Combining Physical activity and healthy diet

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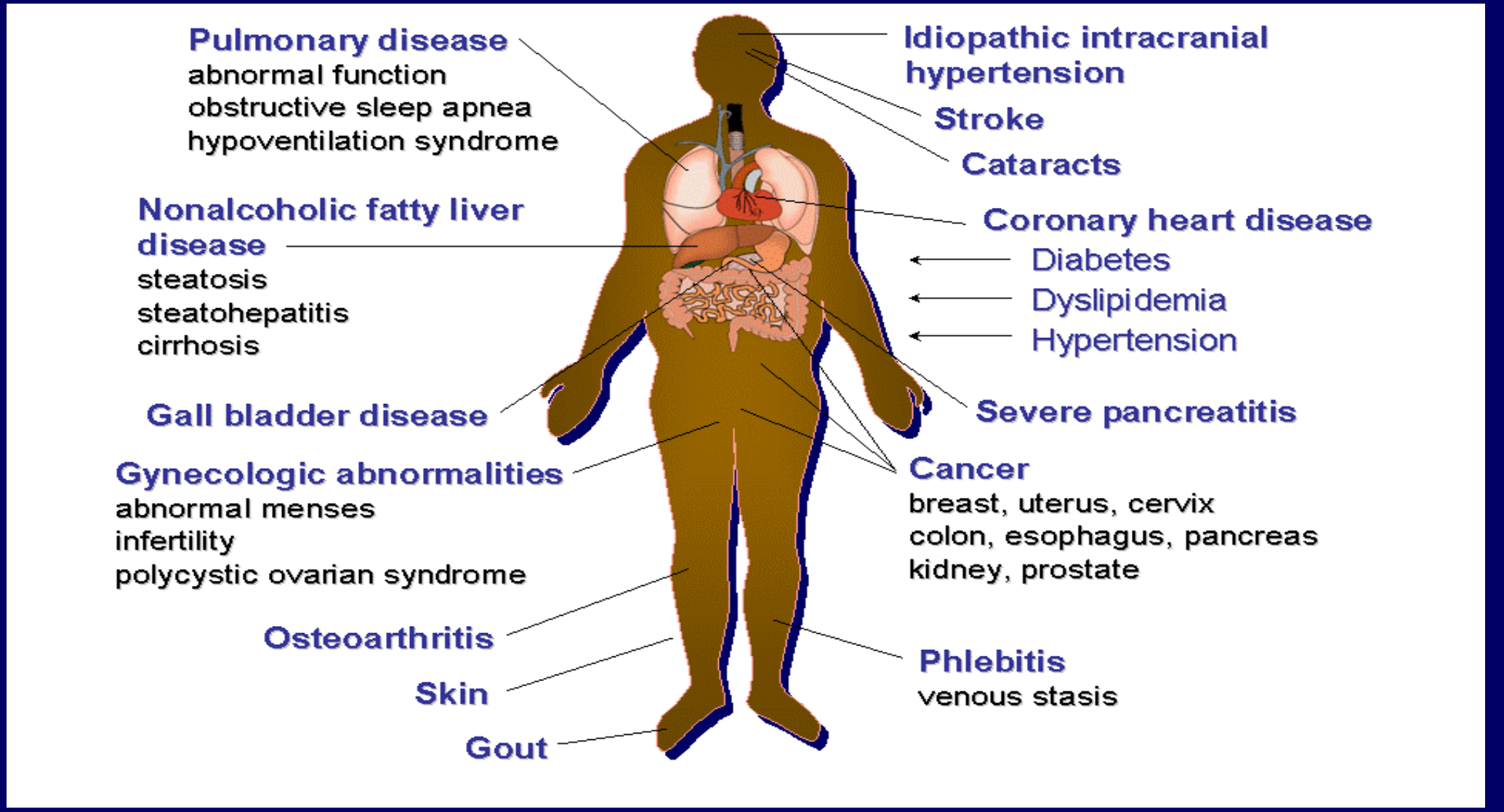
Conflict of interest

- Participation: MygoodLife
- Invitations to meetings:
  - Sanofi, Servier, Novo, MSD

Obesity agregates lots of comorbidities

stigmatisation, less screening, higher mortality…

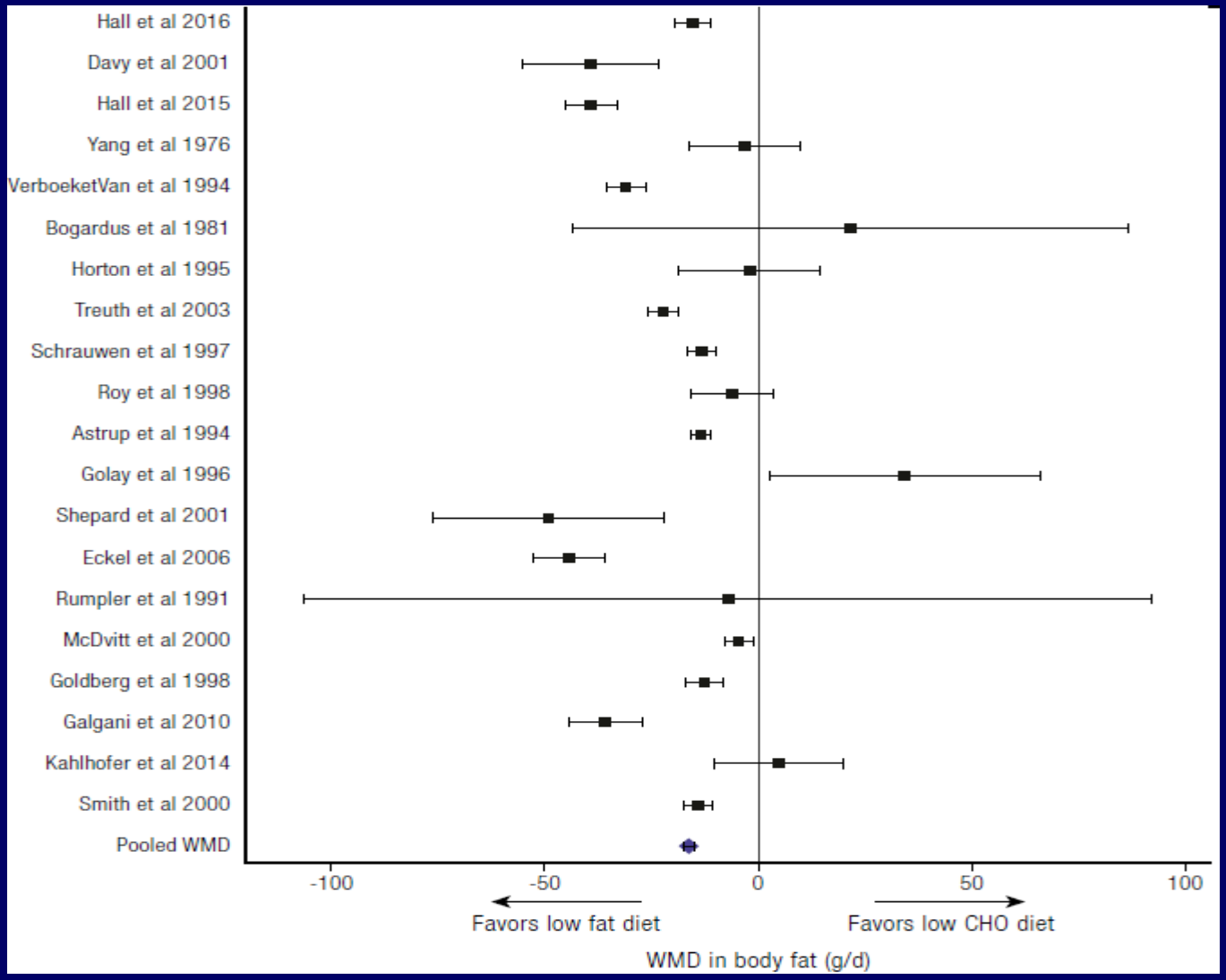


Changing diet

→ Food groups are more important than calories

Body fat loss greater with low fat/high carb diets

✓ 32 controlled feeding studies with isocaloric substitution of carb for fat



Hall et al., Gastroenterology 2017

Comparing a typical American diet and a balanced-diet

Type of Diet	Example	General Dietary Characteristics	Comments	AHA/ACC/TOS Evaluation and Others
Typical American diet		Carb: 50%	Low in fruits and vegetables, dairy, and whole grains	
		Protein: 15%	High in saturated fat and unrefined carbohydrates	
		Fat: 35%		
		Average of 2200 kcal/d		
Balanced-nutrient, moderate-calorie approach	DASH Diet or diet based on MyPyramid food guide. Commercial diet plans such as: Diet Center, Jenny Craig, Nutrisystem, Physician's Weight Loss, Shapedown Pediatric Program, Weight Watchers, Setpoint, Sonoma, Volumetrics	Carb: 55%–60%	Based on set pattern of selections from food lists using regular grocery store foods or prepackaged foods supplemented by fresh food items	Meta-analysis showing DASH approach better than control or healthy diets (weight mean difference 0.87–1.5 kg).
		Protein: 15%–20%	Low in saturated fat and ample in fruits, vegetables, and fiber	
		Fat: 20%–30%	Recommended reasonable weight-loss goal of 0.5–2.0 pounds/wk	
		Usually 1200-1800 kcal/d	Prepackaged plans may limit food choices	
			Most recommend exercise plan	
			Many encourage dietary record keeping	
			Some offer weight-maintenance plans/support	

Bray et al., Endoc Rev, 2018

Qualitative dietary intervention

Increase nutritional density

- Increase meal components
- Decrease portion size in high energy density food
- Increase water from food→ increase fibers and trace elements

Lets get practical!

Meal A

1 main component
Big portion size

Meal B

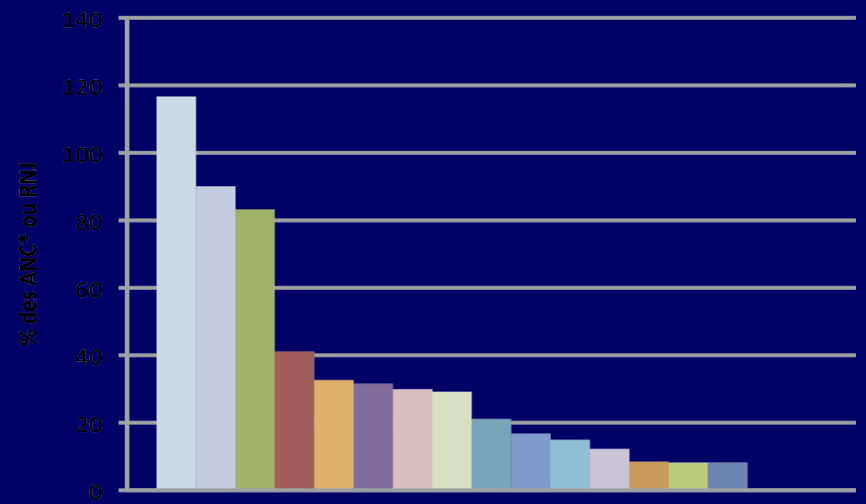
More colourful, more diverse, smaller portion sizes

Nestlé

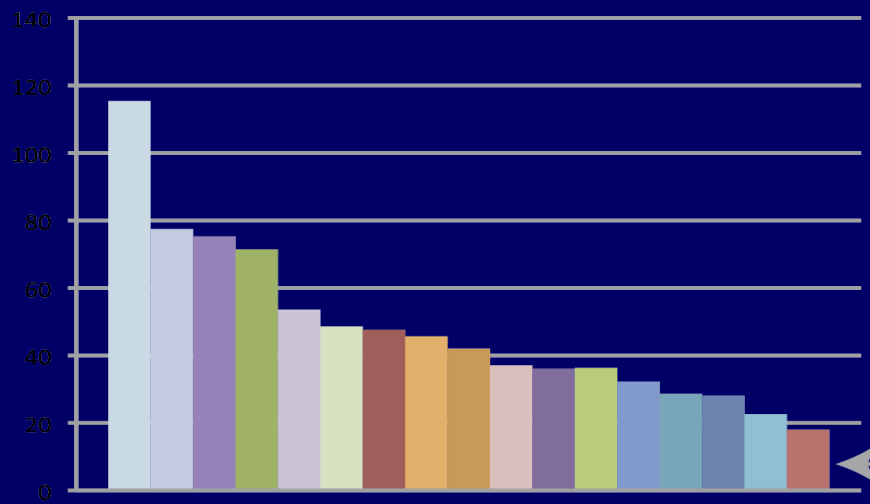
= 690 kcal

Higher nutritional density for B

Meal A



Meal B



Vit B12 - Vit B3 - Vit C - Zinc - Vit B9 - Vit B6 - Fer - Vit B2 - Vit A - Vit B5 - Mg - Vit E - Fibres - Cu - Ca - Vit B1 - Vit D

+20 mg de Mg	3x plus de Ca	de la Vit D	4x plus de Vit E	2x plus de Vit B1	2x plus de Fibres	2x plus de Vit B6	83 mg de Vit C	4x plus de Vit B9	5x plus de Vit A

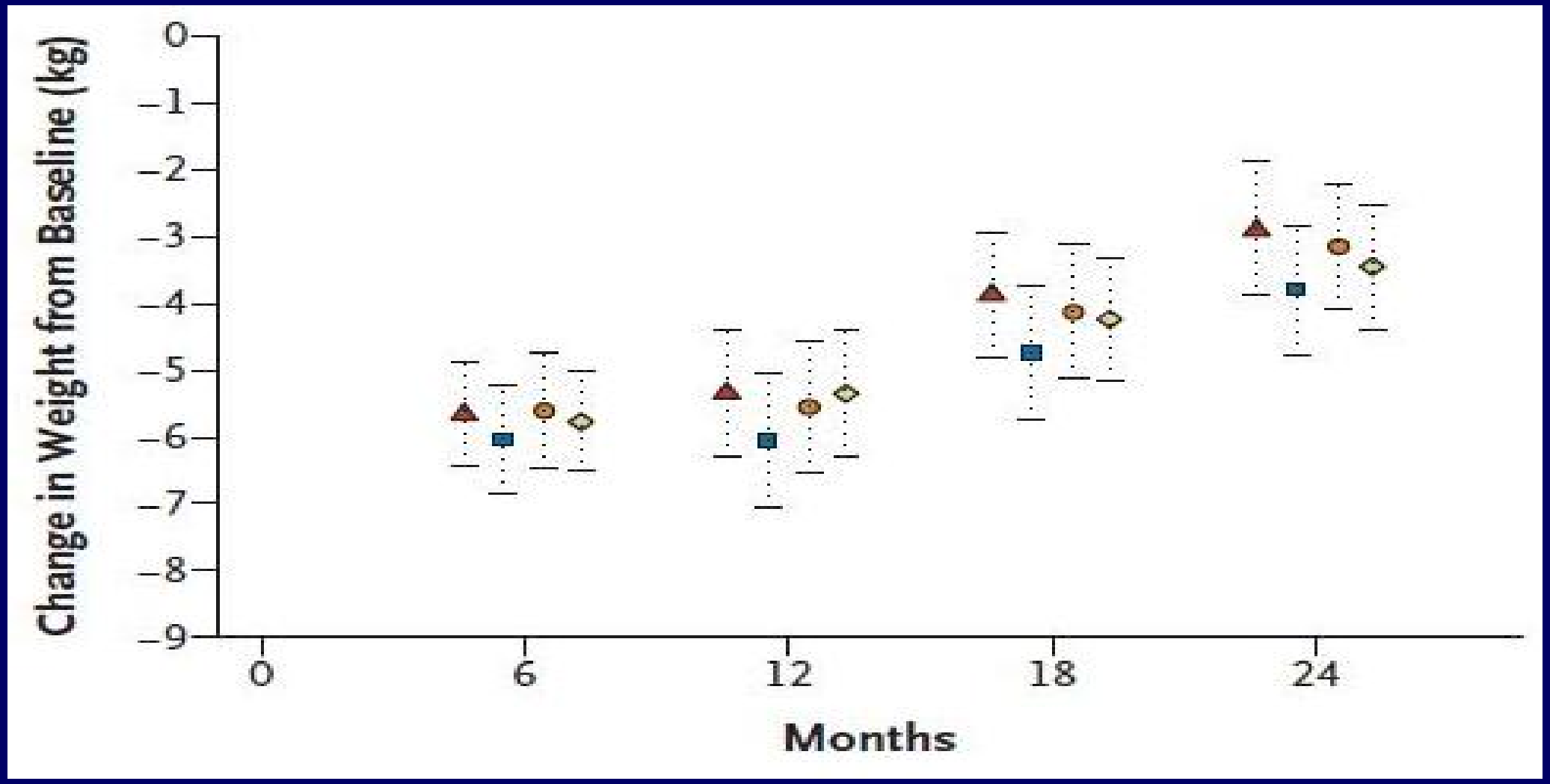
Testing four diet combinaisons

✧ Comparison of four different isocaloric diets with varying prot, carb and fat contents

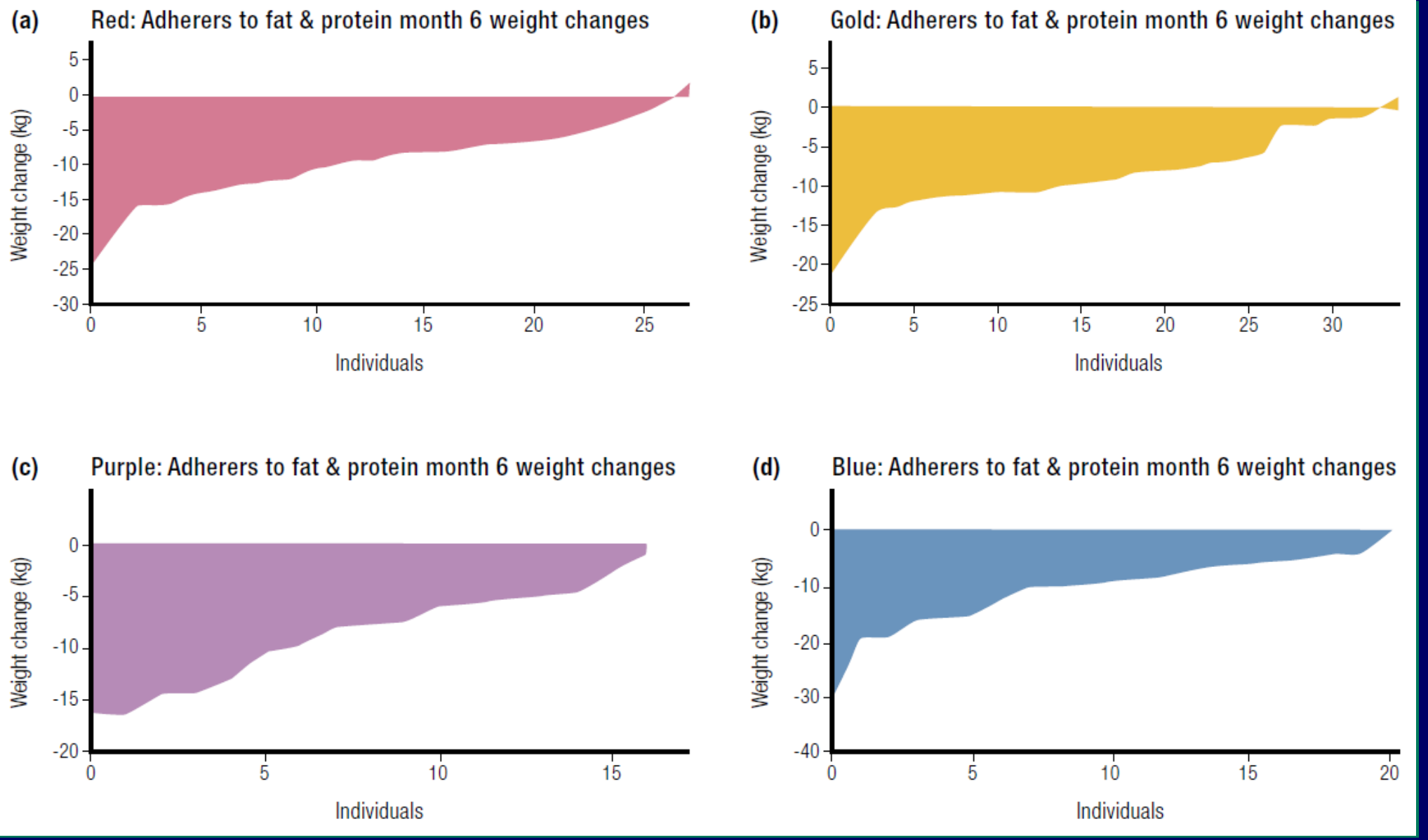
- ✧ **N=811 obese subjects, 33 kg/m²**
- ✧ **2y follow-up**
- ✧ **Age: 51±9 y, 62%female**
- ✧ **Decrease of 750 kcal/day**
- ✧ **90 min physical activity/week**
- ✧ **Individual and group sessions**

Diets	Carb	Fat	Prot
Low fat/normal prot	65 %	20 %	15 %
Low fat/high prot	55 %	20 %	25 %
High fat/normal prot	45 %	40 %	15 %
High fat/high prot	35 %	40 %	25 %

Sacks et al., NEJM, 2009


Carbohydrate/Protein/Fat:
65/15/20%
55/25/20%
45/15/40%
35/25/40%
Change in Weight from Baseline (kg)
0
−1
−2
−3
−4
−5
−6
−7
−8
−9
0
6
12
18
24
Months

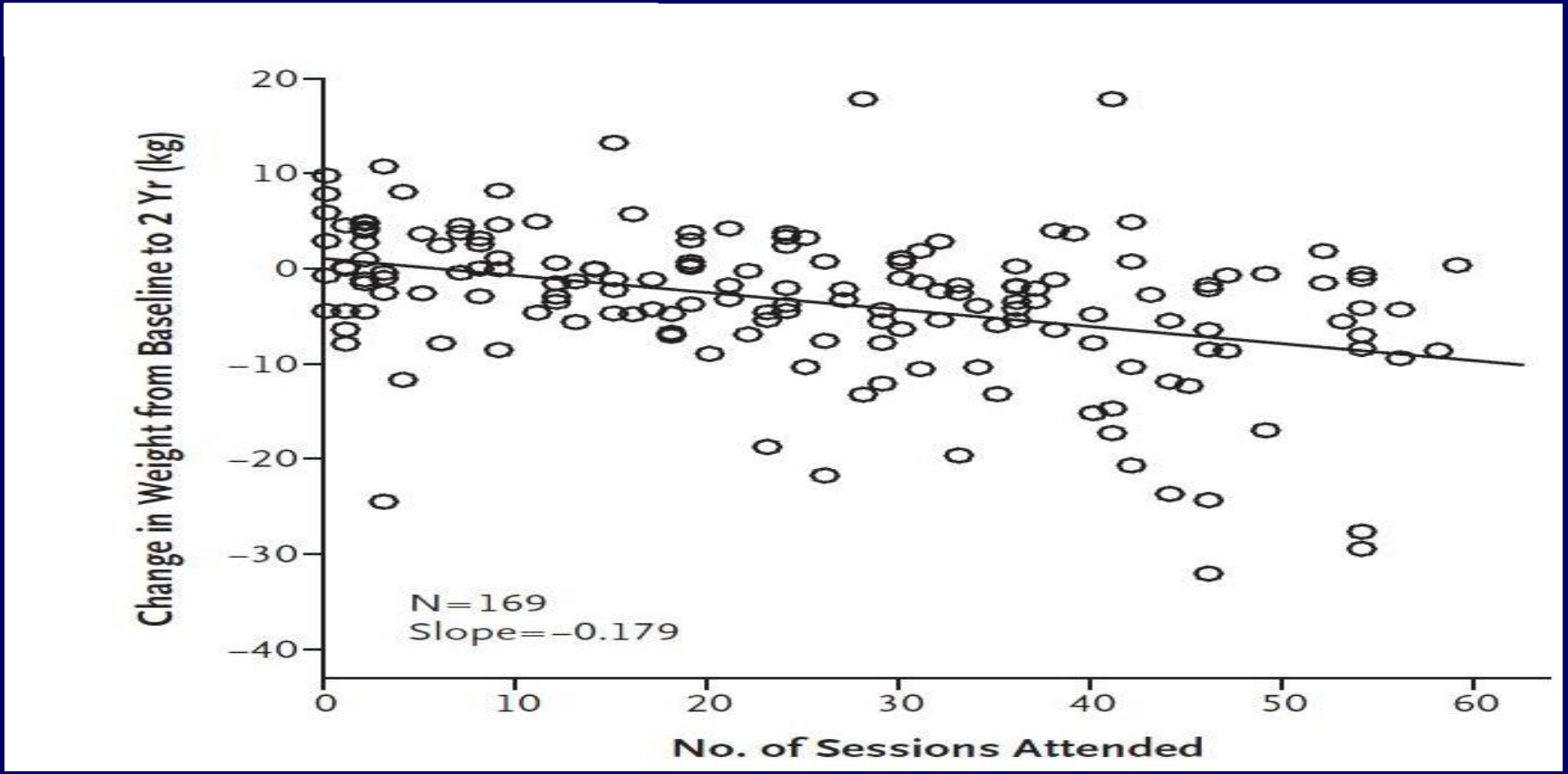
High individual variability



Bray et al., Endoc Rev, 2018

Adherence: key factor for long-term weight loss

✧ Intense follow-up associates with higher adherence rate at 2y and higher WL (Δ = 5 kg compared to mean WL)

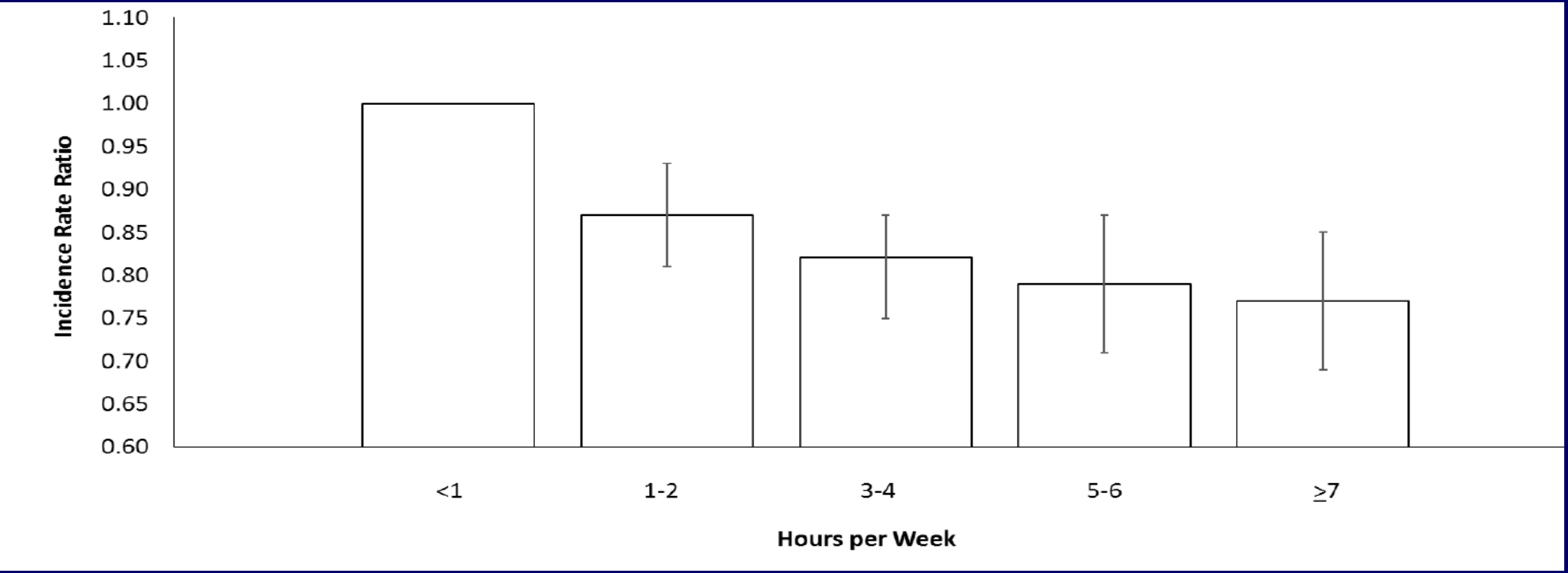


recommendations of the American College of Cardiology/American Heart Association/Obesity Society Guideline for the Management of Overweight and Obesity in Adults, which states that "a variety of dietary approaches can produce weight loss in overweight and obese adults, and that the choice should be based on the patient's preferences and health status"

Jensen et al., Circulation, 2014

Changing physical activity

Incidence of developing obesity (BMI ≥ 30kg/m²) by level of vigorous PA



OR (95% CI)	**Ref**	**0.87** (0.81-0.93)	**0.82** (0.75-0.88)	**0.79** (0.71-0.87)	**0.77 (0.69-0.85)**

20,259 African-American
< 40 y, follow-up 1995-2009

Rosenberg et al. *Am J Prev Med* 2013

Types of PA and weight gain

- **Total leisure PA**
  - Moderate, vigorous, moderate-to-vigorous: consistent inverse association
  - Light intensity: no or positive association
- **Occupational PA**
  - Moderate, vigorous: inverse association
  - Light intensity: no association
- **Walking**: no consistent association

Maintaining weight loss with physical activity

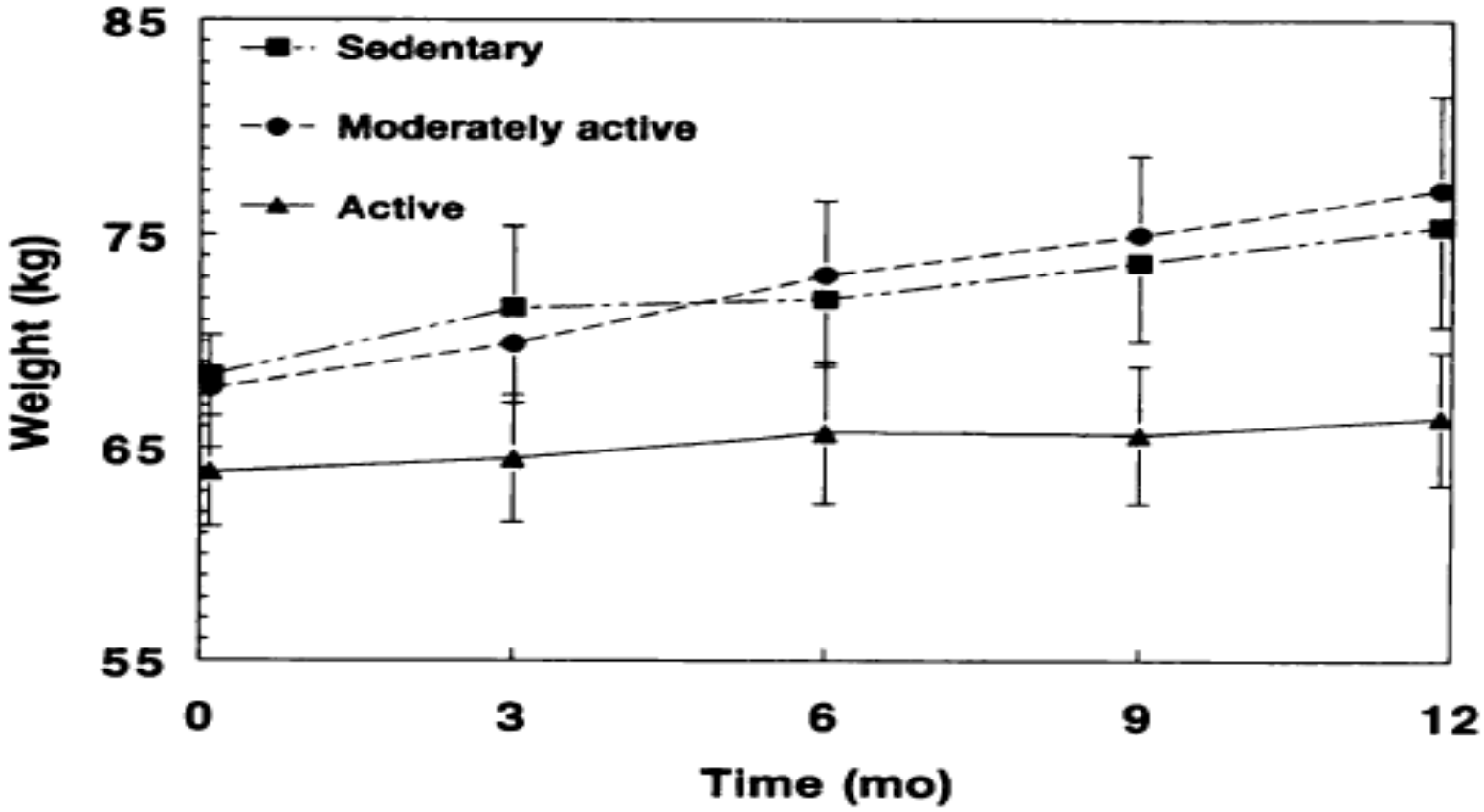


FIGURE 1. Mean (± SEM) body weights in three groups of previously obese women in the year after completion of weight loss. Time-group interaction, ANOVA, and post hoc *t* testing indicated that increases in weight were less in active women (TEE:RMR > 1.75).

Schoeller DA , AJCN, 1997

The evidence available supports that physical activity can be an effective lifestyle behavior to prevent or minimize weight gain in adults, but… a relatively high volume of physical activity is needed

Physical Activity Guidelines Advisory Committee 2018

US guidelines

Component	Weight Loss	Weight-Loss Maintenance
Frequency and duration of treatment contact	• Weekly contact, in person or by telephone, for 20–26 wk (Internet/e-mail contact yields smaller weight loss)	• Every-other-week contact for 52 wk (or longer)
	• Group or individual contact	• (Monthly contact likely adequate)
		• Group or individual contact
Dietary prescription	• Low-calorie diet (1200-1500 kcal for those <250 pounds; 1500–1800 kcal for those ≥250 pounds	• Consumption of a hypocaloric diet to maintain reduced body weight
	• Typical macronutrient composition: ≤30% fat (≤7% saturated fat), 15%–25% protein, remainder from carbohydrate (diet composition based on individual needs or preferences)	• Typical macronutrient composition similar to that for weight loss
Physical activity prescription	• 180 min/wk of moderately vigorous aerobic activity (*e.g.*, brisk walking), strength training also desirable	• 200-300 min/wk of moderately vigorous aerobic activity (*e.g.*, brisk walking), strength training also desirable
Behavior therapy prescription	• Daily monitoring of food intake and physical activity by use of paper or electronic diaries	• Occasional to daily monitoring of food intake and physical activity by use of similar diaries
	• Weekly monitoring of weight	• Twice weekly to daily monitoring of weight
	• Structured curriculum of behavior change (*e.g.*, Diabetes Prevention Program)	• Curriculum of behavior change, including relapse prevention and individualized problem solving
	• Regular feedback from an interventionist	• Periodic feedback from an interventionist

Heymsfield et al., NEJM 2017

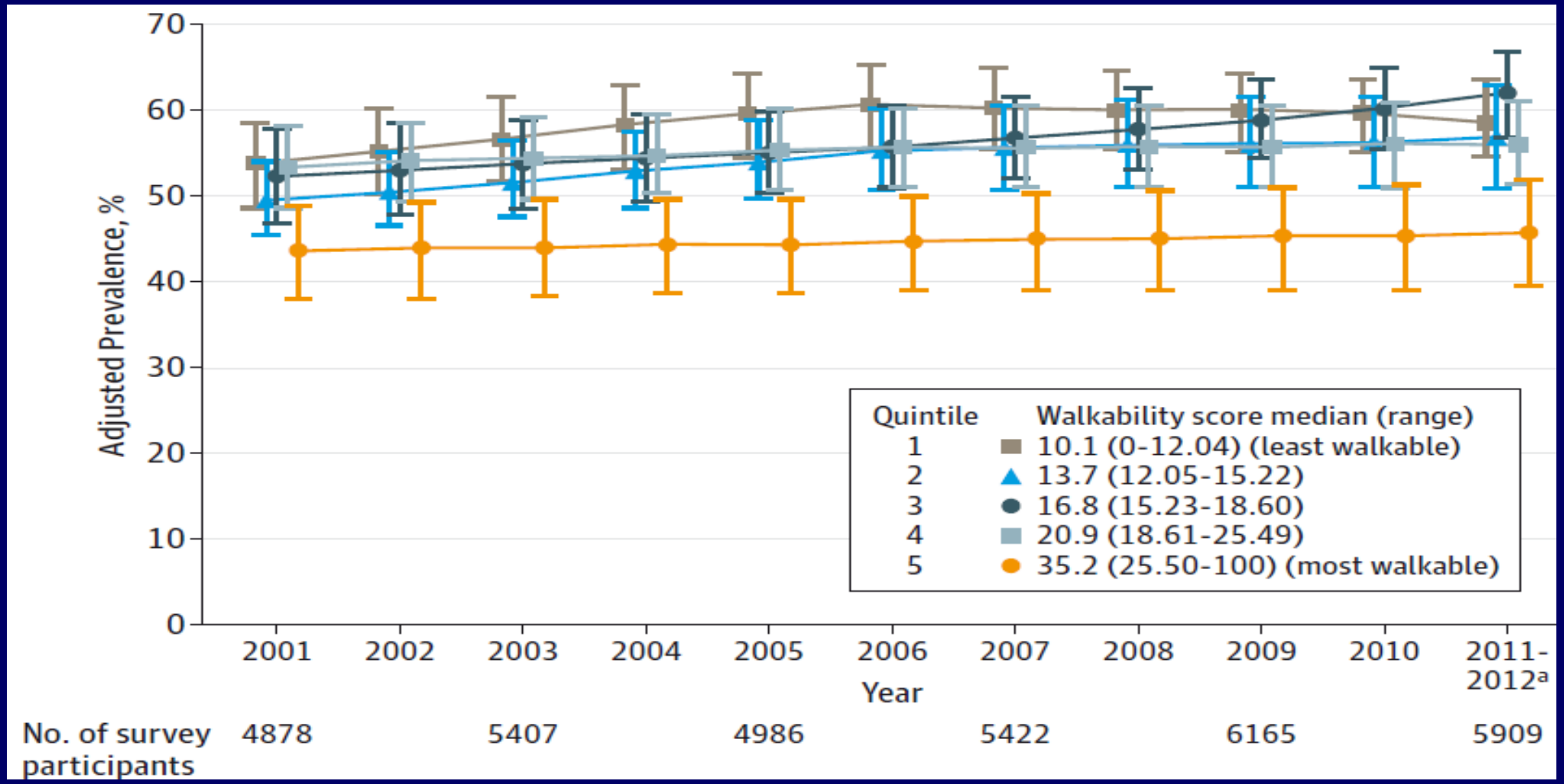
Conclusions

- **Obesity is a chronic condition**
- **Public health actions: keys at a population-level**
- **At an individual-level the objectives are:**
  - High volume (180 min/w) vigorous physical activity is needed
  - Achievable targets: loss of 5-15% of initial weight
  - No restrictive diets (high risk of weight regain)
  - Moderate caloric restriction and increase food diversity
    - Balanced diet adapted to patient preferences'
  - Regular contacts to enhance adherence to diets
  - Behavioral therapy when needed

Perspective:

Target the environment!

High neighborhood walkability is associated with a lower obesity prevalence over time

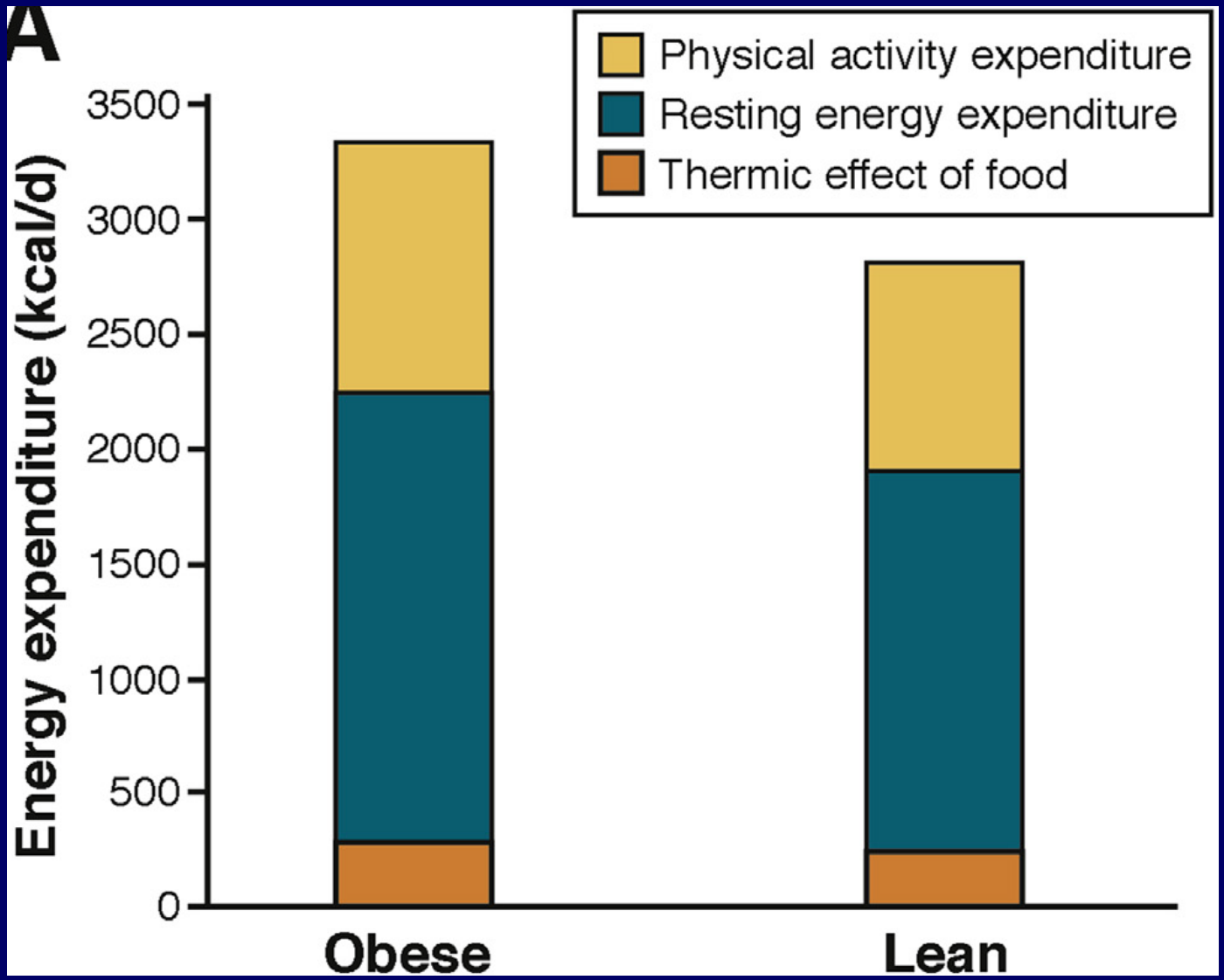


Ontario, Canada, n=8777, 2001-2012

Creatore et al., JAMA 2016

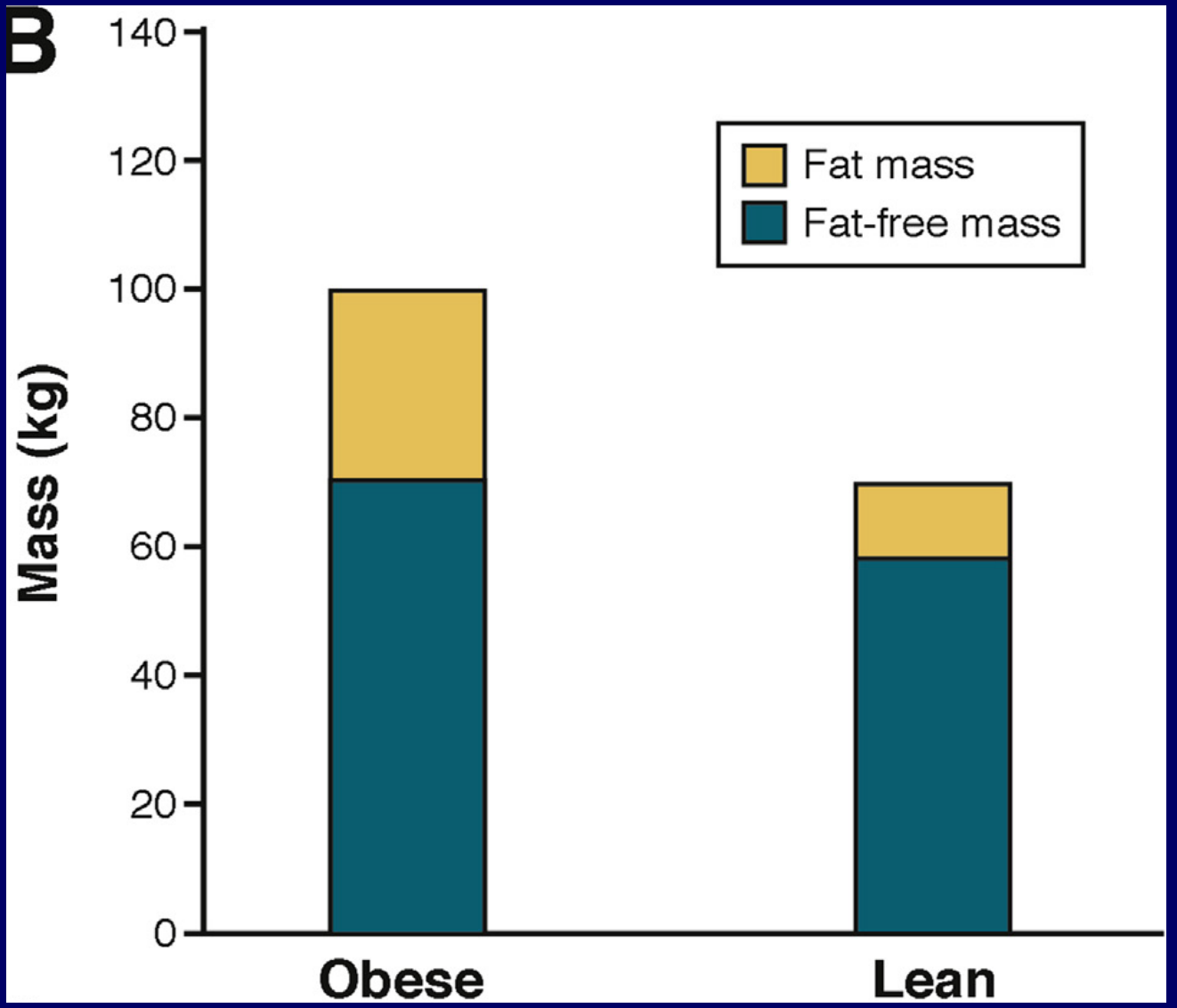
Thank you

Components of human energy expenditure and body composition 1/3



Hall et al., Gastroenterology 2017

Components of human energy expenditure and body composition 2/3



Components of human energy expenditure and body composition 3/3