

How can we change nutrition behavior?

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Adult obesity

Body mass index ≥ 30

Aged 18+

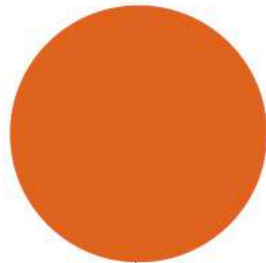
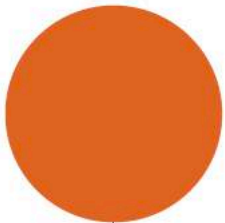
2014

TOTAL

641 million adults

Men
266 million

Women
375 million



11%



15%



Adult overweight

Body mass index ≥ 25

Aged 18+

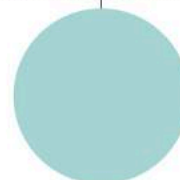
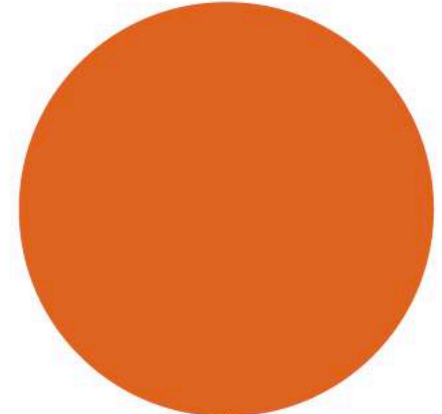
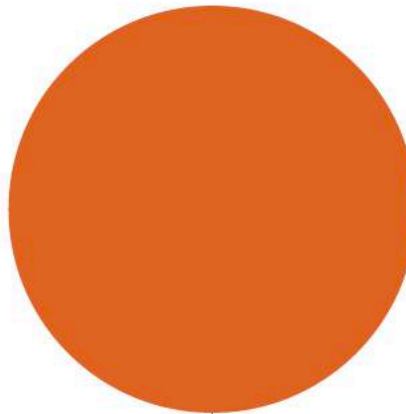
2014

TOTAL

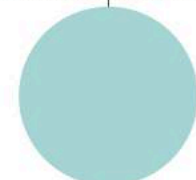
1,929 million adults

Men
947 million

Women
982 million



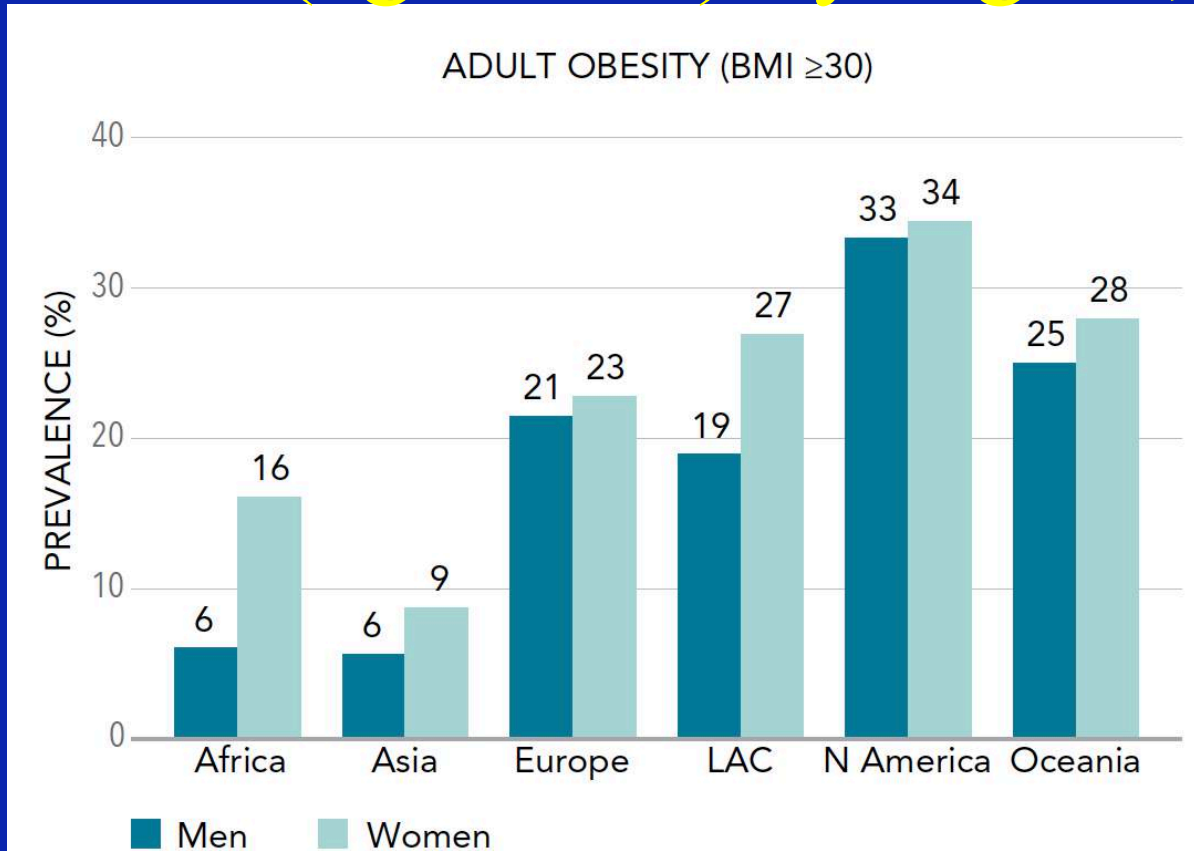
38%



39%

Source: Global Nutrition Report, 2017

Prevalence of obesity among adults (ages 18+) by region, 2014

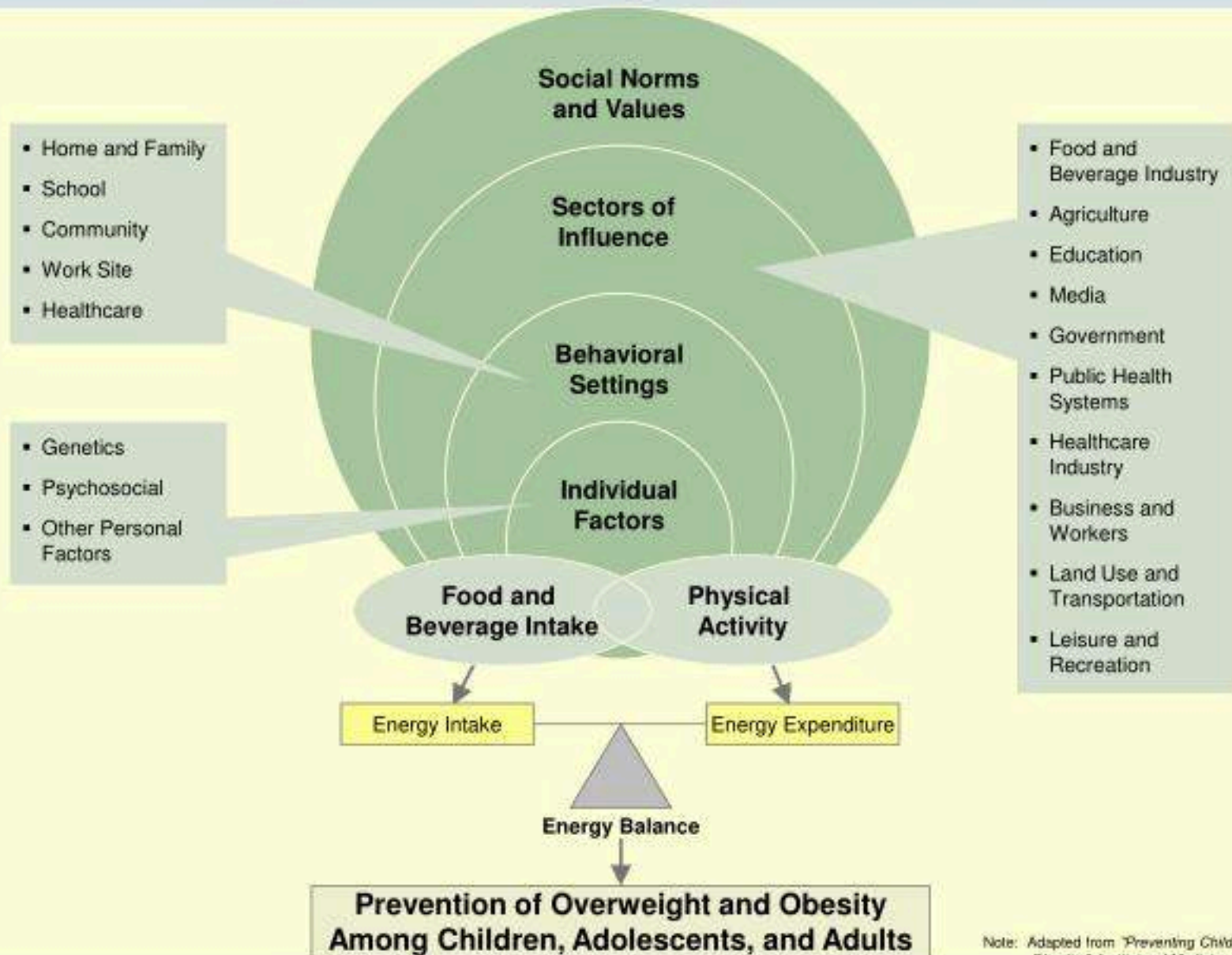


Source: Authors based on data from the World Health Organization Global Health Observatory data repository and NCD Risk Factor Collaboration.¹⁴

Notes: Population-weighted means for 189 countries. LAC: Latin America and the Caribbean.

Source: Global Nutrition Report, 2017

Social Ecological Model



Note: Adapted from "Preventing Childhood Obesity." Institute of Medicine, 2005.



Let's Move.



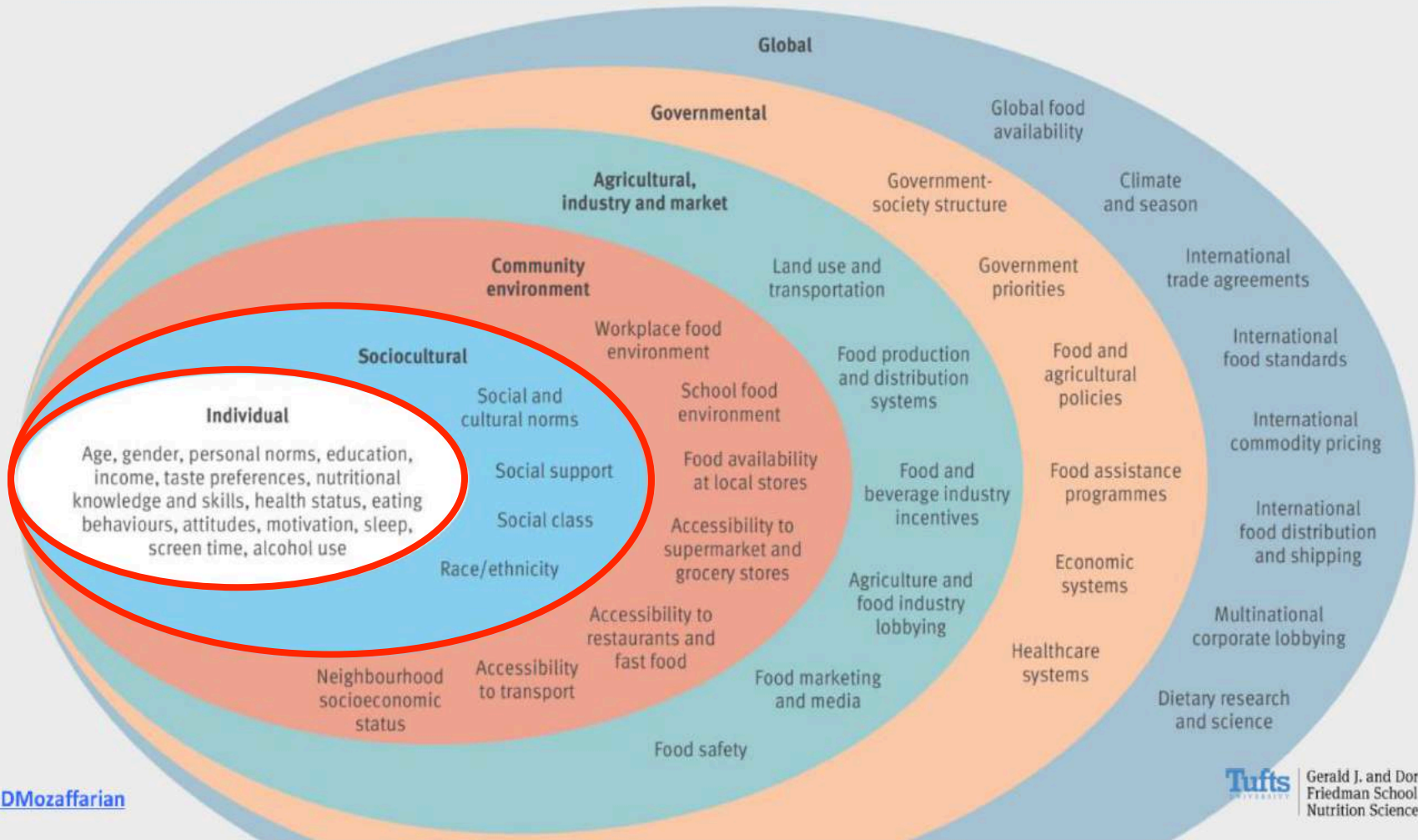
Each 1/2 pack serving contains

MED	LOW	MED	HIGH	MED
Calories	Sugar	Fat	Sat Fat	Salt
353	0.9g	20.3g	10.8g	1.1g
18%	1%	29%	54%	18%

of your guideline daily amount



Policy Priorities: Systems Changes



How Can We Change Nutrition Behavior?

Health vs. Weight

A Healthy Lifestyle is All About Balance:

Healthy Diet

Healthy Physical Activity

How Can We Change Nutrition Behavior?

UNFORTUNATELY...

INSIDE IMCLONE • FIGHTING WEST NILE VIRUS

U.S. News & WORLD REPORT

AUGUST 19, 2002



SUPER SIZE AMERICA

HOW OUR WAY
OF LIFE IS
KILLING US

\$3.95

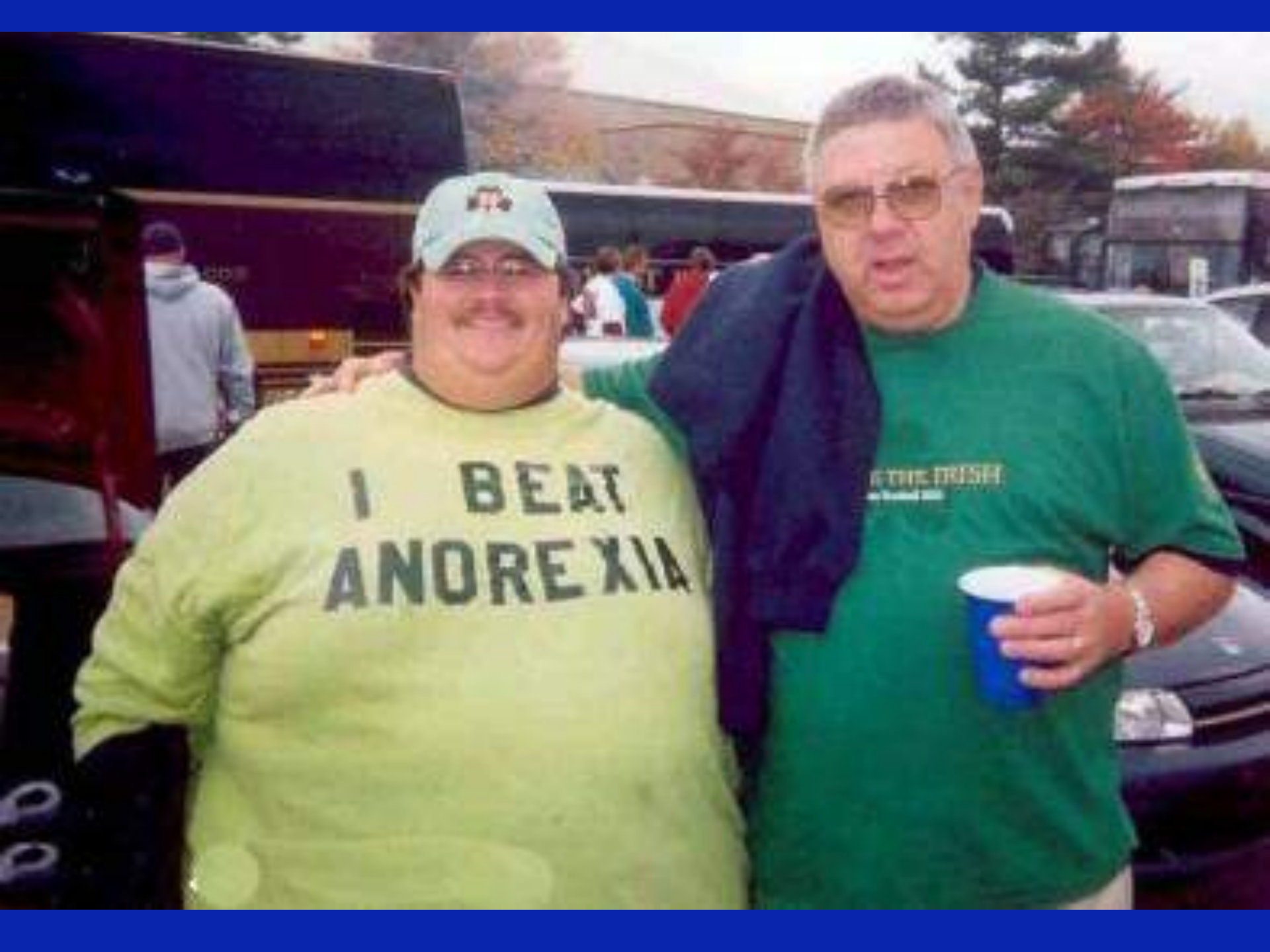


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**72-oz Steak FREE if eaten
within 1 hour**







AVERAGE ADULT AMERICAN MAN

Height:	5' 9"
Weight:	194 lbs
Waist:	39.69 in.
BMI:	28.4





AVERAGE ADULT AMERICAN WOMAN

- Height: 5'3"
- Weight: 165 lbs
- Waist: 37.0 in.
- BMI: 26.1

CDC, 2018



Luisel Ramos

Age: 22

Height: 5' 9"

Weight: 98 lbs

BMI: 14.6



Eliana Ramos

Age: 18

Height: 5'9"

What is Successful Weight Loss?

- Sustained weight loss of 3%-5% produce clinically meaningful reductions in triglycerides, blood glucose, HbA1C, and the risk of developing type 2 diabetes
- Larger weight losses produce greater benefits
- The Panel recommends as an initial goal the loss of 5% to 10% of baseline weight within 6 months

What is the Most Effective Behavioral Weight Loss Treatment?

- The most effective behavioral weight loss treatment is in-person, high-intensity (i.e., ≥ 14 sessions in 6 months) comprehensive weight loss interventions provided in individual or group sessions by a trained interventionist
- Its components include “a moderately-reduced calorie diet, increased physical activity, and behavior therapy”

Weight Reducing Diets

Comparison of Weight Loss Diets with Different Macronutrient Compositions

Aim

- To compare the effects of 4 diets of differing macronutrient compositions on body weight after 2 years

Sacks FM, et al. *NEJM*, 2009;360:859-873

Weight Reducing Diets

Comparison of Weight Loss Diets with Different Macronutrient Compositions

- N: 811 overweight adults (BMI= 25-40) randomized to diets with a deficiency of 750 kcal/day & addition of 90 min/wk exercise
- Outcome : Comparison of low fat (20%) vs. high fat (40%); average PRO (15%) vs. high PRO (25%); & low CHO (35%) vs. high (65%) CHO

Weight Reducing Diets

Comparison of Weight Loss Diets with Different Macronutrient Compositions

Results

- Reduced calorie diets result in meaningful weight loss regardless of which macronutrients they emphasize
- Participants tended to revert to their customary macronutrient intakes over time but were able to maintain weight loss

Weight Reducing Diets

Comparison of Weight Loss Diets with Different Macronutrient Compositions

Results

- Successful diets can emphasize a range of fat, protein, & carbohydrate composition & have beneficial effects on risk factors for CVD & diabetes
- Diets can be tailored on the basis of personal & cultural preferences and therefore have the best chance for long-term success

What is the Most Effective Moderately-Reduced Calorie Diet for Weight Loss?

Bottom Line

- For weight loss, they are all pretty much the same
- It's the calories
- All calories count
- Prescribe a 500 k/cal/day or 750 k/cal/day energy deficit
- Or Prescribe 1200-1500 k/cal/day for women and 1500-1800 k/cal/day for men (adjusted for body weight)

THE #1 NEW YORK TIMES BESTSELLER

Eat More, **WEIGH** Newly Revised & Updated **LESS**



Dr. Dean Ornish's
Program for
Losing Weight
Safely While
Eating Abundantly

Includes 250 Heart-Healthy Gourmet Recipes

DEAN ORNISH, M.D.
author of *Dr. Dean Ornish's Program for Reversing Heart Disease*

OVER 100 WEEKS ON
The New York Times BESTSELLER LIST

DR. ATKINS' ***NEW* DIET** **REVOLUTION**



**REVISED
AND
UPDATED**

ROBERT C. ATKINS, M.D.

Adherence is the Real Issue

Adherence to Medical Procedures

- Adherence is the extent to which individuals follow the instructions given to them for prescribed treatment
- Research on adherence has studied a range of behaviors from pill-taking to following a prescribed diet or exercise program
- Rates of adherence vary from 33% for acute conditions to 50% for chronic medical conditions

Williamson et al *J Beh Med* 2009

Why Use Behavioral Strategies?

Adherence to Diet and Exercise

- Behavioral strategies are used to help obese individuals increase their adherence to their dietary and exercise prescriptions
- The ultimate goal is better adherence to diet and exercise through the use of behavioral strategies

Changing Habits: Fast or Slow?

What's the Best Way to Change Habits?

“Habit is habit, and not to be flung out of the window, but coaxed downstairs a step at a time.”

Mark Twain

Behavioral Strategies

The four S's



Self-Monitoring

- Theoretically, awareness is an essential step in promoting behavior change
- Self-monitoring is the core behavioral strategy in evidence-based interventions for lifestyle change
- It is the cornerstone of the behavioral treatment for weight loss

Self-Monitoring

Weight Loss

Self-
monitoring

- Observe the behaviors to be modified
- Record those behaviors
- Provide feedback with respect to the behaviors
- The process raises awareness of the behaviors to be modified

Self-Monitoring Efficacy

Self-
monitoring

- Studies have consistently shown that self-monitoring of progress has a significant and robust beneficial effect on attainment of desired goals
- Interventions that increase the frequency of progress monitoring are likely to promote behavior change

Harkin et al., *Psychol Bull*, 2016;142:198-229

Self-Monitoring

Self-
monitoring

- Traditional Approach: Paper and Pencil based
- Web based
- Mobile devices

Wu et al., *J Acad Nutr and Diet*. 2015;12:1931-1938

Self-Monitoring

(Raising awareness of the behaviors to be changed)

Early studies relied on paper and pencil-based monitoring:

- Dietary Intake
- Physical Activity
- Body Weight

Behavioral Methods for Weight Loss: The Patient Diary

LUNCH	TIME	FRAME OF MIND	ACTIVITY	CALORIES
<i>Roast Beef Sandwich</i>	<i>12:30</i>	<i>Hurried</i>	<i>Office Work</i>	<i>241</i>
<i>Ritz Crackers, 6</i>	"			<i>90</i>
<i>Hot Cocoa, 1 cup</i>	"			<i>175</i>
TOTAL				<i>506</i>
DINNER	TIME	FRAME OF MIND	ACTIVITY	CALORIES
<i>Chicken Pot Pie</i>	<i>7:00</i>	<i>Relaxed</i>	<i>Television</i>	<i>545</i>
<i>Carrot-Raisin Salad</i>	"			<i>310</i>
<i>Cauliflower, 1 cup</i>	"			<i>28</i>
<i>Skim Milk, 1 cup</i>	"			<i>88</i>
TOTAL				<i>971</i>
PHYSICAL ACTIVITY	<i>Walking</i>	TIME	<i>10 min.</i>	

AIDS TO DIETING
Careful weightwatching

Self-
monitoring



Fiddy

Traditional Paper and Pencil Self Monitoring

Dietary Intake

Readiness Redefined

- Assessed performance of completion of paper-and pencil-food records from screening in Look AHEAD study (n=549)
- One year later, counted number of words recorded per day during screening
- At one year, the number of words recorded during screening were associated with significantly greater weight loss

Traditional Paper and Pencil Self Monitoring Limitations

- Challenging
- Use tends to decline over time usually around 2-4 weeks
- Takes too much work to enter information
- Does not permit real-time feedback
- Under-reporting of food intake and over-reporting of physical activity

Web Based Self Monitoring

- Electronic diaries using computerized software programs or food tracking websites
- Can involve individualized feedback from RDs
- Less time consuming than paper and pencil recording
- Instant automatic feedback

Mobile Devices

Weight Loss

- Wearables
- Smart Phones and Tablets
- Today there are hundreds of diet and health web based programs and mobile apps available, many free or low cost
- The most common weight-loss mobile apps include self-monitoring of weight loss goals, dietary goals, and caloric balance

Mobile Apps for Self Monitoring

Advantages & disadvantages

- Benefits include self monitoring with immediate feedback
- Results indicate mobile apps are associated with behavior change and significant weight loss
- Barriers include potential message overload/inappropriate timing of messages
- Personalization and engagement essential
- Tailoring different target group demographic preferences
- Minimizing perceived barriers & maximizing perceived benefits
- Additional behavioral strategies may enhance efficacy

AIDS TO DIETING.
Willpower

Self-
monitoring



LUCKILY, RHODA WAS SAVED FROM OVER-EATING BY HER REFRIGERATOR'S AIRBAG.



Self-
monitoring

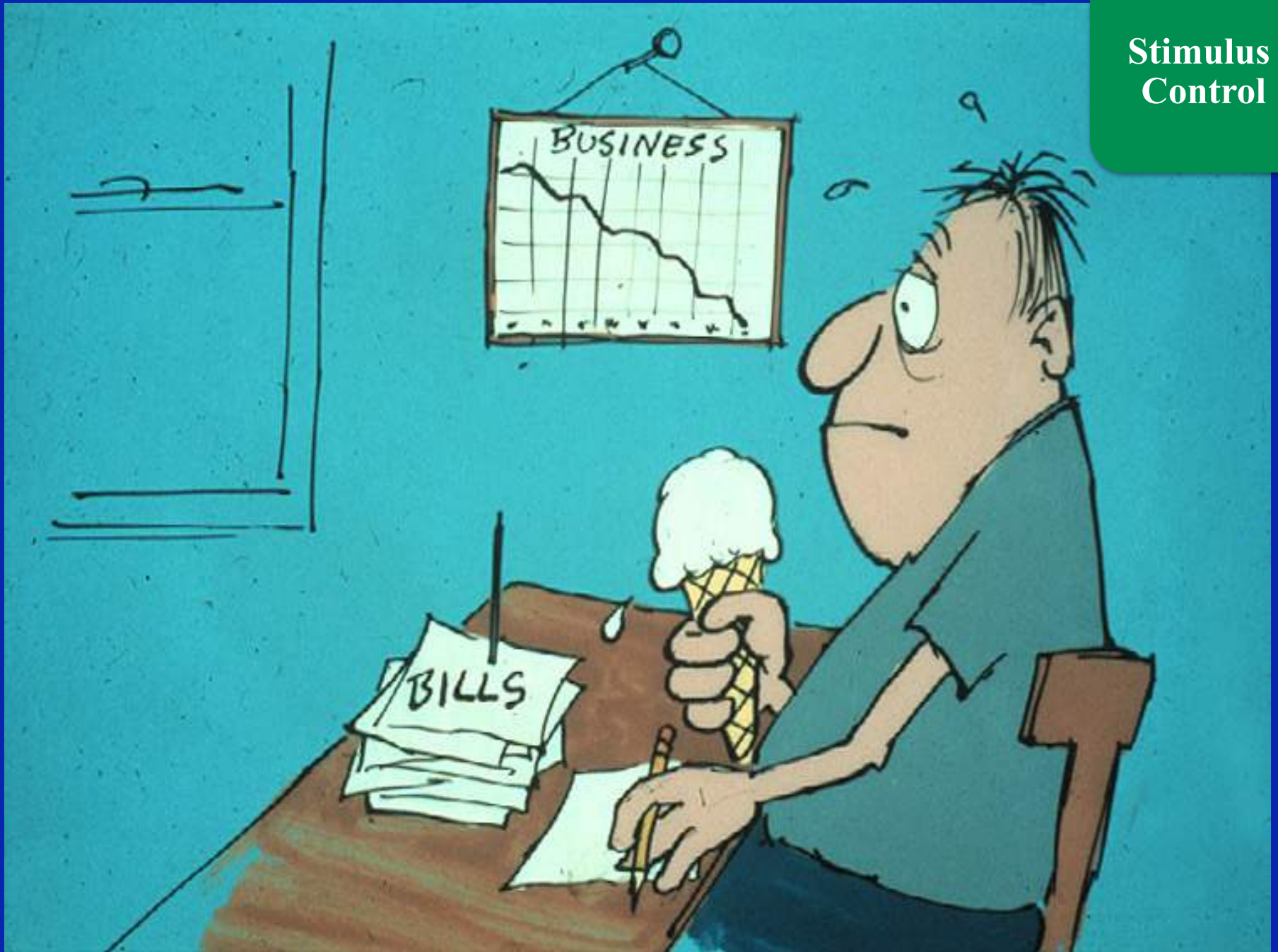
Stimulus Control

(Controlling the triggers leading to non-adherence)

Examples

- Shop from a list
- Do nothing else while eating
- Lay out exercise clothes
- Walk with a friend

Stimulus
Control



Stress Management

Stress
Management

“If a problem is fixable, if a situation is such that you can do something about it, then there is no need to worry.

If it’s not fixable, then there is no help in worrying.

There is no benefit in worrying whatsoever.”

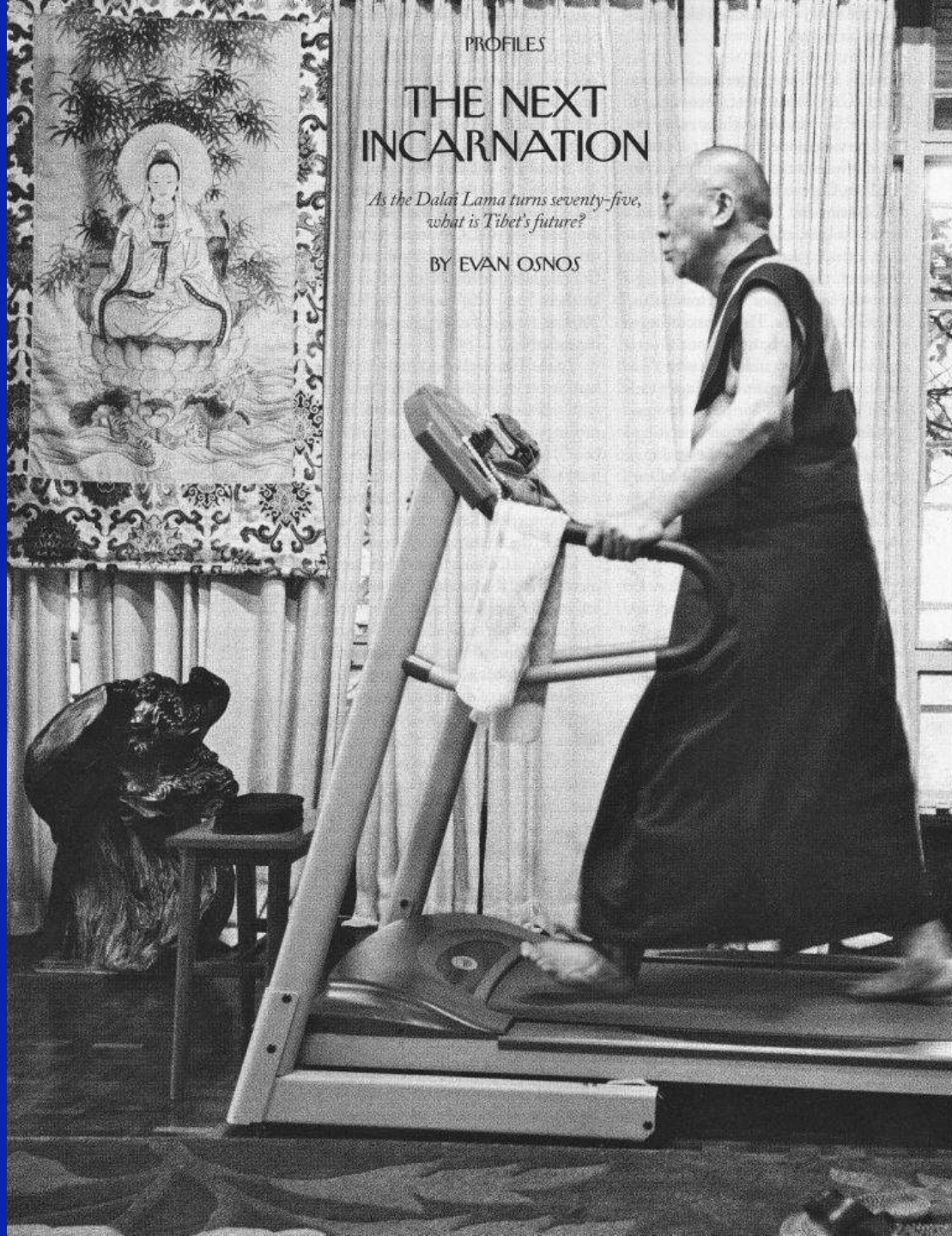
H.H. The Dalai Lama

PROFILES

THE NEXT INCARNATION

*As the Dalai Lama turns seventy-five,
what is Tibet's future?*

BY EVAN OSNOS



**Stress
Management**

Stress Management: Cognitive Restructuring

(Changing thought patterns and expectations)

Examples

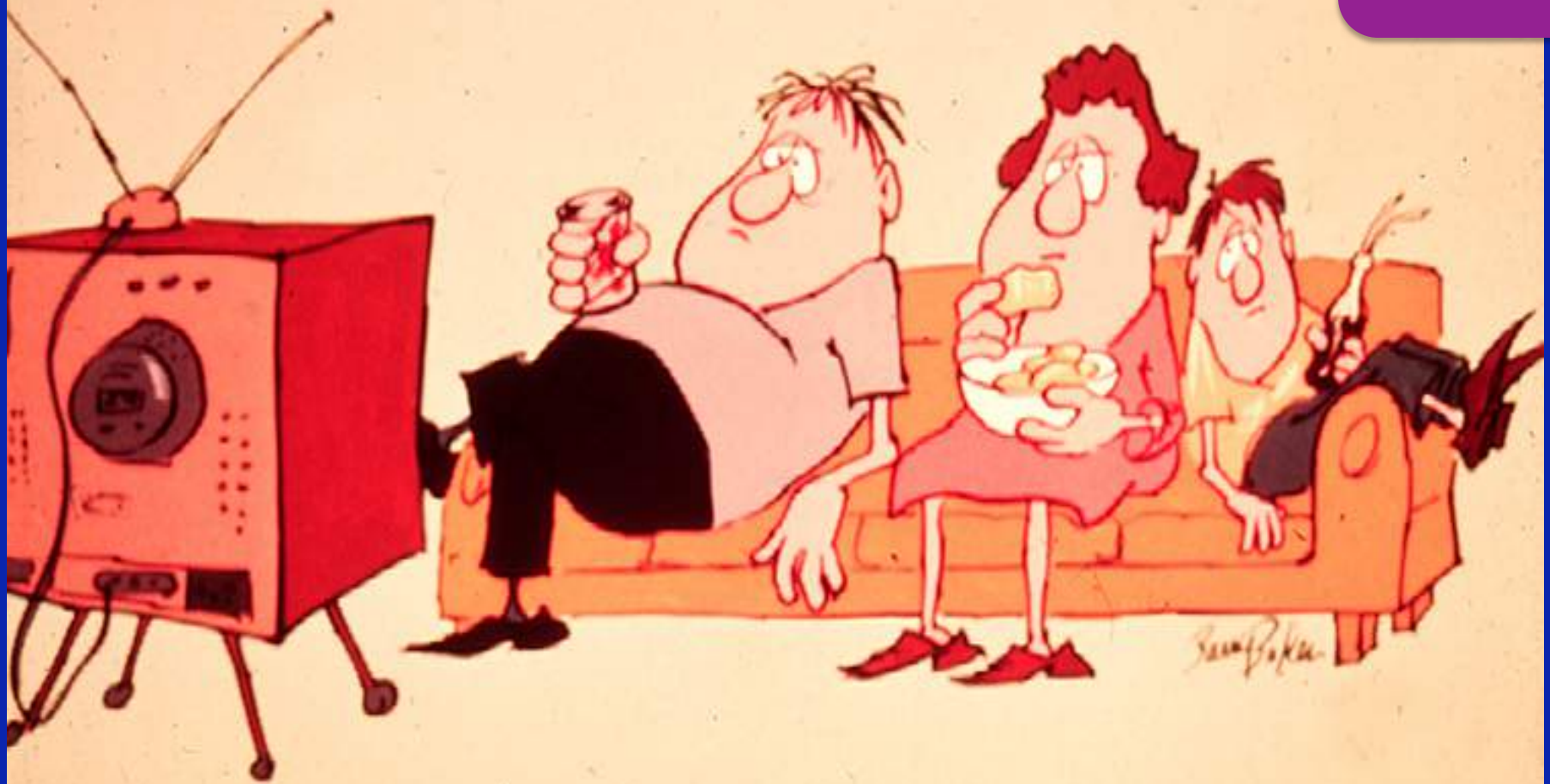
- Set realistic goals & expectations
- Focus on making small changes
- Get a life

Stress Management: Cognitive Restructuring

(Managing the emotional aspects of behavior change)

Examples

- Physical Activity
- Meditation
- Progressive Relaxation



Social Support

- Individuals' behaviors are shaped by their interactions with others
- Psychological & sociological theories regarding social facilitation & social networks have been incorporated into weight management programs
- The solidarity which stems from groups/clubs can boost self-esteem & enhance adherence to diet & physical activity
- Evidence is strong documenting the benefits of social gatherings as part of weight management interventions

Social Support

Social
Support

- Meeting in groups/clubs, individuals exchange nutrition & physical activity tips, provide support, walk and eat together, reinforcing healthy lifestyle behaviors
- Groups/clubs provide individuals with a sense of universality, helping them understand that their problems are not unique, that they can learn from others
- The benefits of social gatherings for weight management are well documented in the literature

Social Support

(Developing and maintaining a support system)

Examples

- Family
- Peer
- Health Care Professional
- Community Nutrition Clubs

Long-Term Weight Maintenance

Weight Maintainers report that they usually:

- Track their food intake
- Count calories or fat grams
- Follow a low-calorie, low fat diet (1,800 calories/day; less than 30% of calories from fat)
- Eat breakfast regularly
- Limit the amount they eat out (about 3 times/week; eat fast food less than once/week)

Thomas, Bond, Phelan et al., TOS, 2011

Long-Term Weight Maintenance

Weight Maintainers report that they usually:

- Eat similar food regularly
- Don't splurge much on holidays & special occasions
- Walk about one hour/day
- Watch less than 10 hours of TV a week
- Weigh themselves at least once a week

Long Term Weight Maintenance

National Weight Control Registry

- Diet: 24% fat, 56% carbohydrate, 20% protein
- Physical Activity: 60-90 min/day moderate intensity (400 kcal/day), mostly walking
- Frequent self-monitoring: daily or weekly weighing, daily food records, counting calories or fat grams
- Eating breakfast: 78% ate breakfast every day

Hill & Wing, 2013

Realistic Management Goals

Focus on Modest Weight Losses & Health

- Emphasize an initial 5-10% weight loss
- Focus on health, energy and fitness
- Emphasize beneficial changes in CVD risks
- Reinforce well-being and self-esteem
- Focus on improved mood
- Reinforce improved functional & recreational activities

Key Elements

Focus on health and energy

- Focus on health and energy, not just weight loss
- Encourage food and physical activity diaries
- Encourage gradual increases in physical activity
- Encourage gradual reduction in caloric intake
- Emphasize no feelings of food deprivation
- Build and maintain social support groups/clubs



Look AHEAD

Behavior change and coaching methods

- A twelve year, multicenter, randomized clinical trial
- To evaluate the health effects of interventions designed to produce weight loss
- In 5,145 obese individuals with Type 2 diabetes



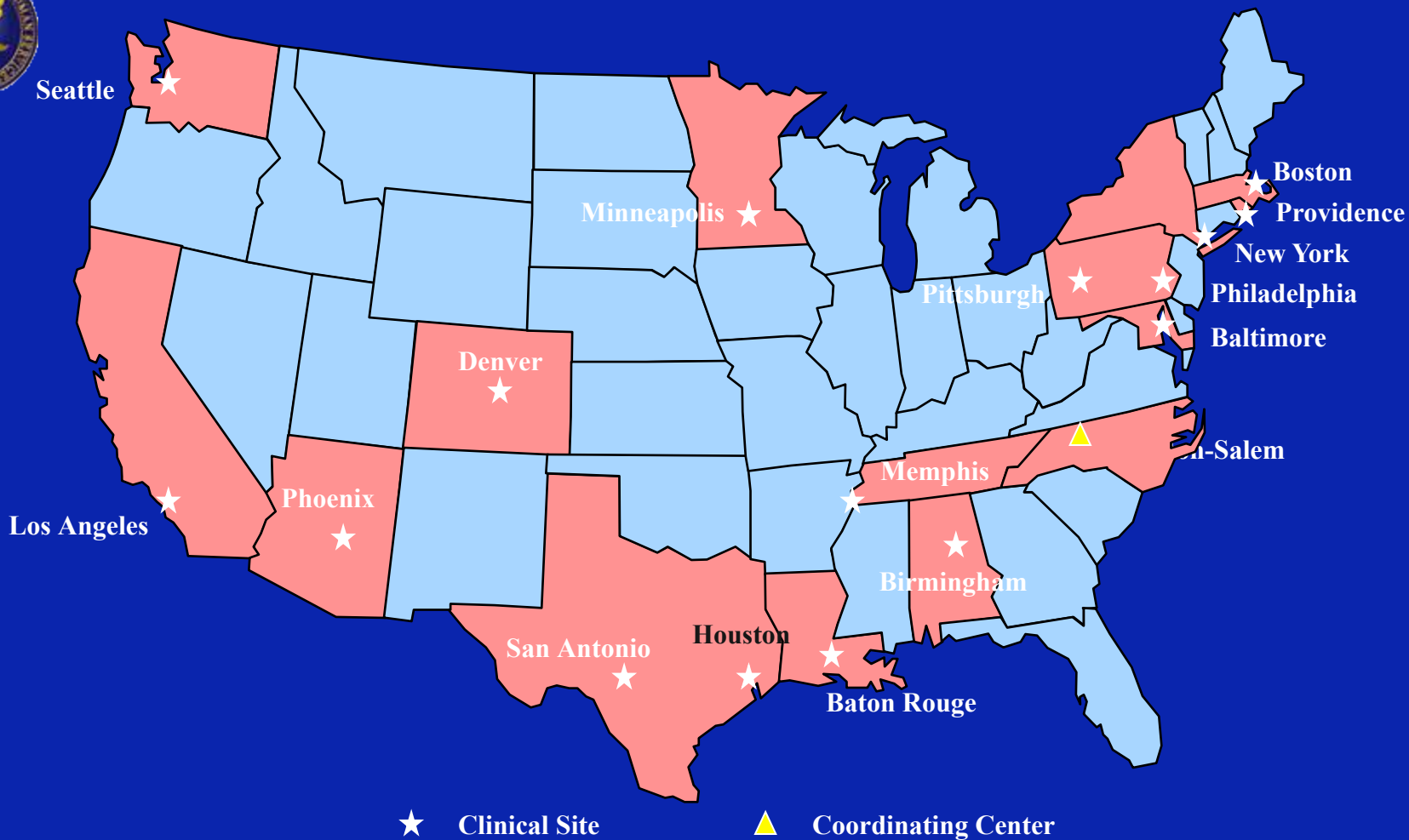
Look AHEAD

Primary End Point Composite

- Cardiovascular death (including fatal myocardial infarction and stroke)
- Non-fatal myocardial infarction
- Non-fatal stroke



Clinical Sites



Look AHEAD

Diet and Physical Activity Recommendations

- Dietary Intake
 - 1200-1500 kcal/day < 250 lb
 - 1500-1800 kcal/day \geq 250 lb
 - \leq 30% calories from fat
 - Meal replacements in year 1
- Physical Activity
 - Gradual increases
 - 175 min/wk
 - 10,000 steps

Look AHEAD

Behavioral Strategies

The four S's

- Self monitoring
- Stimulus control
- Stress management
- Social support



Look AHEAD Participants

	Lifestyle	DSE
	(N=2630)	(N=2574)
Women	59%	60%
Minority	37%	37%
Age (years)	58.6	58.9
Insulin Users	14%	15%
Baseline BMI	35.9	36.0
Baseline weight (kg)	100	101
Attended 1 year exam	96%	94%*

* $p \leq .0004$

Look AHEAD

Baseline Dietary Pattern

At baseline:

- 93% exceeded recommended calories for fat
- 85% exceeded saturated fat recommendation
- 92% exceeded sodium recommendation
- Fewer than half met recommendation of fruit, vegetables, dairy and grains

Look AHEAD

Randomized Groups
(Weight Loss Goal=7%)

- Intensive Lifestyle Intervention (ILI)
(N = 2570)
- Diabetes Support & Education (DSE)
(N = 2575)

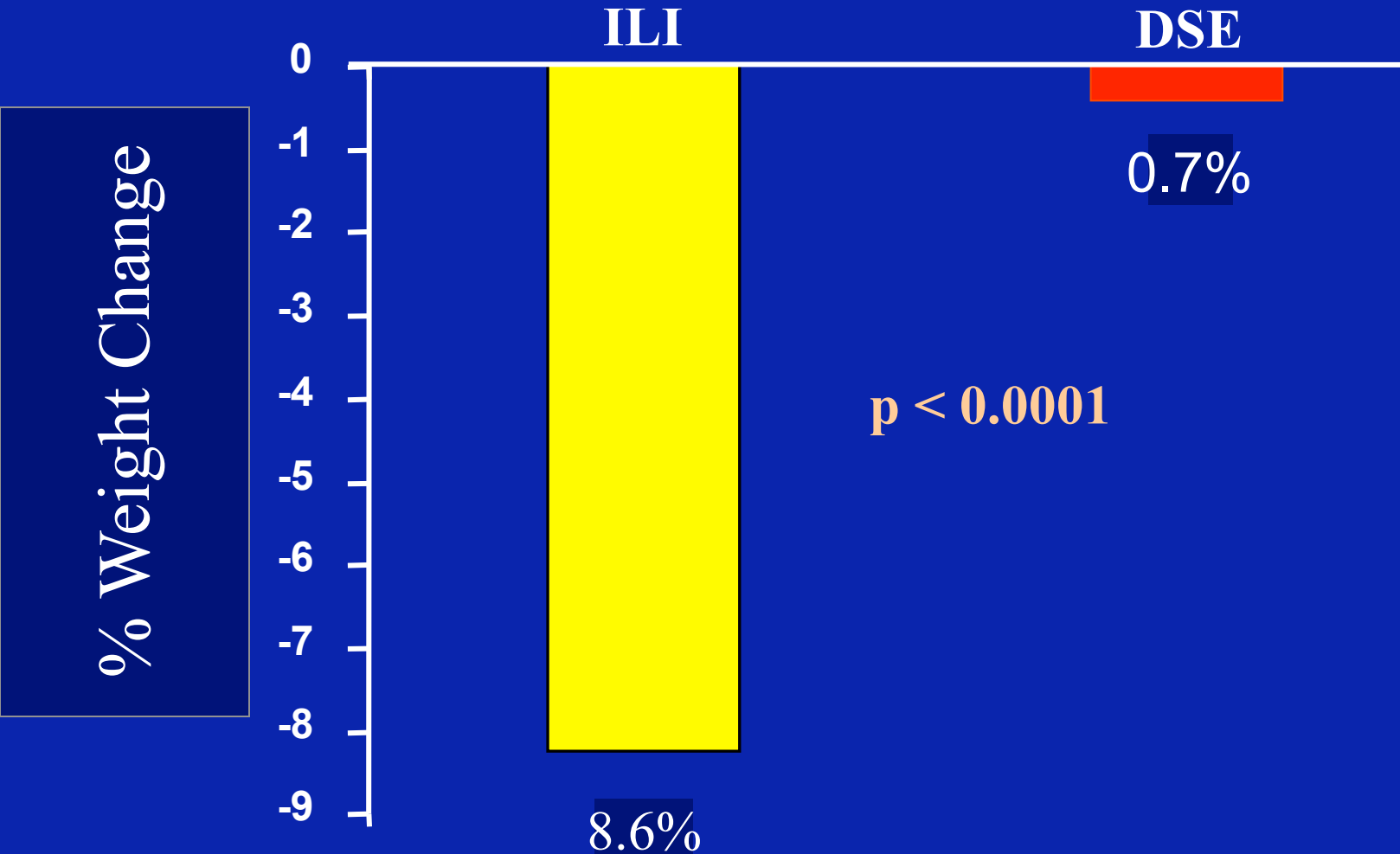
Look AHEAD

Research Questions

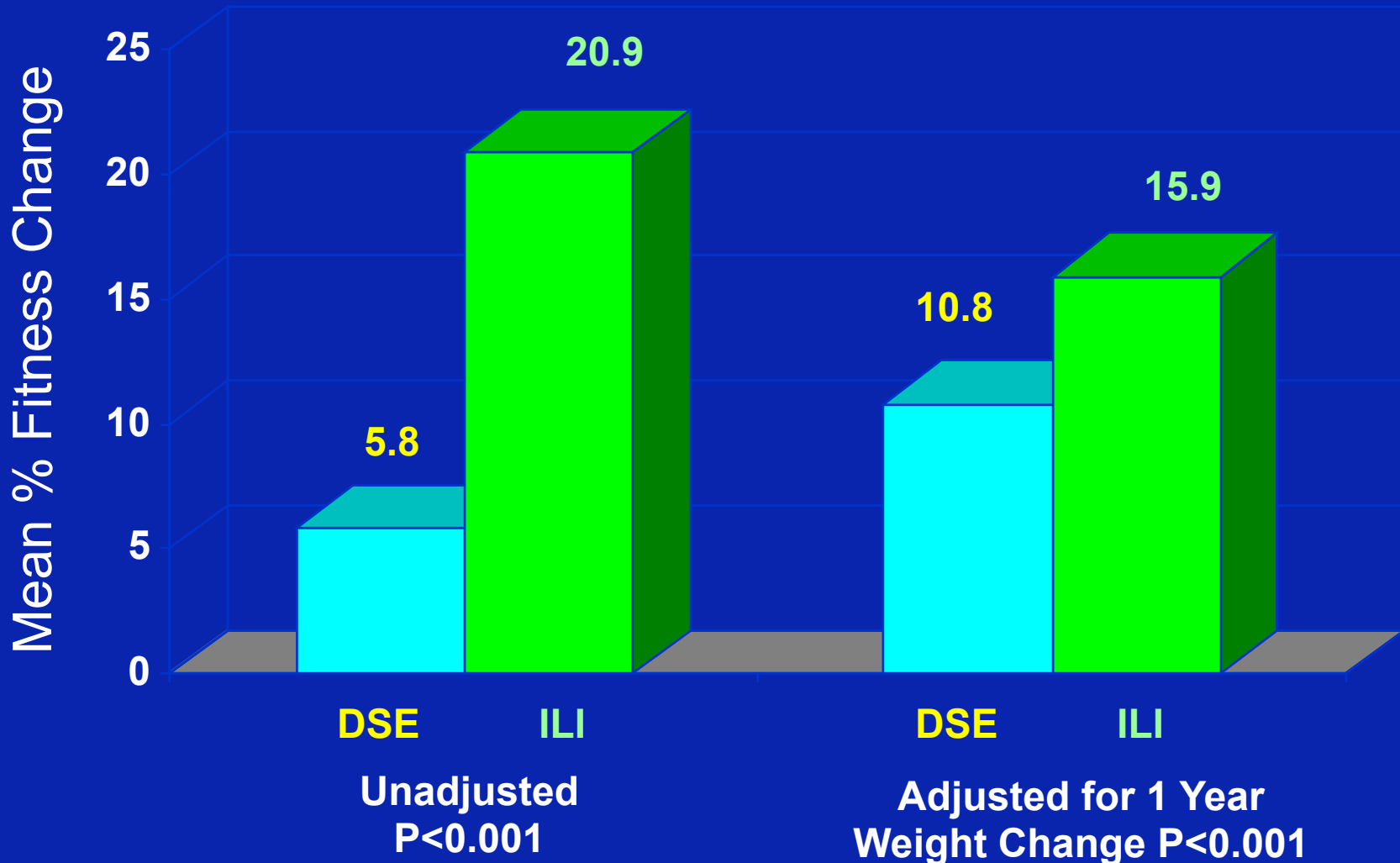
- Does Intensive Lifestyle Intervention (ILI) (behavioral changes in diet and physical activity) result in improvements in weight, fitness, glucose control, quality of life, and cardiovascular risk factors compared compared to Diabetes Support and Education (DSE) in individuals with obesity and type 2 diabetes?

% Weight Loss at 1-Year

(Weight Loss Goal at 1-year for ILI was 7.0%)



% Fitness Change at 1-Year



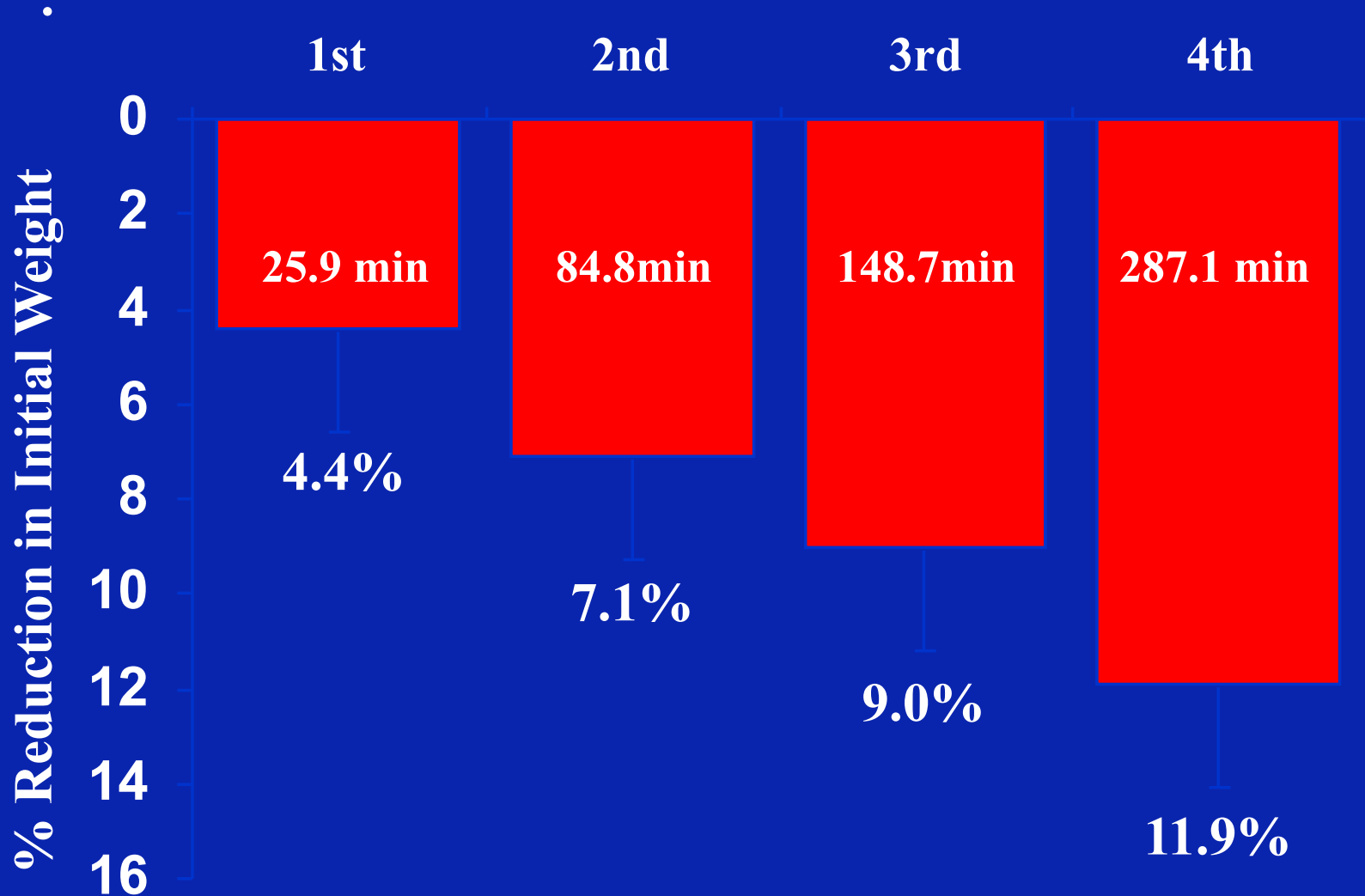
Look AHEAD

Weight Loss Success Factors

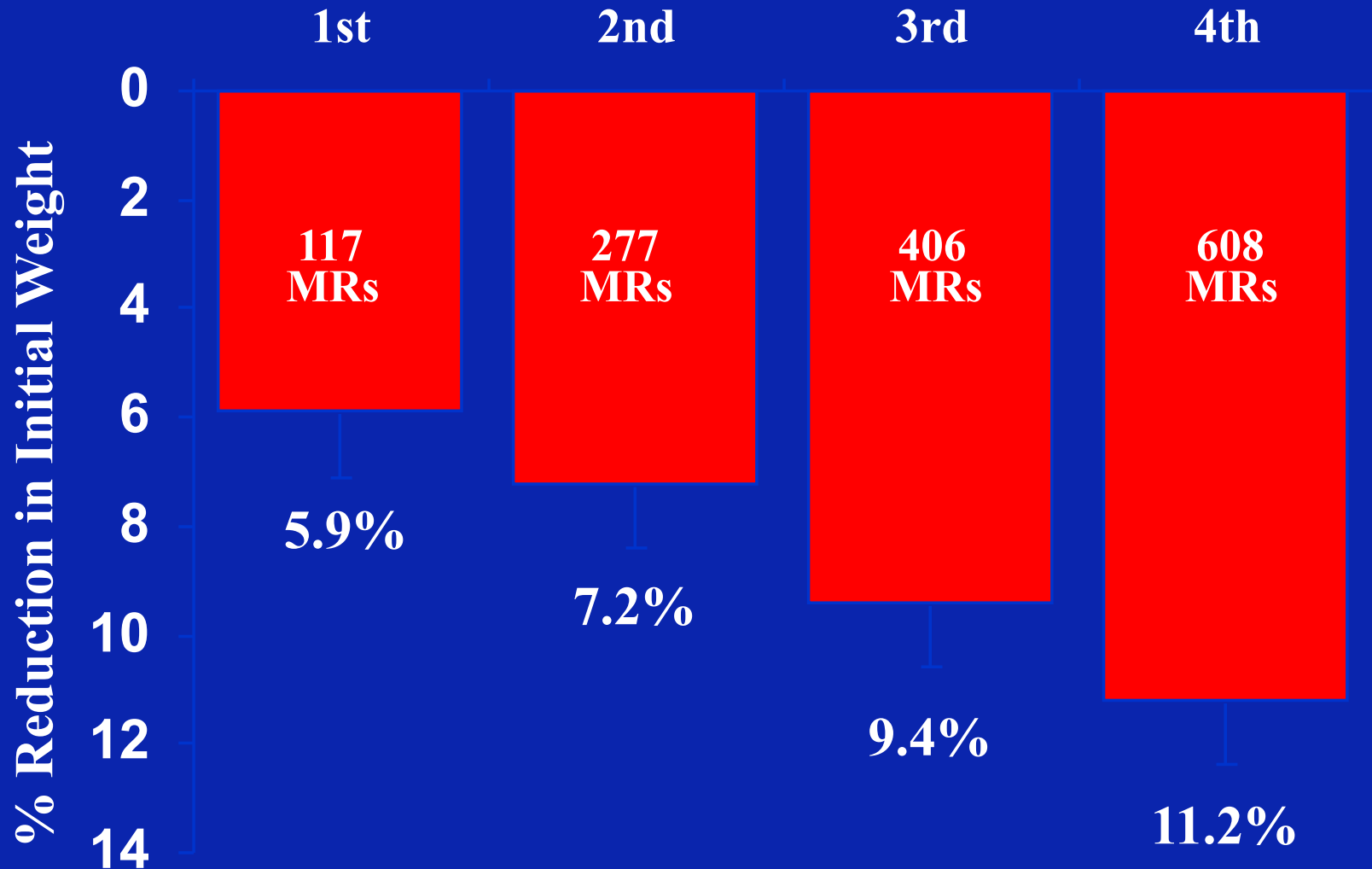
At one year, the three significant weight loss success factors were:

- Self-reported physical activity (mean=137 minutes/wk)
- Treatment attendance (mean=35 sessions/yr)
- Meal replacements (mean=361/yr)

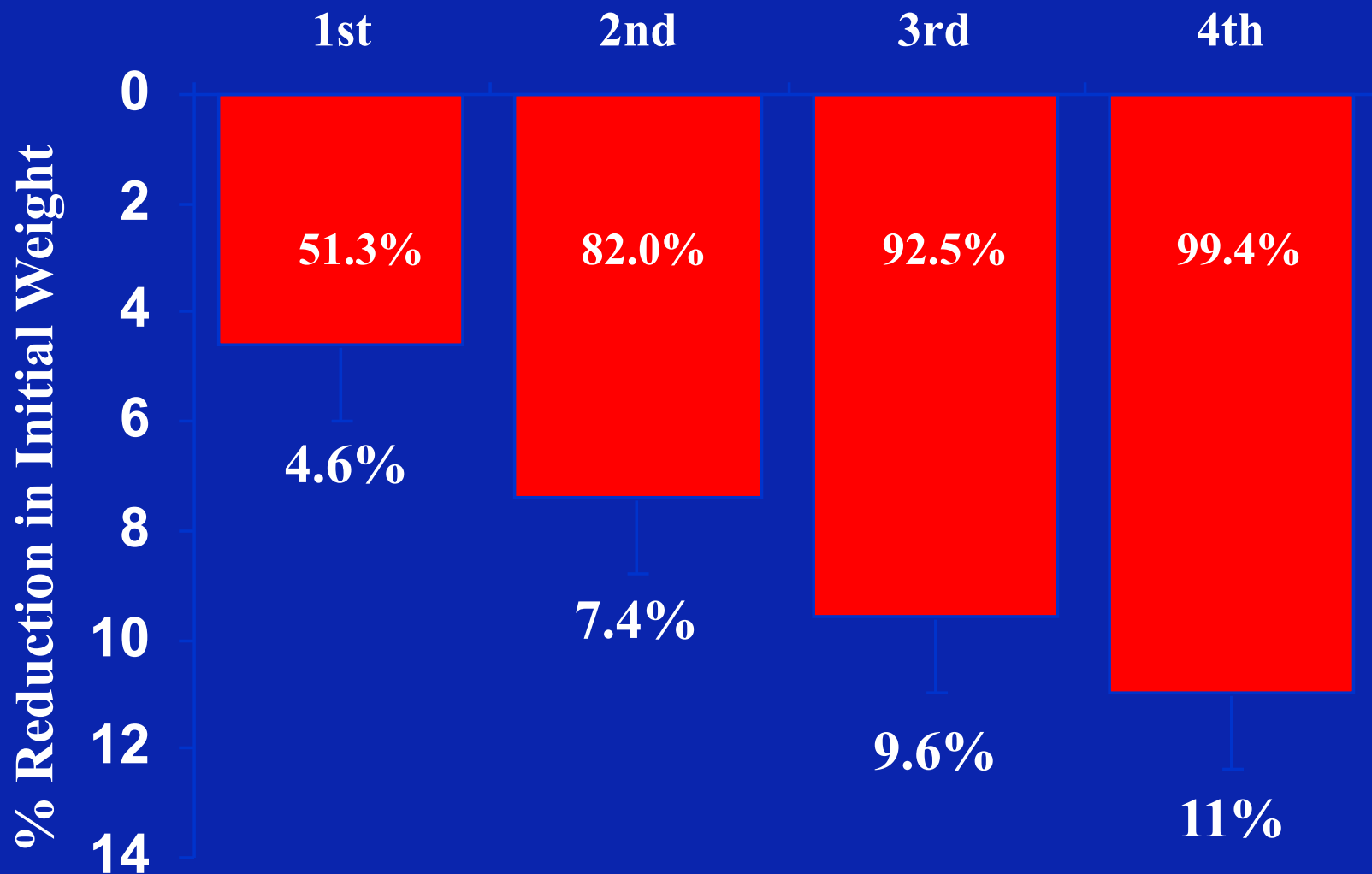
1-Yr Weight Loss (ILI) Based on Quartiles of Weekly Physical Activity



1-Year Weight Loss (ILI) Based on Quartiles of Meal Replacements (MR) Used



1-Yr Weight Loss (ILI) Based on Quartiles of % of Visits Attended



Cardiovascular Effects of Intensive Lifestyle Intervention in Type 2 Diabetes

The Look AHEAD Research Group*

ABSTRACT

BACKGROUND

Weight loss is recommended for overweight or obese patients with type 2 diabetes on the basis of short-term studies, but long-term effects on cardiovascular disease remain unknown. We examined whether an intensive lifestyle intervention for weight loss would decrease cardiovascular morbidity and mortality among such patients.

METHODS

In 16 study centers in the United States, we randomly assigned 5145 overweight or obese patients with type 2 diabetes to participate in an intensive lifestyle intervention that promoted weight loss through decreased caloric intake and increased physical activity (intervention group) or to receive diabetes support and education (control group). The primary outcome was a composite of death from cardiovascular causes, nonfatal myocardial infarction, nonfatal stroke, or hospitalization for angina during a maximum follow-up of 13.5 years.

RESULTS

The trial was stopped early on the basis of a futility analysis when the median follow-up was 9.6 years. Weight loss was greater in the intervention group than in the control group throughout the study (8.6% vs. 0.7% at 1 year; 6.0% vs. 3.5% at study end). The intensive lifestyle intervention also produced greater reductions in glycated hemoglobin and greater initial improvements in fitness and all cardiovascular risk factors, except for low-density-lipoprotein cholesterol levels. The primary outcome occurred in 403 patients in the intervention group and in 418 in the control group (1.83 and 1.92 events per 100 person-years, respectively; hazard ratio in the intervention group, 0.95; 95% confidence interval, 0.83 to 1.09; $P=0.51$).

CONCLUSIONS

An intensive lifestyle intervention focusing on weight loss did not reduce the rate of cardiovascular events in overweight or obese adults with type 2 diabetes. (Funded by the National Institutes of Health and others; Look AHEAD ClinicalTrials.gov number, NCT00017953.)

The authors and their affiliations are listed in the Appendix. Address reprint requests to Dr. Rena Wing at the Weight Control and Diabetes Research Center, Warren Alpert Medical School of Brown University and Miriam Hospital, 196 Richmond St., Providence, RI 02903, or at rwing@lifespan.org.

*A complete list of participants in the Look AHEAD (Action for Health in Diabetes) Research Group is provided in the Supplementary Appendix, available at NEJM.org.

This article was published on June 24, 2013, at NEJM.org.

N Engl J Med 2013;369:145-54.

DOI: 10.1056/NEJMoa1212914

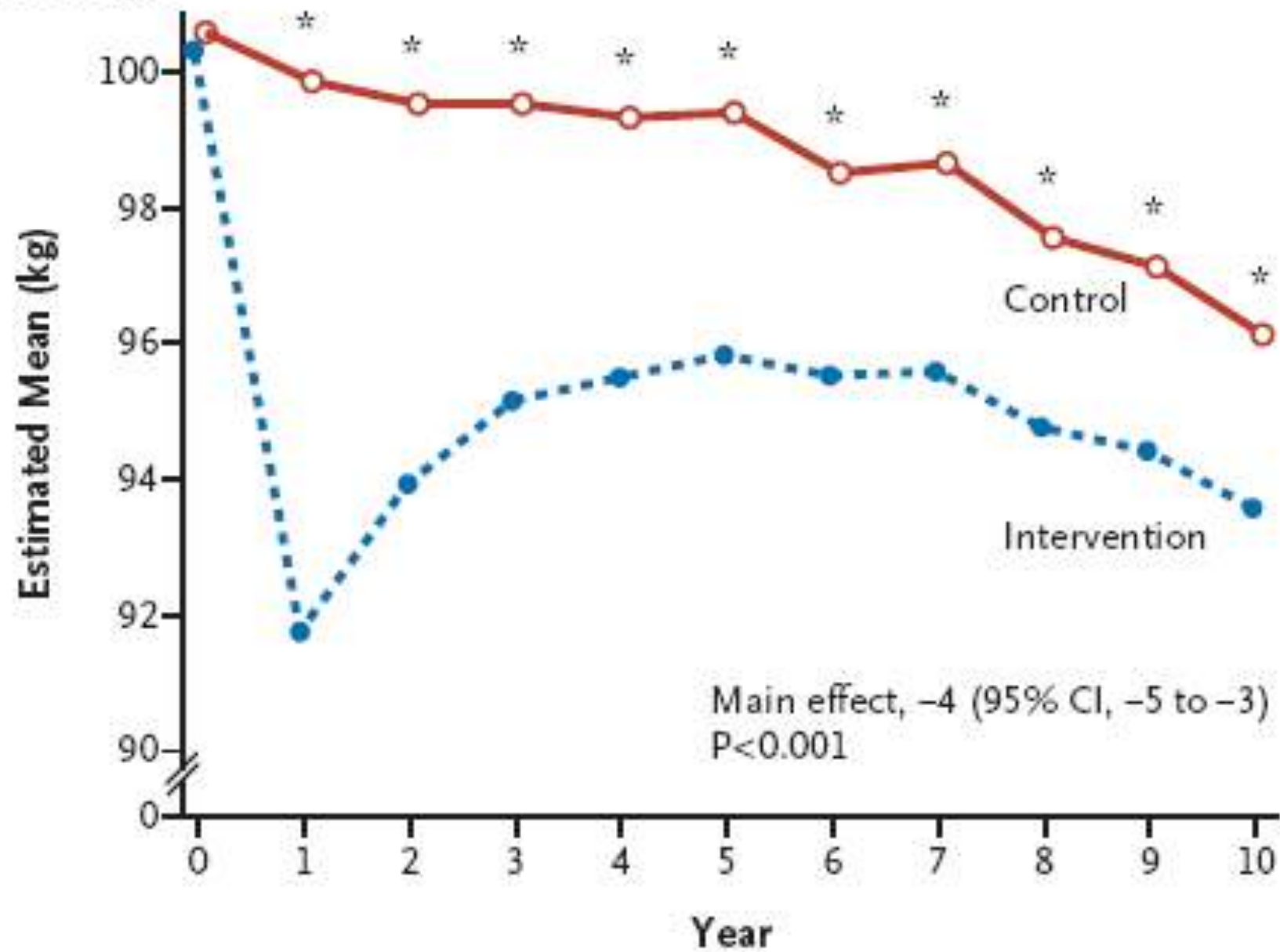
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Look AHEAD Update

Year 10

- The intervention was stopped early (September 14, 2012) based on a futility analysis when median follow-up was 9.6 years.
- When the intervention was stopped at year 10, the loss to follow-up was fewer than 6% of the randomized participants (>94% assessed)
- Weight loss was greater in ILI vs. DSE at study end: 8.6% vs. 0.7% at year 1; 6.0% vs. 3.5% at study end (year 10)

A Weight



Look AHEAD Update

Year 10

- ILI had significantly greater initial reductions in A1c, improved fitness, and all cardiovascular risk factors (except LDL: both groups has significant reductions)
- ILI also showed significant improvements in urinary incontinence, sleep apnea, depression, quality of life, physical function, and mobility
- The primary outcome of cardiovascular events (mortality & morbidity) did not differ significantly between groups

Look AHEAD Update

The Future

- The Look AHEAD trial has received additional NIH support through 2021 as an observational study (no intervention)
- The trial is focusing on assessing differences between ILI and DSE in lifespan (overall mortality), health care costs, frailty, diabetic microvascular complications, and quality of life

Practical Strategies for Long Term Weight Management

Summary

“Several studies demonstrate that small losses...help reduce obesity-related comorbidities and that improvements in these risk factors persist with maintenance of these modest weight losses.”

-Institute of Medicine, 1995

- ↓ Glucose levels
- ↓ Insulin levels
- ↓ A1c levels
- ↓ Triglyceride levels
- ↑ HDL cholesterol levels
- ↓ LDL cholesterol levels
- ↓ Blood pressure
- ↑ Quality of life levels

Practical Strategies for Long-Term Weight Management

Summary

- Emphasize modest initial weight losses
- Focus on health and well being
- Maintain ongoing social support/clubs
- Emphasize continued awareness of behaviors through self-monitoring
- Continue ongoing coaching by health care team

Anton, Foreyt & Perri, 2014

Secrets of Successful Weight Loss & Maintenance

Every Day:

- Sleep 8 hours
- Eat breakfast
- Walk briskly 60 minutes
- Write down what you eat/exercise
- Weigh regularly
- Find support group
- Never give up

LIVING

COUCH POTATOES, ARISE!



Thank You