity treatment the highest ranking issue

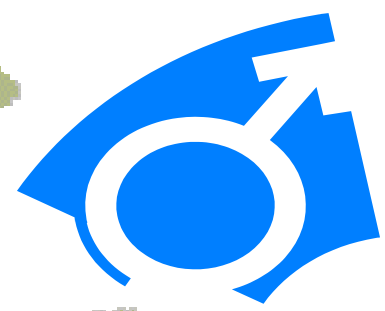
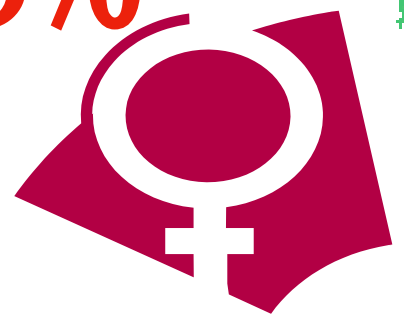
- Treatment will be the top public health priority in most countries

Country	Prevalence of obesity % by 2025 (95% CI)
England	34 (28; 40)
Estonia	34 (24; 44)
Finland	20 (11; 29)
France	24 (21; 27)
Germany	19 (16; 22)
Greece	40 (35; 45)
Ireland	43 (28; 58)
Italy	13 (10; 16)
Lithuania	24 (10; 38)
Netherlands	14 (10; 18)
Russian Federation	29 (24; 34)
Scotland	37 (31; 43)
Sweden	17 (12; 22)
Wales	28 (20; 36)

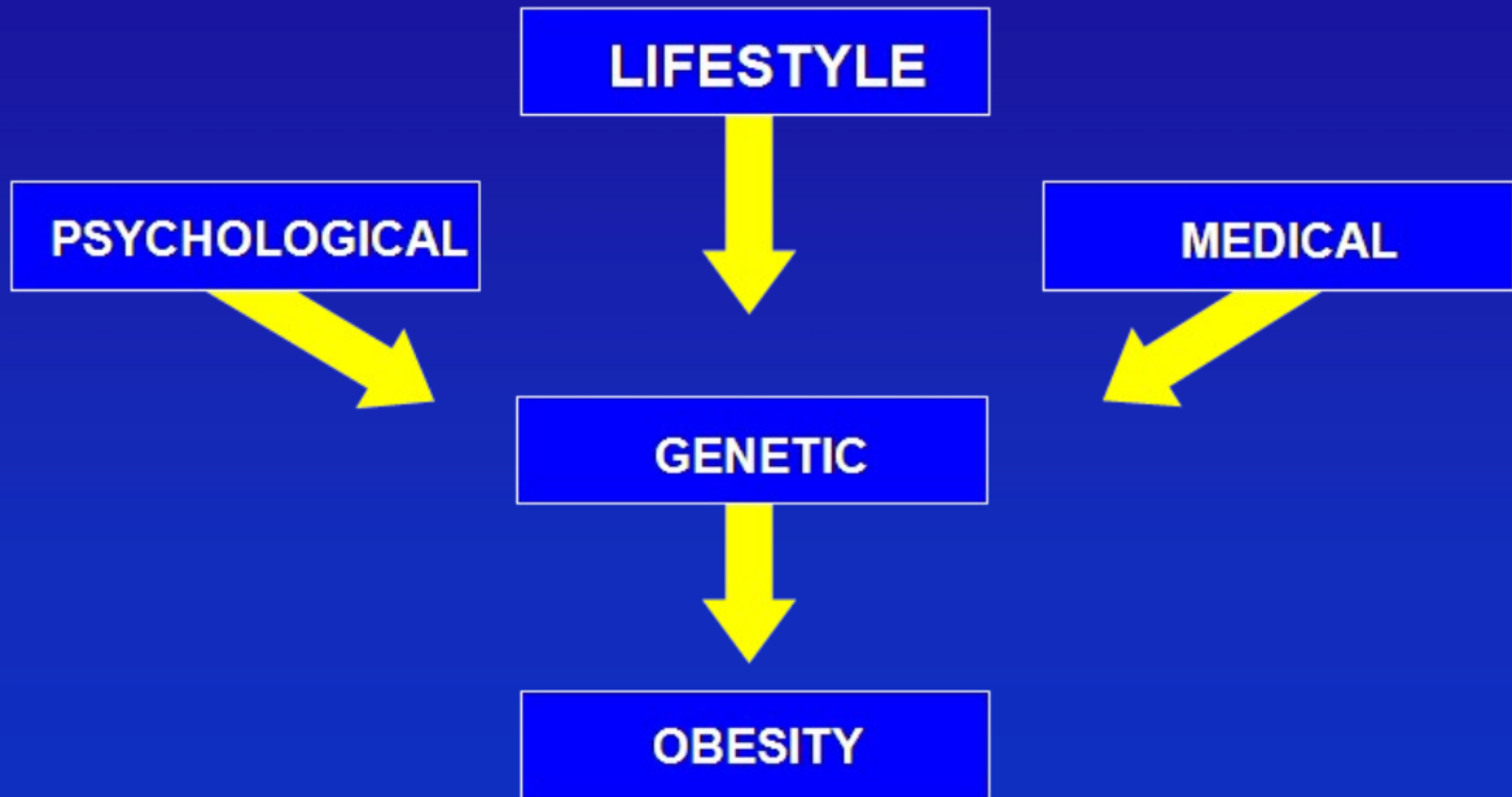
Υπέρβαροι Έλληνες:

67%

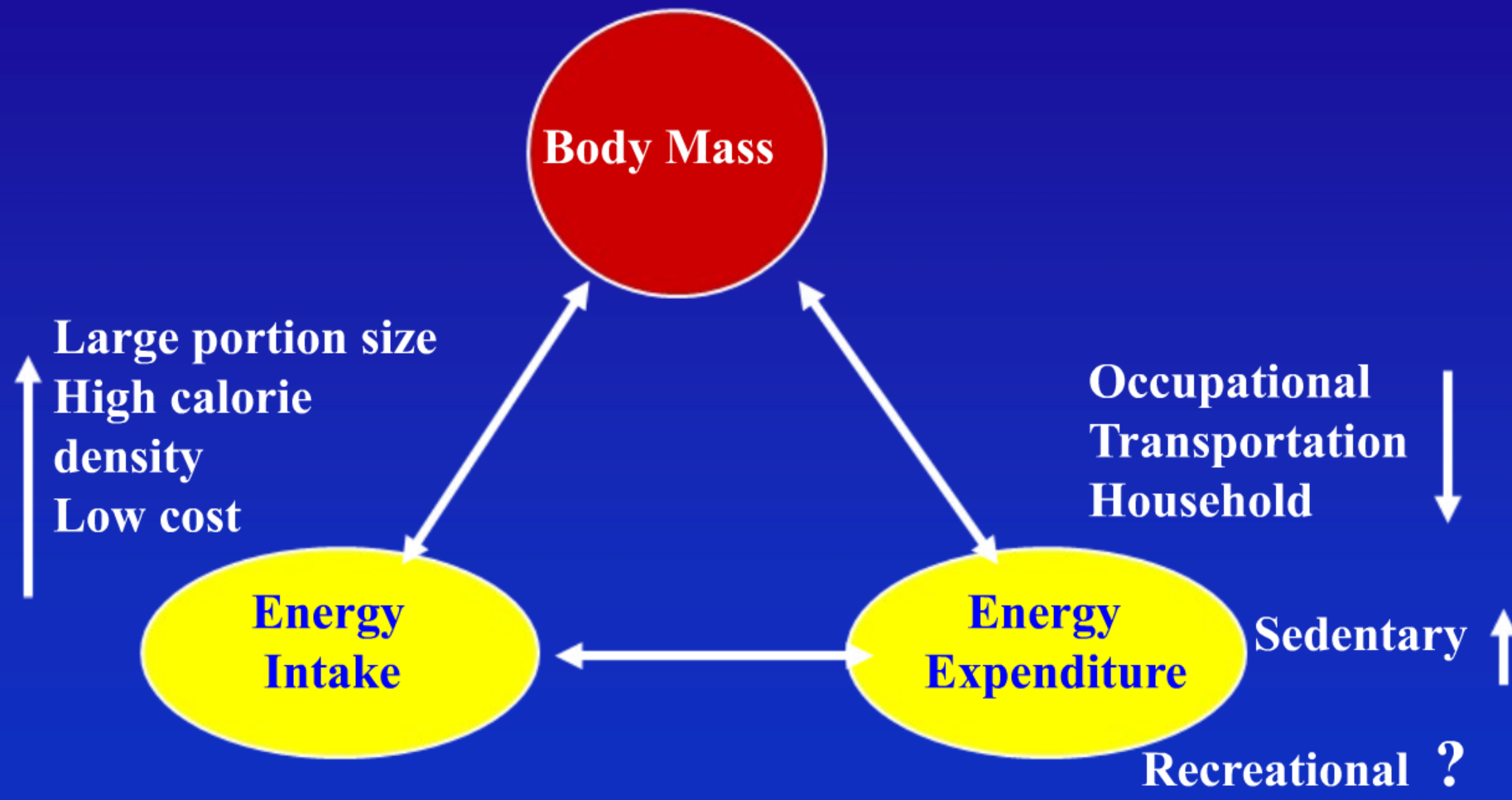
48%



Aetiology of obesity



Factors Contributing to Recent Increases in Body Mass in the USA & Other Developed Countries



High Caloric Density Food Always Available at Low Cost

	CALORIES
Double Cheese Burger =	690
Super Size Coke =	280
Biggie Fries =	570
TOTAL =	1,540

62 grams of fat

Ad in Sports Illustrated 15/06/02



WHO CAN ENJOY A
FULL MOON
ON AN **EMPTY** STOMACH?



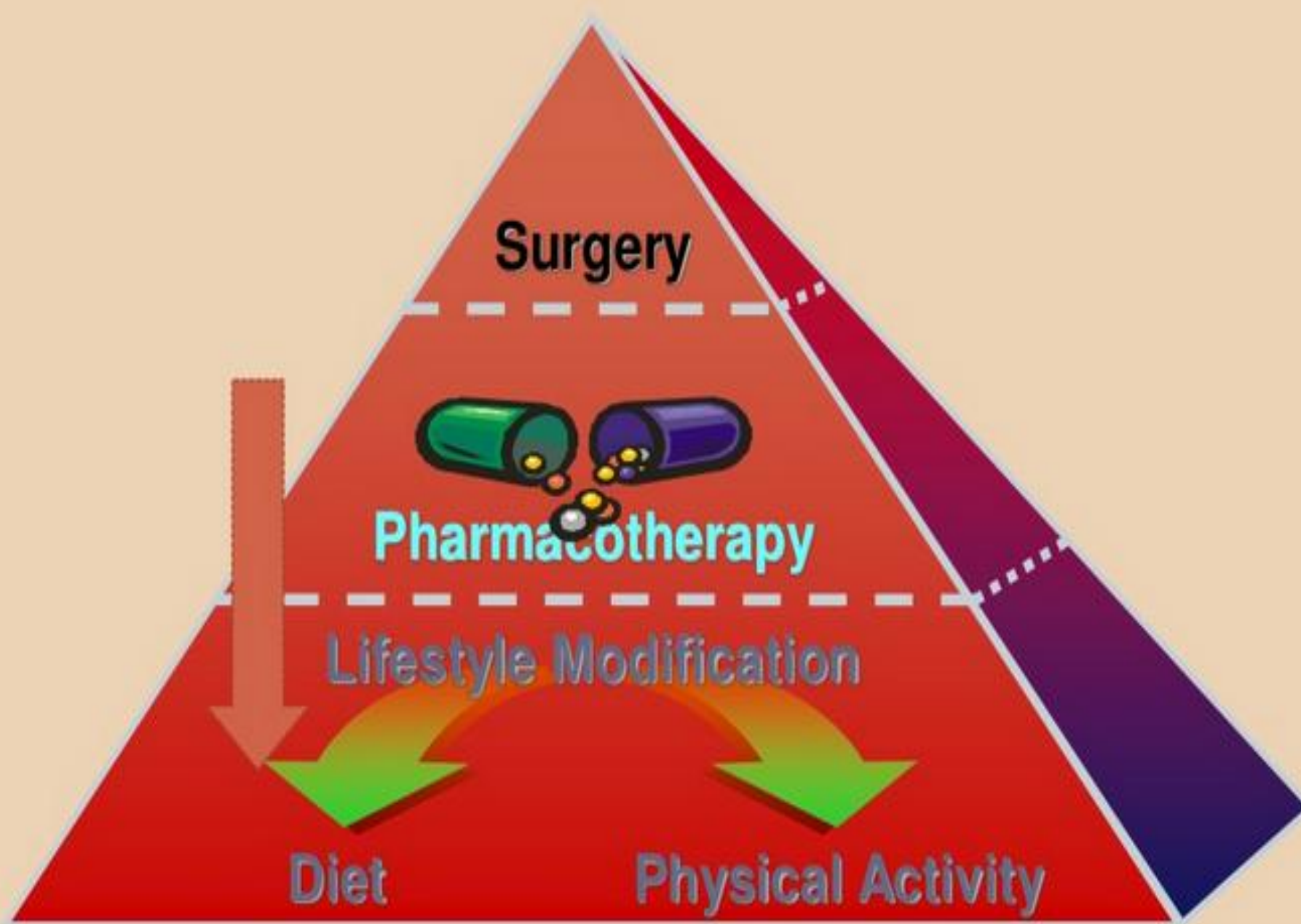
©2002 Oldemark LLC. All Rights Reserved. Wendy's, Wendy's logo and other trademarks and/or slogans used herein owned by Oldemark LLC.



WENDY'S LATE NIGHT
Classic Single, Classic Double, Classic Triple. Eat Great. Even Late.







- The dietary treatment of obesity is a part of a comprehensive program of weight control that includes increased physical activity, lifestyle modification, appropriate intakes of nutrients to minimize chronic disease risk, and eating patterns that maximize quality of life.

- Δίαιτες χαμηλών θερμίδων
(1000–1200 kcals/d)
- Δίαιτες πολύ χαμηλών θερμίδων
(400– 500 kcals/d)

➤ VLCD's vs LCD's:

Meta-analysis of 6 RCTs

- Trials with direct comparisons
- Short-term: mean 12.7 weeks
- Long-term: mean 1.9 years

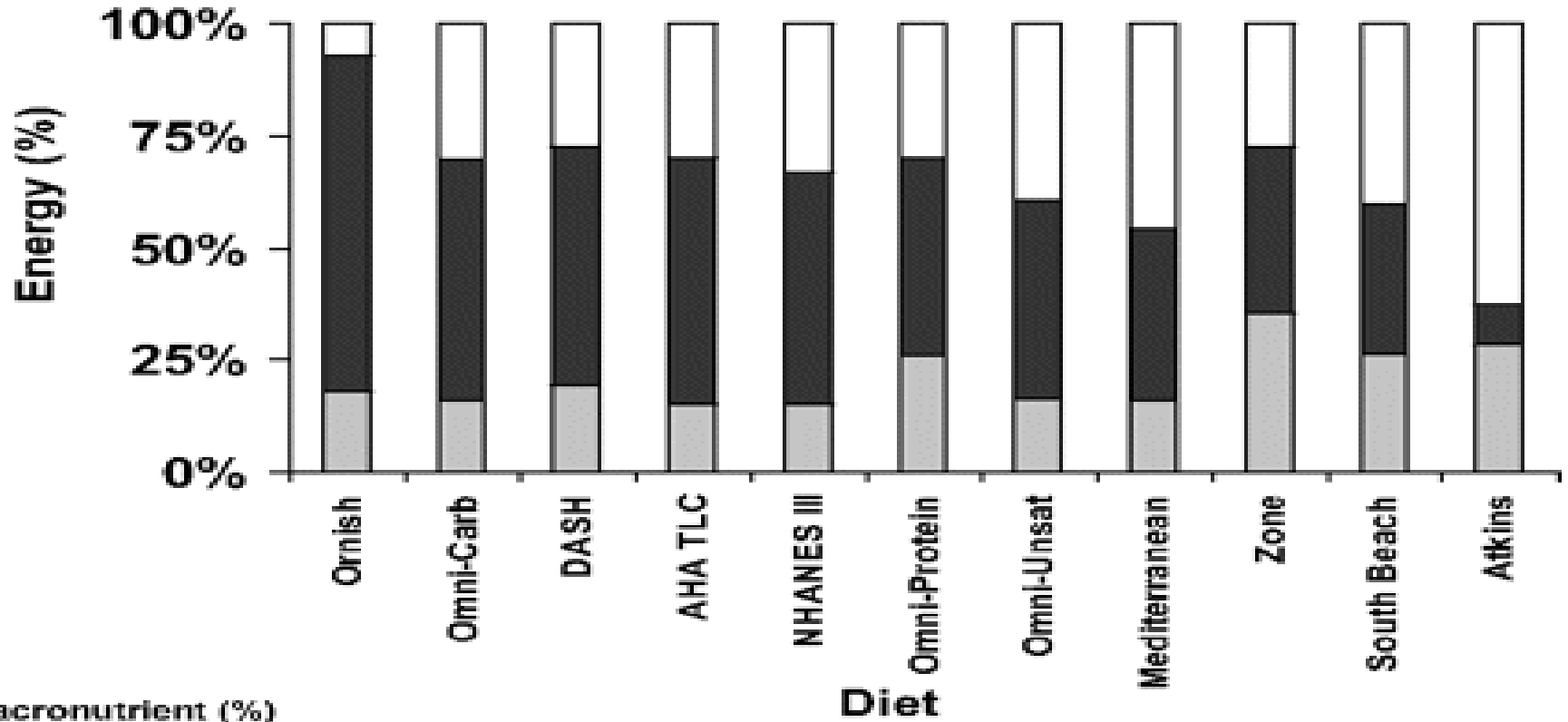
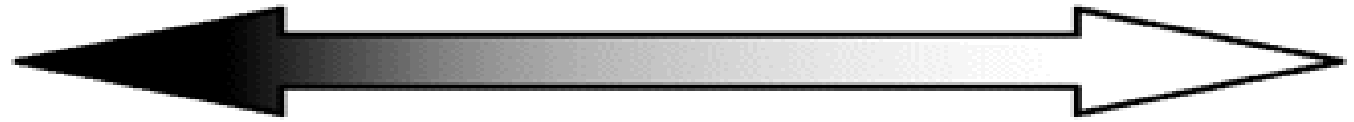
Weight loss (as % of initial weight):

	<u>short-term</u>	<u>long-term</u>
LCDs	9.7	5.0
VLCDs	16.1	6.3
(p)	(0.001)	(0.2)

➤ DIETS BASED ON THEIR MACRONUTRIENT CONTENT

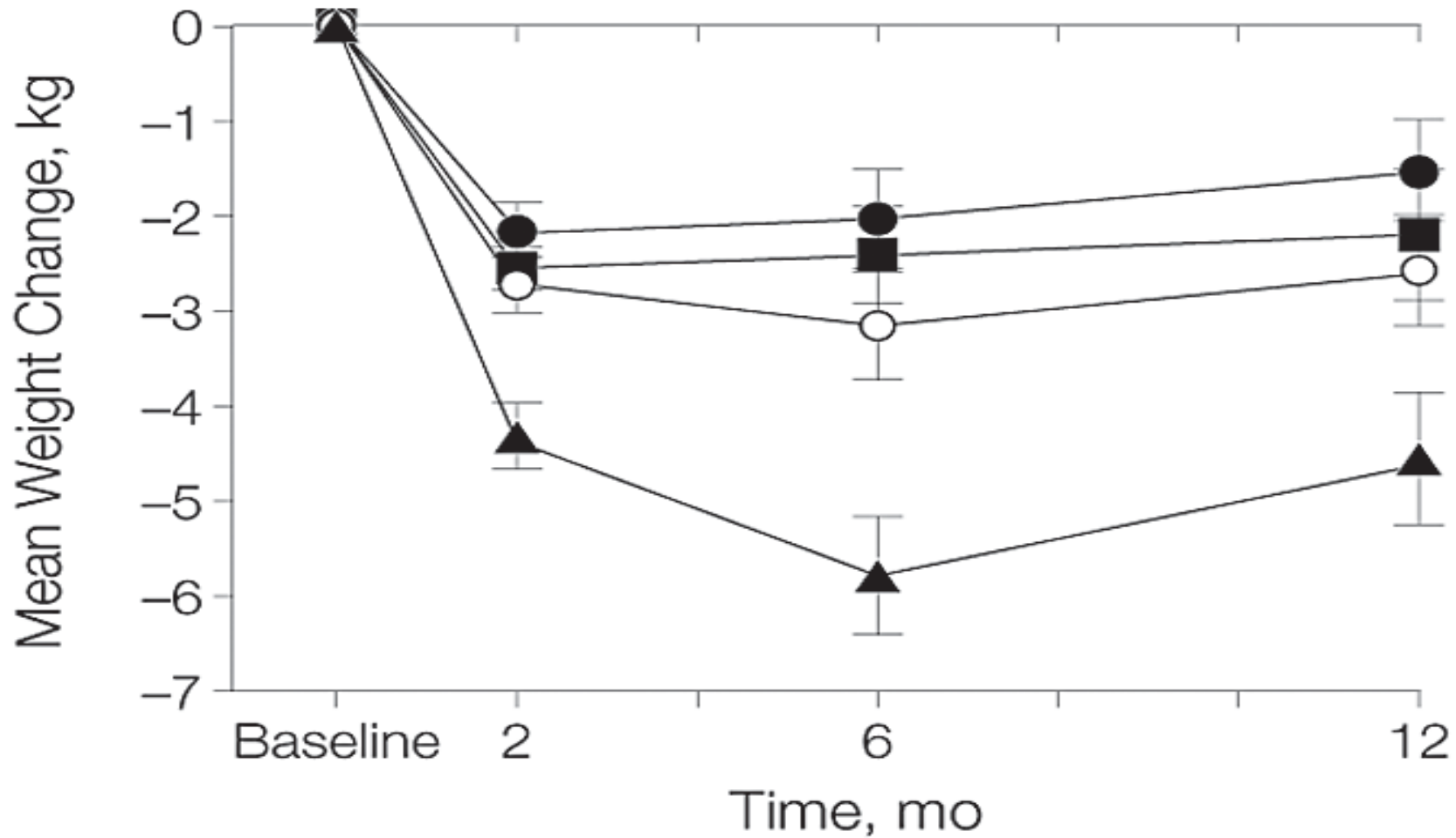
*High Carbohydrate
Low Fat
Moderate Protein*

*Low Carbohydrate
High Fat
High Protein*

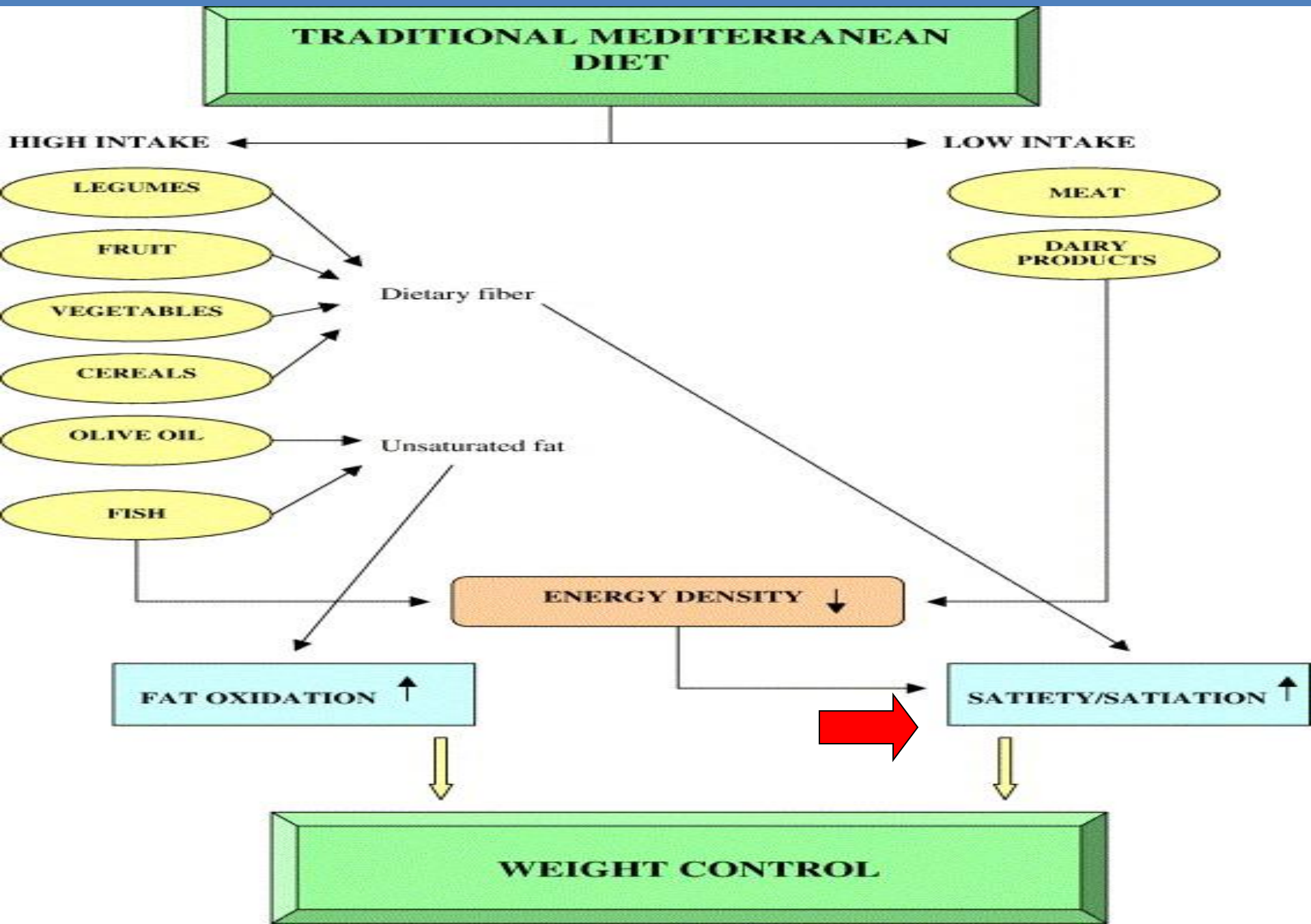


Macronutrient (%)	Ornish	Omni-Carb	DASH	AHA TLC	NHANES III	Omni-Protein	Omni-Unsat	Mediterranean	Zone	South Beach	Atkins
Protein	18	16	20	15	15	26	16	16	35	26	29
Carbohydrate	75	54	53	55	52	44	44	38	37	33	9
Fat	7	30	28	30	33	30	40	46	27	40	62

● Zone ○ LEARN ■ Ornish ▲ Atkins



- **European Guidelines for Obesity Management in Adults with a Very Low-Calorie Ketogenic Diet: A Systematic Review and Meta-Analysis**
- [Obesity Facts](#) Pub Date: 2021-04-21 ,
DOI:10.1159/000515381
Giovanna Muscogiuri , Marwan El Ghoch , Annamaria Colao , Maria Hassapidou , Volkan Yumuk , Luca Busetto



Weight Loss with a Low-Carbohydrate, Mediterranean, or Low-Fat Diet

Iris Shai, et al

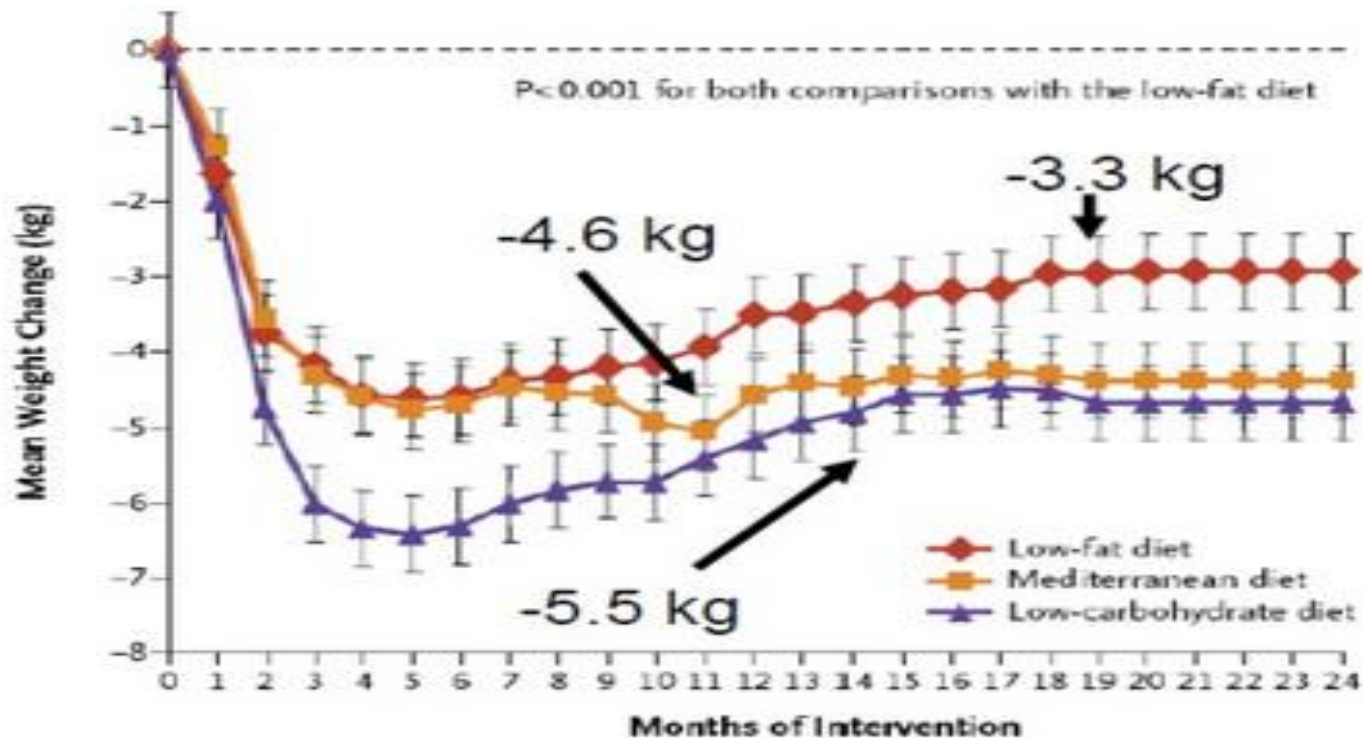


Figure 2. Weight Changes during 2 Years According to Diet Group.

Vertical bars indicate standard errors. To statistically evaluate the changes in weight measurements over time, generalized estimating equations were used, with the low-fat group as the reference group. The explanatory variables were age, sex, time point, and diet group.

➤ EXERCISE FOR OBESITY

Meta-analysis of 43 RCTs: 3476 participants

- Exercise
 - small weight losses
- Exercise plus diet vs diet alone
 - -1.1 kg
- Increased intensity of exercise
 - -1.5 kg



Volume 22, Issue S4

Special Issue: Exercise Training in
Management of Obesity in Adults:
Report from the EASO Physical Activity
Working Group

July 2021

Issue Edited by: **Manfred Müller**

GUIDE FOR HEALTHCARE PROFESSIONALS

EXERCISE TRAINING IN THE MANAGEMENT OF OVERWEIGHT AND OBESITY IN ADULTS

Recommendations of the EASO Physical Activity Working Group



- ✓ Help patients define the primary goal of their daily training
- ✓ Provide evidence-based recommendations for the patient-preferred exercise
- ✓ Identify meaningful benefits to patients
- ✓ Deliver practical information



GOAL 1. IMPROVE CARDIOMETABOLIC HEALTH

LOSS OF VISCERAL AND INTRAHEPATIC FAT

- Advise preferentially **aerobic exercise** at least at moderate intensity.
- Advise **HIIT** only i) after thorough assessment of cardiovascular risk and ii) ideally with supervision

BLOOD PRESSURE

- Advise preferentially **aerobic exercise** at least at moderate intensity

INSULIN SENSITIVITY

- Advise **any type of exercise**: aerobic exercise at moderate intensity, resistance training or a combination of both, or HIIT (after assessment of cardiovascular risk and with supervision)

Explain to patients that exercise improves cardiometabolic outcomes and helps prevent type 2 diabetes even though limited weight loss may occur.

What is moderate-to-high intensity resistance training?

At moderate intensity, people are usually not able to perform 20 consecutive repetitions. This corresponds to at least 60% of the 1-RM (heaviest weight one can lift in a single repetition).

What is HIIT?

High-intensity interval training. Short periods of high-intensity exercise, alternating with short recovery periods. During the high-intensity periods, your heart rate is > 85% of its maximal value.

Our recommendations are evidence-based and range from Very Strong to Expert Opinion

- Strong recommendation
- Moderate recommendation
- Weaker recommendation
- Insufficient evidence for formal recommendation; but expert opinion

PHYSICAL ACTIVITY COUNSELLING

- Recommendations are designed to support incremental progress
- Recommendations should be personalized according to patient physical fitness, corpulence, co-morbidities, stage of change regarding physical activity, barriers to increasing physical activity, and opportunities available in an individuals' environment
- These recommendations focus on exercise training. Advice should also emphasize limiting sedentary time and increasing incidental physical activity
- Behaviour change techniques including demonstrating exercise practices are effective in promoting physical activity in face-to-face programmes

What is a moderate intensity physical activity?

You're breathing hard but can still have a conversation easily.



GOAL 2. IMPROVE BODY COMPOSITION

WEIGHT LOSS AND REDUCTION IN ADIPOSITY

- Advise preferentially 150 to 200 min/week of **aerobic exercise** at least at moderate intensity
- Advise **HIIT** only after thorough assessment of cardiovascular risk and ideally with supervision
- Inform patients that anticipated weight loss is on average not more than 2 to 3 kg

WEIGHT MAINTENANCE AFTER WEIGHT LOSS

- Advise a **high volume of aerobic exercise** (200-300 minutes per week of moderate-intensity exercise)

PRESERVATION OF LEAN BODY MASS DURING WEIGHT LOSS

- Advise **resistance training** at moderate-to-high intensity

People with overweight or obesity should be encouraged to focus on improving weight management in the long term rather than short-term weight loss when exercising.



GOAL 4. IMPROVE EATING BEHAVIOUR AND QUALITY OF LIFE

EATING BEHAVIOUR

- Inform patients with overweight or obesity that exercise will not have substantial impact on energy intake but rather may improve eating behaviour

APPETITE AND SATIETY

- Inform patients that exercise may increase fasting hunger but can also improve satiety

QUALITY OF LIFE (PHYSICAL COMPONENT)

- Advise **aerobic** or **resistance training** or a combination of both

Exercise has very positive effects on eating behaviour when accompanied by a healthy diet. Quality of life improves with exercise, especially in physical abilities. Positive effects are also seen on vitality and mental health.



GOAL 3. IMPROVE PHYSICAL FITNESS

FOR CARDIORESPIRATORY FITNESS

- Advise **any type of exercise**: aerobic exercise at moderate intensity, resistance training or a combination of both, or HIIT (after assessment of cardiovascular risk and with supervision)

FOR MUSCLE STRENGTH

- Advise **resistance training** alone or combined with **aerobic training**

Low physical fitness is a strong risk factor for morbidity and mortality. Improving physical fitness has direct implication on patient quality of life and ability to perform daily activities; this becomes more important as people get older.



GOAL 5. OPTIMIZE THE BENEFITS OF BARIATRIC SURGERY

ADDITIONAL WEIGHT LOSS AND REDUCTION IN ADIPOSITY

- Advise a combination of **aerobic** and **resistance training**
- Inform that expected additional weight loss is on average not more than 2 to 3 kg

PRESERVATION OF LEAN BODY MASS

- Advise a combination of **aerobic** and **resistance training**

PHYSICAL FITNESS

- Advise a combination of **aerobic** and **resistance training**

Exercise will substantially improve both cardiorespiratory and muscular fitness. Exercise is an integral part of the long-term management strategy following bariatric surgery.

EASO
European Association for the Study of Obesity

Members of the EASO Physical Activity Working Group: Oppert JM, Bellicha A, van Baak MA, Battista F, Beaulieu K, Blundell JE, Carraça EV, Encantado J, Ermolao A, Pramono A, Farpour-Lambert N, Woodward E, Dicker D, Busetto L.

Table 7 Recommended FITT framework for Overweight & Obesity

	Recommendations*
Frequency	> 5 days/week of aerobic exercise to maximize caloric expenditure ³⁴⁸
Intensity	<ul style="list-style-type: none">• Moderate to vigorous activities encouraged where appropriate• Some individuals may prefer doing vigorous exercise as its less time consuming but vigorous exercise may not be appropriate for those with severe obesity [BMI>35]²• Individuals choosing to incorporate vigorous activity into their programme should do so gradually after an initial 4-12 week period of moderate intensity activity²
Time	<ul style="list-style-type: none">• To prevent obesity – 45-60 min MICA/day unless kcal also reduced¹• To treat obesity – 45-60 min MICA/day^{2,306}• Obesity after weight loss to prevent weight regain– 60-90min MICA/day^{1,2,306}• Obese & sedentary – build up to targets over several weeks starting with 10-20 min/day during 1-2 weeks to minimize muscle soreness & fatigue²

BEHAVIOR THERAPY

Meta-Analysis of 36 Studies

Behavioral vs placebo

- -2.5 kg more weight lost

Behavior plus diet and exercise

- -4.9 kg more weight lost

Shaw, Cochrane Database, 2005

Suggested Areas to Cover in Behavioural Lifestyle Assessment:

- The story so far, what led up to the referral – opportunity for the patient to tell their story and to feel heard and understood
- Understanding patients thoughts on referral
- Expectations of treatment
- Motivation to change lifestyle
- Weight history
- Dieting history
- Patient understanding of obesity
- Potential barriers to change
- Eating patterns
- Current lifestyle: dietary intake and physical activity
- Support networks
- Reward systems/strategies used to reinforce new behaviours

Strength Training

Twice weekly strength or resistance training [RT] is included in the UK activity recommendations³⁰³ with the aim of reducing age-related decline in muscle strength³⁵⁰.

A focus on strength training is particularly relevant to the older obese population where, decline in physical function may be further compounded by weight loss related reduction in muscle mass; this is known as sarcopenic obesity. A recent randomised controlled trial comparing MICA only, RT only or a combined resistance and MICA intervention in sedentary, obese individuals over 70 years found the greatest improvements in muscle strength and function in those using MICA with the addition of RT³⁵¹.

There is also growing interest in the possible role of RT in the treatment of cardiovascular risk factors and some suggestion that RT may have additional benefits in reducing abdominal obesity and ameliorating diet related loss of lean tissue³⁵². RT has been found to improve insulin stimulated glucose uptake in those with impaired glucose tolerance³⁵³, decrease HDL³⁵⁴ and increase insulin sensitivity in older men and women with insulin resistance or type 2 diabetes³⁵⁵. However, further research is needed to fully understand whether RT offers specific advantages in addressing risk factor and co-morbidity reduction. A recent meta-analysis which explored the impact of various types of activity on glucose control and risk factors for complications in those with type 2 diabetes found combined training produced better outcomes than RT alone³⁵⁶.

Although a number of studies have shown RT to be effective in reducing abdominal obesity^{357,358} it remains unclear whether strength training is more effective than MICA. Randomised controlled trials comparing dietary treatment and MICA with or without the addition of resistance training have produced mixed findings. Some suggest no advantage of RT on reduction in total body fat, abdominal fat, or weight^{359,360} while others suggest strength training may be a useful addition to MICA in improving the loss of visceral fat, total fat and increased muscle mass³⁶¹⁻³⁶³.

AGE GROUP	MOTIVATIONS	BARRIERS
TEENAGERS & YOUNG WOMEN	BODY SHAPE WEIGHT MANAGEMENT NEW SOCIAL NETWORKS FAMILY SUPPORT PEER SUPPORT	NEGATIVE EXPERIENCES AT SCHOOL PEER PRESSURE IDENTITY CONFLICT PE UNIFORMS BOYS DOMINANCE IN CLASS COMPETITIVE CLASSES LACK OF TEACHER SUPPORT
ADULTS	SENSE OF ACHIEVEMENT SKILL DEVELOPMENT MEDICAL SANCTION SUPPORT NETWORKS ENJOYMENT	NEGATIVE SCHOOL EXPERIENCES ANXIETY IN UNFAMILIAR SURROUNDINGS LACK OF SOCIAL NETWORK IDENTITY CONFLICT LACK OF ROLE MODELS
OLDER ADULTS	SOCIAL SUPPORT HEALTH BENEFITS ENJOYMENT	UNCLEAR GUIDANCE LACK OF ROLE MODELS

Before and After the Diet



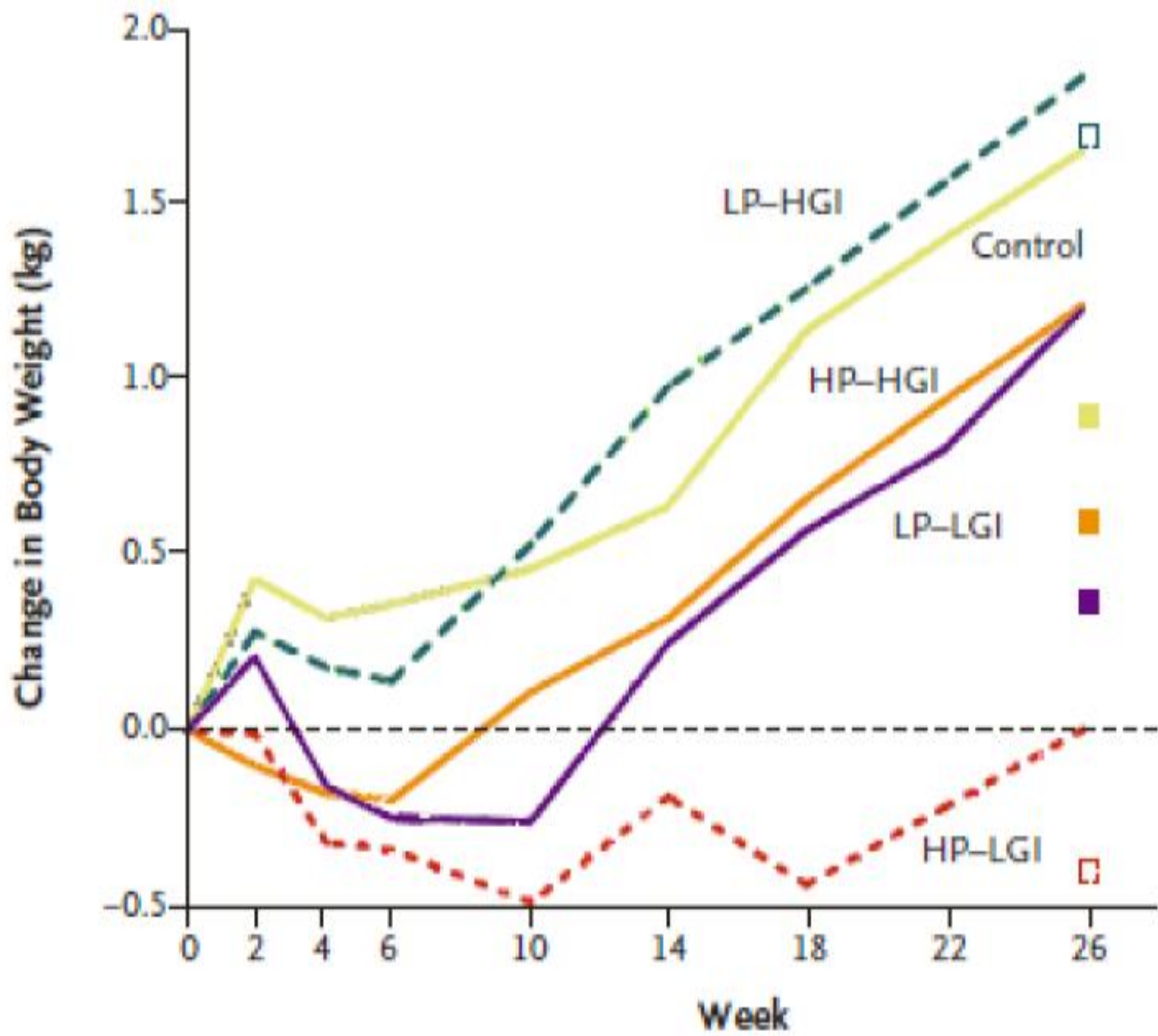
Before



After



After
The
After



Medical Nutrition Therapy for Obesity

The NWG of EASO in collaboration with the ESDN Obesity of EFAD have ready for publication new European guidelines for the treatment of obesity in adults (under revision) and children (accepted for publication)

Stages of preparation:

1. Surveys in European countries
2. Systematic literature review
3. Writing group established
4. Writing of guidelines for adults
5. Writing of guidelines for children

Provide policy makers and health care professionals with a consensus document to be used equally by all member states.

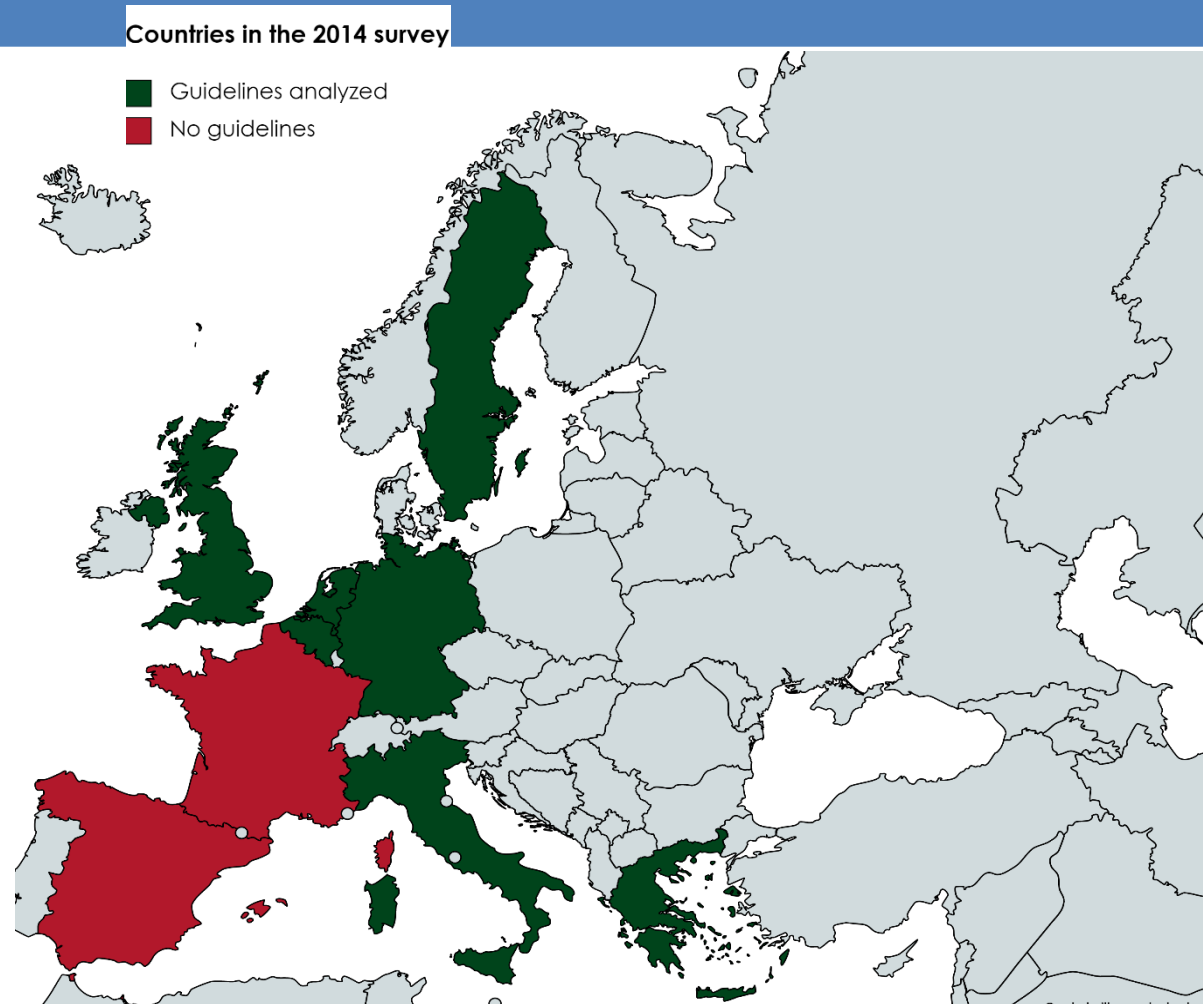


Methods

- ESDN Obesity in collaboration with NWG of EASO carried out 2 survey among European Dietitians
- 1st Survey (December 2014) contacted all EFAD NDAs
- The latest national Obesity treatment Guidelines

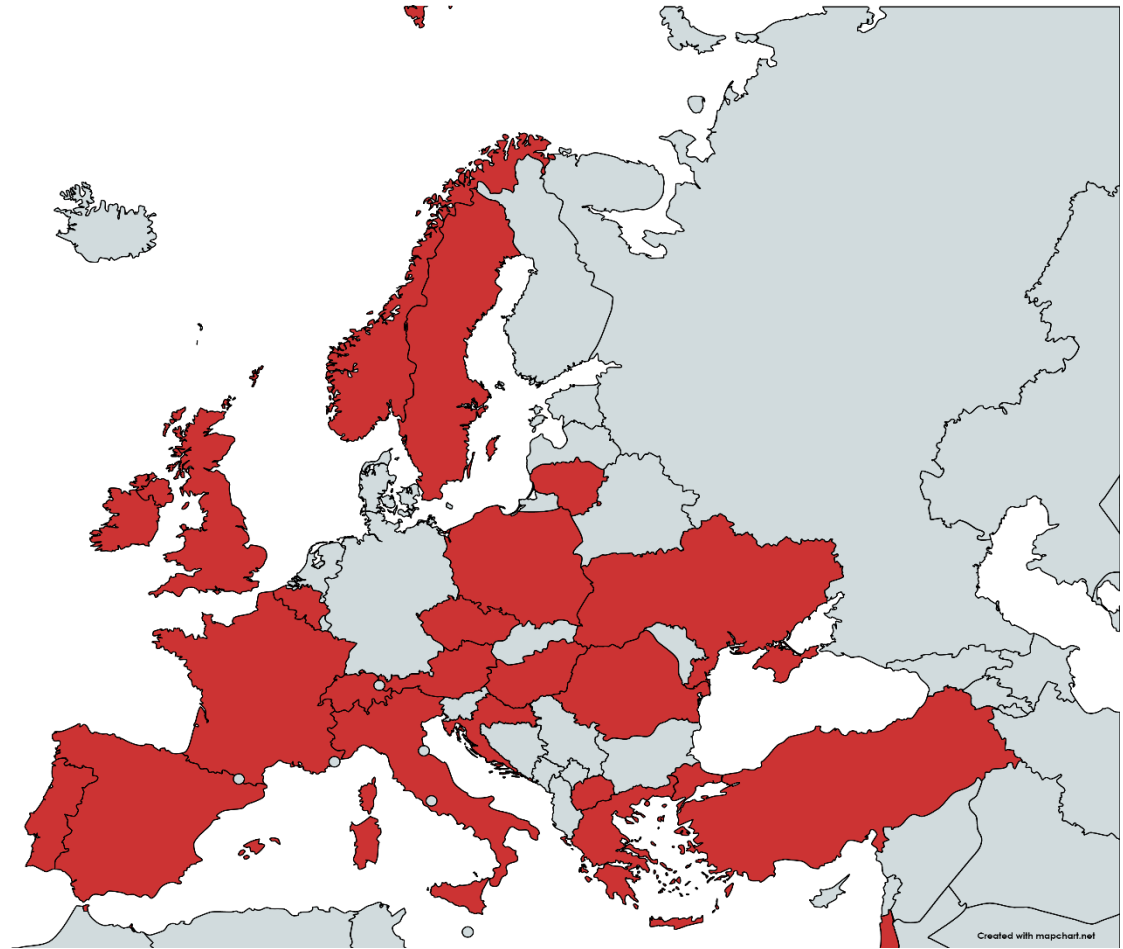
Aim

To compare the available guidelines for the dietetic treatment of obesity



What are the current needs in Europe?

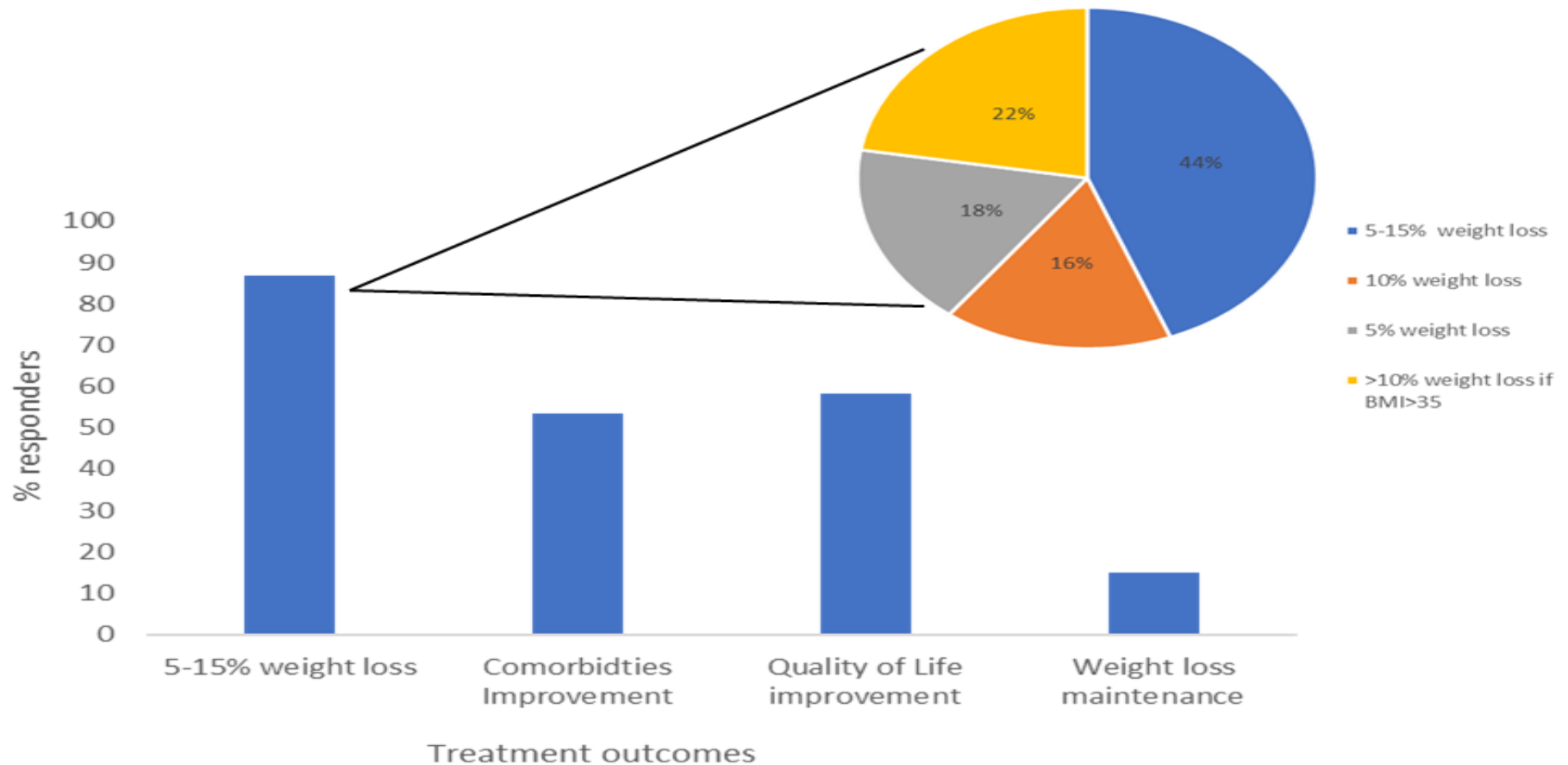
- A follow up survey collecting guidelines for the 2016-2021 period
- >13 countries have participated (NDAs)
- >90 individual answers from dieticians



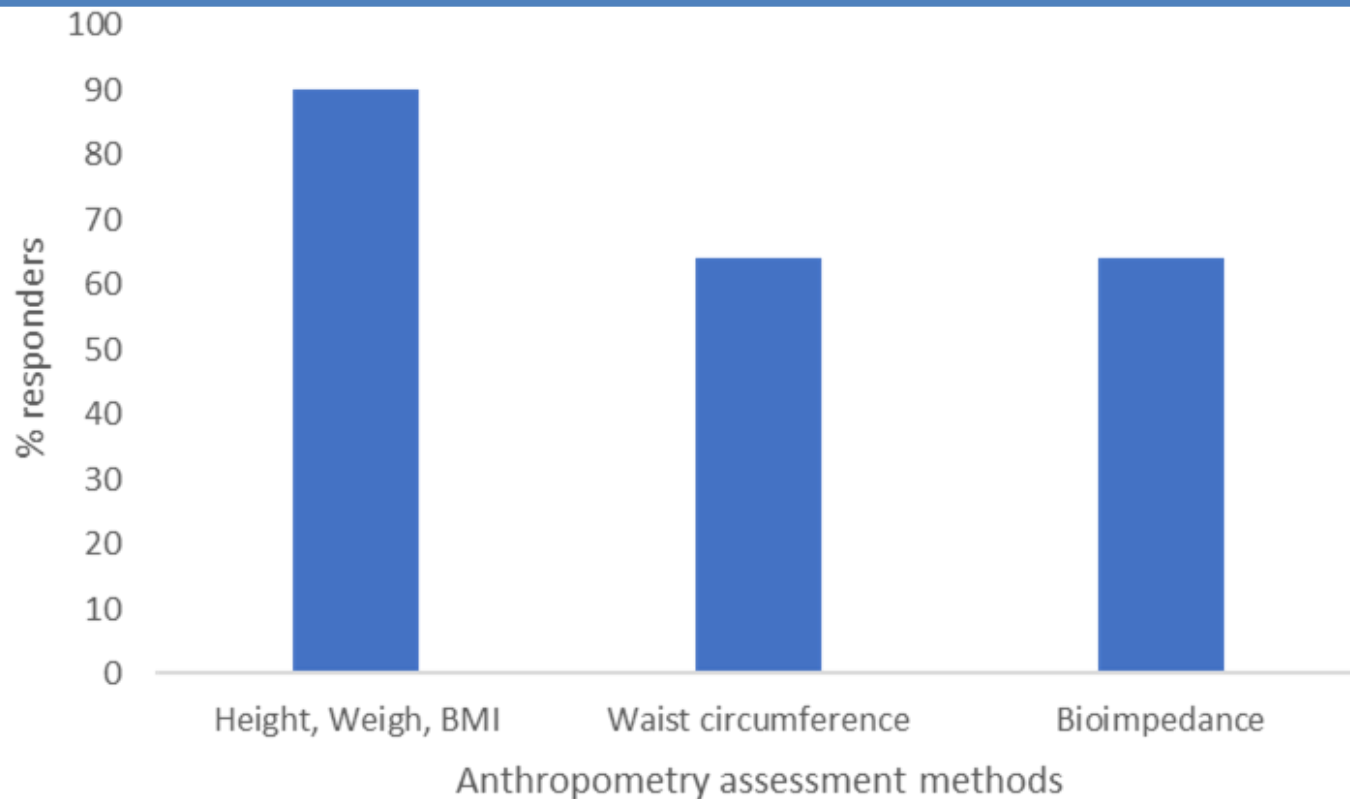
Overview of Obesity Guidelines

		Belgium	Germany	Great Britain	Greece	Italy	Netherlands	Sweden
General	Evidence based, level of evidence	x	x	x	x	x	x	x
	Diet	x	x	x	x	x	x	x
	Exercise	x	x	x		x	x	x
	Behavioural/Psychological approach	x	x		x		x	
	Medication, Surgery, Combined Therapy		x				x	x
	Weight Maintenance		x	x			x	x
Specific elements of the dietary intervention	Macronutrients based on general dietary guidelines	x					x	
	500-600 kcal deficit		x	x			x	
	800 kcal deficit		x					
	Energy expenditure						x	
	Fat reduction/ Fat quality	x	x				x	x
	Low carbohydrate diets/ Glycaemic index		x			x	x	x
	Mediterranean diet		x			x		x
	Protein/ high protein diets	x				x	x	x
	Fibre / Fibre rich foods	x				x	x	x
	Individualised dietary advice		x				x	x
	Dairy products	x			x			x
	Sweet drinks, juices & artificially sweetened	x				x	x	x
	Meal replacements	x	x		x			x
	Micronutrients	x						
	Water	x						
	Alcohol	x				x	x	
	Meal structure/Snacks	x						
	Caffeine						x	x
	Epigallocatechin 3-gallate						x	
Goals	5-15% weight loss		x			x	x	
	Weight maintenance goals			x		x	x	

What treatment outcomes are employed?



How is anthropometry assessed?



→ Body composition measured in 64% of cases

- **European Association for the Study of Obesity (EASO) position statement on medical nutrition therapy for the management of overweight and obesity in adults developed in collaboration with the European Federation of the Associations of Dietitians (EFAD)**
- Maria Hassapidou, Antonis Vlassopoulos, Marianna Kalliostra, Ellen Govers, Hilda Mulrooney, Louisa Ells, Ximena Ramos Salas, Giovanna Muscogiuri, Teodora Handjieva Darleska, Luca Busetto, Volcan Demirhan Yumuk, Dror Dicker, Jason Halford, Euan Woodward, Pauline Douglas, Jennifer Brown, Tamara Brown
- Under publication in Obesity Facts

New guidelines basic statements

- Obesity is a chronic relapsing disease characterized by abnormal or excessive adiposity that presents risk to health.
- Medical Nutrition Therapy based on the latest scientific evidence should be offered to all Europeans living with obesity.
- Medical Nutrition Therapy should be administered by trained dietitians as part of a multidisciplinary team and it should aim to on achieving health outcomes and not only weight changes.

New guidelines

- Multiple nutrition interventions are shown to be effective in the treatment of Obesity and its comorbidities and dietitians should deliver personalized interventions. Caloric restriction is effective for short-term weight reduction but alternative interventions based on eating patterns, food quality and mindfulness should be considered for long-term adherence.
- The Mediterranean Diet, Vegetarian Diets, the Dietary Approaches to Stop Hypertension, Portfolio Diet, Nordic Diet and Low Glycemic Index Patterns have all been associated with improvement in metabolic health with or without changes in body weight.

Current guidelines (based on the Canadian)

Evidence Strength	Diet & Obesity treatment
High (Level 1)	Adults living with obesity should receive individualized medical nutrition therapy provided by a registered dietitian (when available) to improve weight outcomes (body weight, BMI), waist circumference, glycemic control, established blood lipid targets, including LDL-C, triglycerides, and blood pressure.
	Dietary Approaches to Stop Hypertension (DASH) dietary pattern to reduce body weight and waist circumference
	Partial meal replacements (replacing one to two meals/day as part of a calorie-restricted intervention) to reduce body weight, waist circumference, blood pressure and improve glycemic control.

Current guidelines (based on the Canadian)

Evidence Strength	Diet & Obesity treatment
Moderate (Level 2)	Calorie-restricted dietary patterns emphasizing variable macronutrient distribution ranges (lower, moderate, or higher carbohydrate with variable proportions of protein and fat) to achieve similar body weight reduction over 6-12 months
	Mediterranean dietary pattern to improve glycemic control, HDL-cholesterol and triglycerides, reduce cardiovascular events, reduce risk of type 2 diabetes; and increase reversion of metabolic syndrome with little effect on body weight and waist circumference.
	Vegetarian dietary pattern to improve glycemic control, established blood lipid targets, including LDL-C, and reduce body weight

Current guidelines (based on the Canadian)

Evidence Strength	Diet & Obesity treatment
Moderate (Level 2)	Pulses (i.e. beans, peas, chickpeas, lentils) to improve body weight improve glycemic control, established lipid targets, including LDL-C, systolic BP
	Vegetables and fruit to improve diastolic BP, glycemic control
	Nuts to improve glycemic control
	Whole grains (especially from oats and barley) to improve established lipid targets, including total cholesterol and LDL-C.

Current guidelines (based on the Canadian)

Evidence Strength	Diet & Obesity treatment
Moderate (Level 2)	Low-glycemic index dietary pattern to reduce body weight glycemic control established blood lipid targets, including LDL-C, and blood pressure
	Dietary Approaches to Stop Hypertension (DASH) dietary pattern to improve blood pressure , established lipid targets, including LDL-C, CRP, glycemic control
	Nordic dietary pattern to reduce body weight and body weight regain; improve blood pressure and established blood lipid targets, including LDL-C, apo B, non-HDL-C
	Intermittent or continuous calorie restriction achieved similar short-term body weight reduction.

Current guidelines (based on the Canadian)

Evidence Strength	Diet & Obesity treatment
Low (Level 3)	Dairy foods to reduce body weight, waist circumference, body fat and increase lean mass in calorie-restricted diets but not in unrestricted diets and reduce the risk of type 2 diabetes and cardiovascular disease.
	Nuts to established lipid targets, including LDL-C, and reduce the risk of cardiovascular disease.
	Vegetables and fruit to reduce the risk of type 2 diabetes and cardiovascular mortality.
	Pulses (i.e. beans, peas, chickpeas, lentils) to reduce the risk of coronary heart disease

New evidence since the Canadian Guidelines

Evidence Strength	Diet & Obesity treatment
High (Level 1a)	Partial meal replacements (replacing one to two meals/ day as part of a calorie-restricted intervention) to reduce body weight, waist circumference, blood pressure and improve glycemic control
	New literature: 5 new studies/reviews
	New findings: Mixed level of evidence <ul style="list-style-type: none">- 4 Studies at Level 2- 1 Study at Level 1
	New Recommendation: Keep evidence level unchanged Treat Evidence Level with caution

New evidence since the Canadian Guidelines

Evidence Strength	Diet & Obesity treatment
Moderate (Level 2a)	Intermittent or continuous calorie restriction achieved similar short-term body weight reduction
	New literature: 7 new studies/reviews on intermittent fasting
	New findings: Mixed level of evidence <ul style="list-style-type: none">- 2 Studies at Level 2- 5 Studies at Level 1
	New Recommendation: Potential Evidence Level upgrade to Level 1

Dietary management of children with obesity (medical nutrition therapy)

Childhood obesity is a chronic disease demanding
specific health care

A Position Statement from the Childhood Obesity Task
Force of the European Association for the Study of
Obesity (EASO)

Nathalie J. Farpour-Lambert; Jennifer L. Baker; Maria
Hassapidou; Jens Christian Holm; Paulina Nowicka; Grace
O'Malley; Ram Weiss

[Obes Facts](#). 2015 Oct; 8(5): 342–349

- **European Association for the Study of Obesity (EASO) position statement on medical nutrition therapy for the management of overweight and obesity in children and adolescents developed in collaboration with the European Federation of the Associations of Dietitians (EFAD)**
- Maria Hassapidou, Kerith Duncanson, Vanessa Shrewsbury, Louisa Ells, Hilda Mulrooney, Odysseas Androutsos, Antonis Vlassopoulos, Ana Rito, Nathalie Farpourt, Tamara Brown, Pauline Douglas, Ximena Ramos Sallas, Euan Woodward, Clare Collins
- Accepted for publication in Obesity Facts

Position Paper MNT by EASO/EFAD



- **Synthesised graded evidence from interventions with a dietary component for the treatment of overweight or obesity in children and adolescents**

- **Applied expert consensus to develop recommendations for Individual Medical Nutrition Therapy**

NEW GUIDELINES

- Multi-component behavioural interventions are generally considered to be the gold standard treatment for children and adolescents living with obesity. The evidence presented in this position statement confirms that dietary interventions can effectively improve their adiposity outcomes.

- Dietary strategies should focus on the reduction of total energy intake through promotion of food-based guidelines that target modification of usual eating patterns and behaviours. These should target increasing nutrient-rich foods with a lower energy density, specifically vegetables and fruits, and a reduction in intakes of energy dense nutrient poor foods and beverages. In addition, treatments that are of higher intensity, longer duration delivered by a dietitian and co designed with target families are associated with greater treatment effects.

This systematic review aimed to investigate the impact of the dietary component of weight management interventions on the change in diet in children and adolescents with overweight or obesity.

Eligible randomized controlled trials (RCTs) published between 1975 and 2020 were identified by a systematic search

.

This review identified 109 RCTs, including 95 that reported at least one statistically significant dietary outcome change and 14 reporting no significant dietary change..

Recommendations for MNT for children and adolescents with overweight or obesity based on Level A evidence

- General recommendation: As a chronic disease, obesity in childhood and adolescence should be treated with both intensive and long-term care strategies. The focus of obesity management should be oriented toward improving patient-centered health outcomes, rather than weight maintenance or loss alone.
- Recommendation 1: Long-term, regular individual dietitian-delivered MNT can result in maintenance of energy deficits that reduce adiposity indicators in children and adolescents with obesity, while maintaining nutritional requirements for growth.
- Recommendation 2: It is recommended that IMNT for children and adolescents with overweight is focused on reduced energy density through increased vegetable consumption, adequate fruit intakes and limited fruit juice consumption. Increasing children's fruit and vegetable intakes by 0.5 to 1.5 servings per day and maintaining increased intakes for at least 12-months is feasible. Dietary targets need to be tailored, with personalised dietary coaching to facilitate behaviour change and address barriers to improving dietary patterns, especially for increasing vegetable intakes.

Recommendations for MNT for children and adolescents with overweight or obesity based on Level A evidence

- Recommendation 3: Goal setting and guidance on intakes of targeted food groups or specific foods or drinks are associated with decreased servings and proportion of total energy from EDNP foods for up to 12 months. IMNT strategies should focus on simple but explicit, food-based guidance towards achieving country-specific guidelines and delivered as part of a behaviour change strategy.
- Recommendation 4: Although weight status and weight change are predominantly influenced by total energy intake and expenditure, IMNT guidance and goal setting are more effective when focused on food-based guidance to improve nutrient intakes, rather than goal setting that is focused on nutrients or total energy intakes.
- Recommendation 5: The level of parental involvement in MNT needs to be age-appropriate, transitioning from parent focused for children with overweight or obesity in the preschool years to adolescent-focused once children reach 12 years and older. It is prudent to conduct IMNT as part of a multi-component intervention within a multi-disciplinary team that includes physical activity and psychology-trained health professionals. Evidence-based e-Health components that are developed or supported by trained health professionals may be useful for dietetic practitioners to complement IMNT.

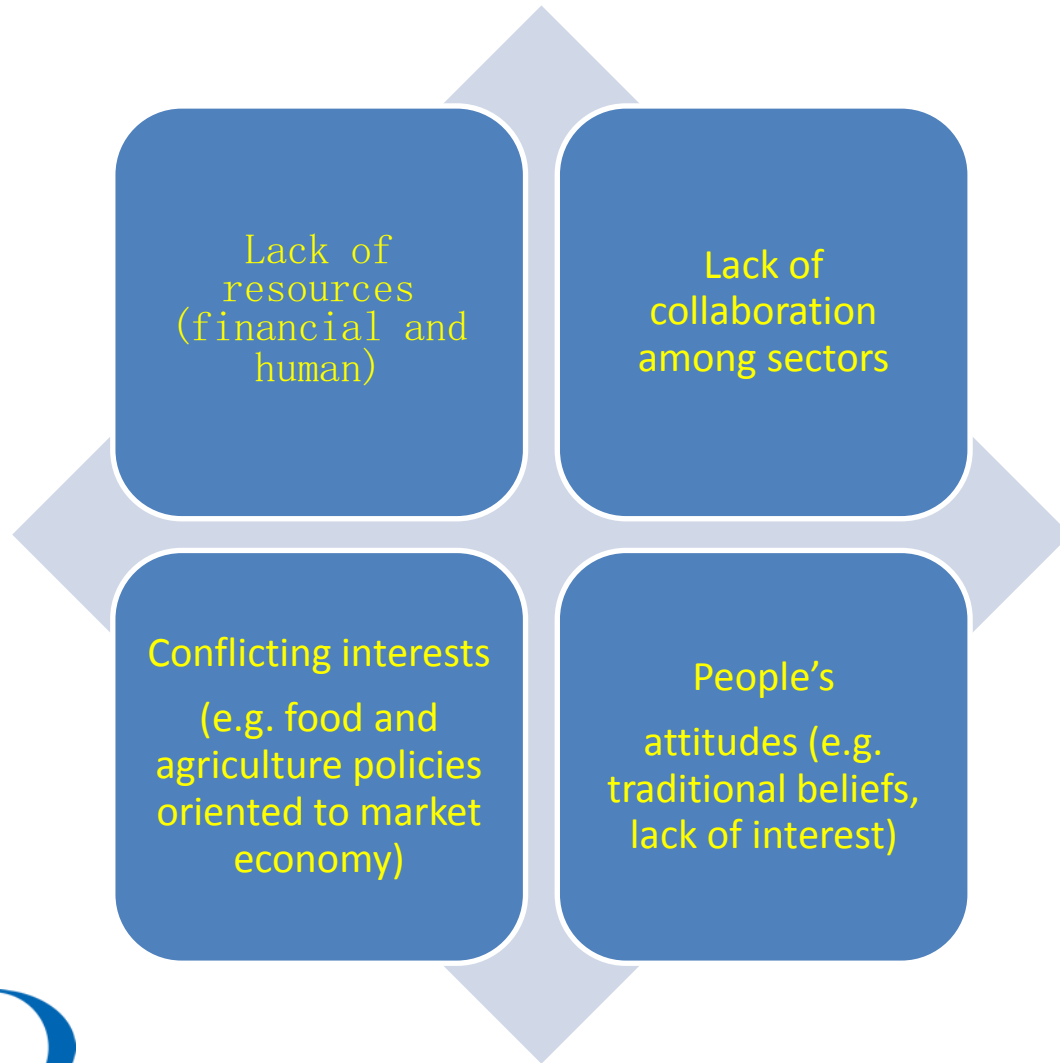
Recommendations for MNT for children and adolescents with overweight or obesity based on Level A evidence

- Recommendation 6: Although the management of children and adolescents with overweight or obesity is usually conducted in tertiary clinics or primary care, settings can vary considerably based on country-specific health systems and service delivery models. Practitioners providing IMNT virtually need to carefully consider how they curate their intervention to ensure all aspects of treatment and management are incorporated.
- Recommendation 7: The therapeutic environment of IMNT affords healthcare professionals with a unique and important opportunity to mitigate psychological, social and physical health consequences of overweight and obesity, including weight bias and stigmatisation. Role modelling, appropriate non-stigmatising person first language and a safe, welcoming environment all contribute to optimal clinical care.

Considerations for the Future



Main barriers in the implementation



Equitable Access to Interventions

Tackle disparities related to:

- Educational status
- Ethnicity
- Income

→ they are associated to ↓ compliance &
↑ drop-out in interventions

 **THANK YOU!**