

# **Weight as a Measure of Health vs. Health at Every Size**

**Society for Nutrition Education and  
Behavior**

**49<sup>th</sup> Annual Conference – 2016**

**Glenn Gaesser, PhD  
Arizona State University  
([glenn.gaesser@asu.edu](mailto:glenn.gaesser@asu.edu))**

*Takes on the fat phobia that permeates  
so much of the research about obesity and health.*

# **BIG FAT LIES**

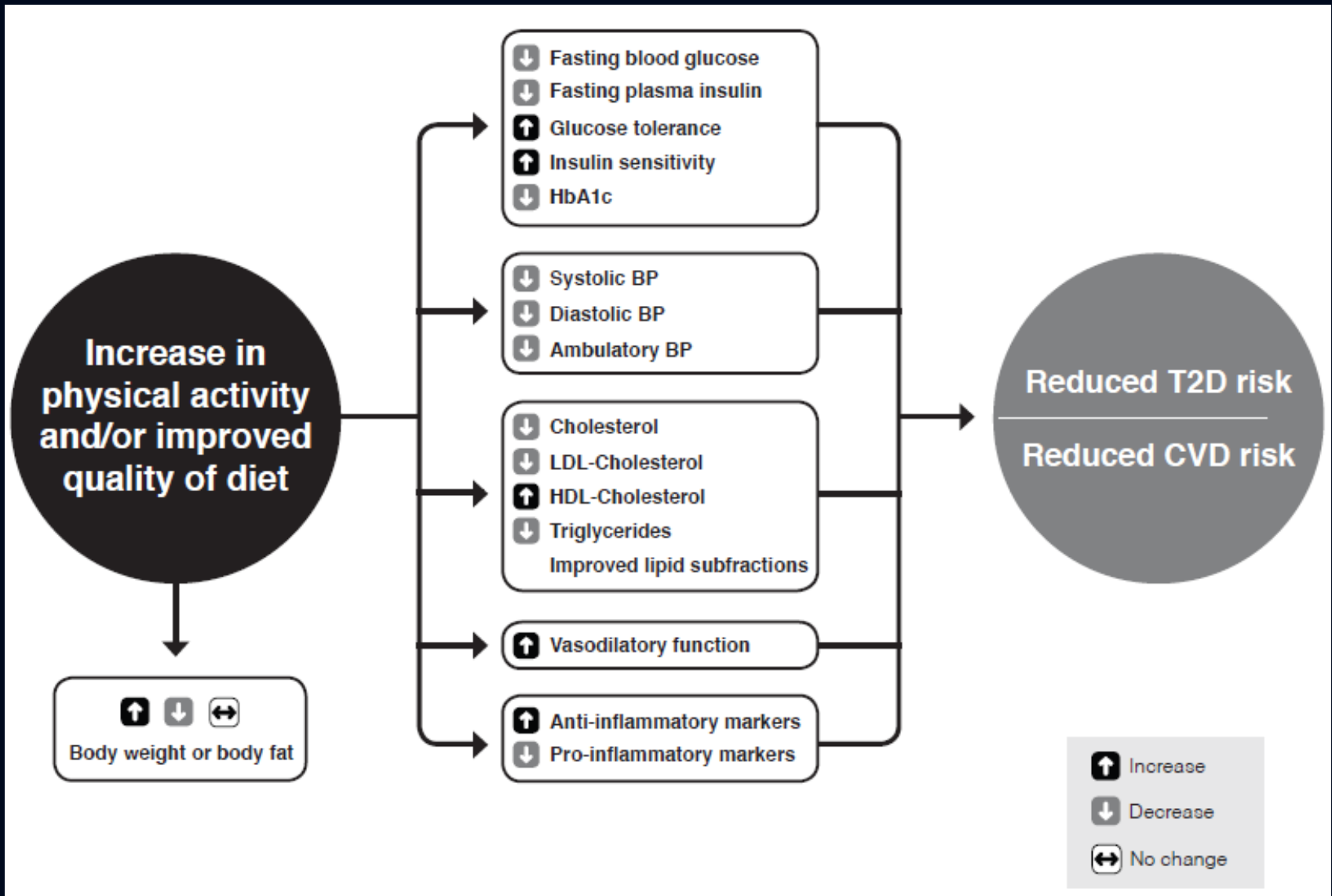
*Updated  
Edition*

*Learn the astonishing facts.*

**THE TRUTH ABOUT  
YOUR WEIGHT  
AND  
YOUR HEALTH**

**GLENN A. GAESSER, PH.D.**

# *Non-weight-loss-centered approach to treating “obesity-related” health conditions*



**Two Billion Reasons  
for a New Perspective on Obesity  
Prevention and Treatment**

# ***THE SCIENCE OF FAT***

After ‘The Biggest Loser,’ Their Bodies Fought to Regain Weight Contestants lost hundreds of pounds during Season 8, but gained them back. A study of their struggles helps explain why so many people fail to keep off the weight they lose.

By [GINA KOLATA](#) MAY 2, 2016

**Original Article**

OBESITY BIOLOGY AND INTEGRATED PHYSIOLOGY

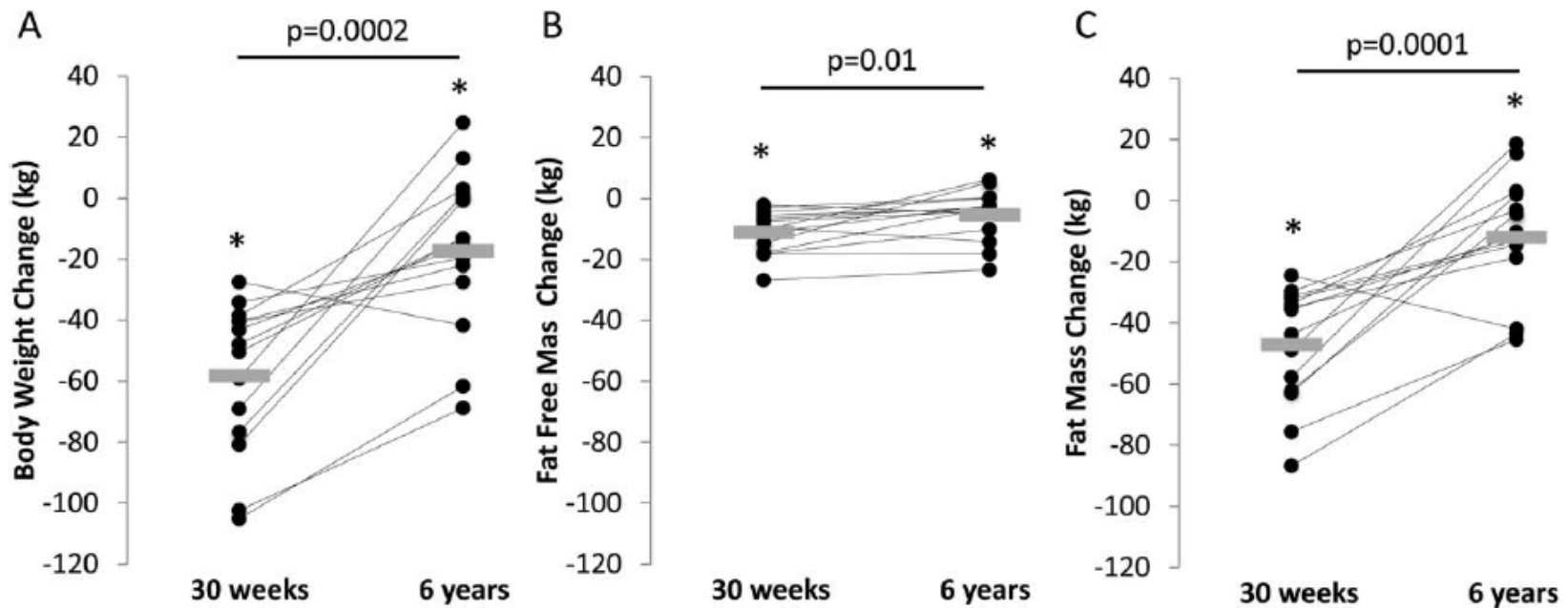
**Obesity**

## **Persistent Metabolic Adaptation 6 Years After “The Biggest Loser” Competition**

*Erin Fothergill<sup>1</sup>, Juen Guo<sup>1</sup>, Lilian Howard<sup>1</sup>, Jennifer C. Kerns<sup>2</sup>, Nicolas D. Knuth<sup>3</sup>, Robert Brychta<sup>1</sup>, Kong Y. Chen<sup>1</sup>, Monica C. Skarulis<sup>1</sup>, Mary Walter<sup>1</sup>, Peter J. Walter<sup>1</sup>, and Kevin D. Hall<sup>1</sup>*

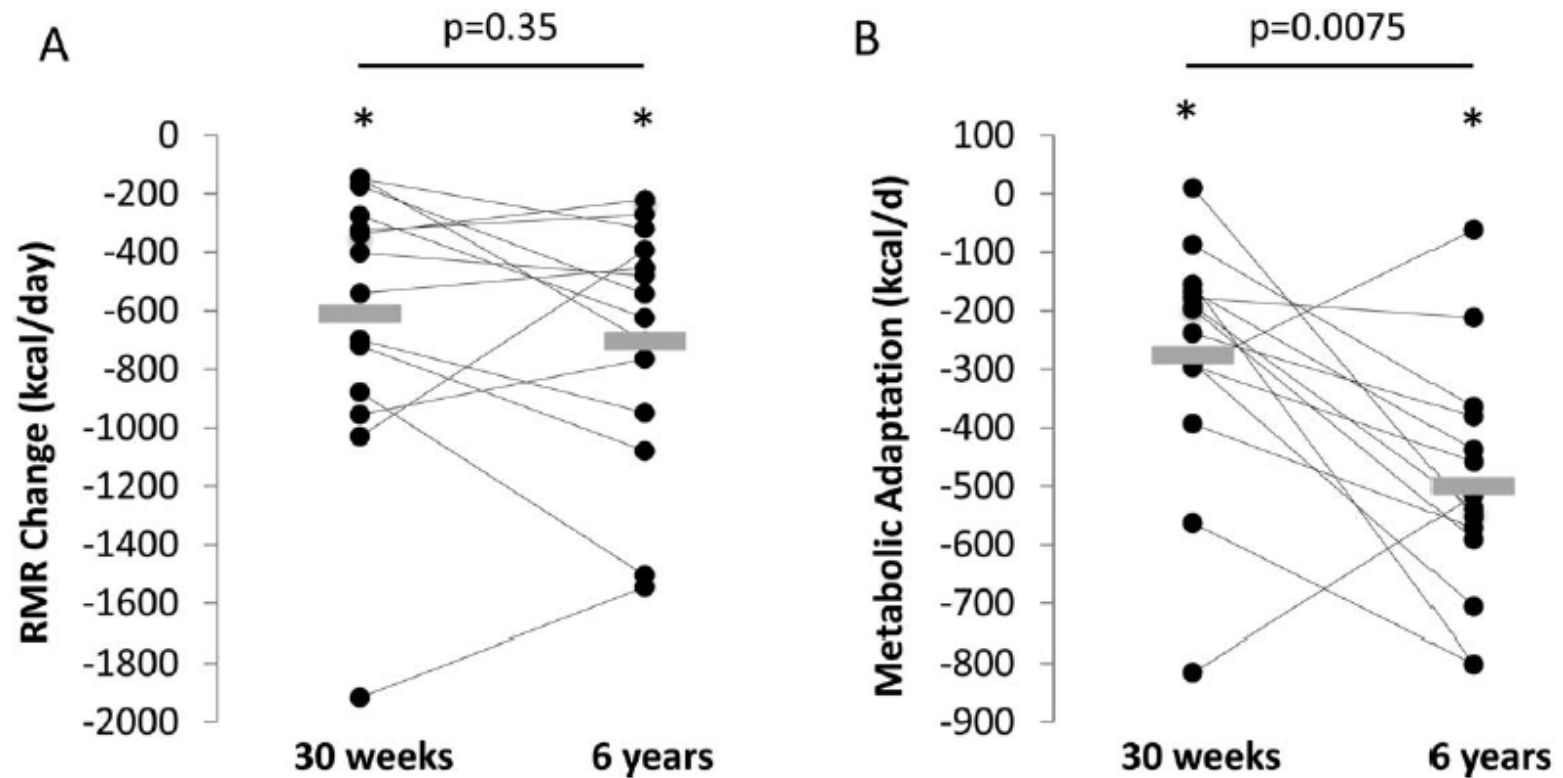
***Obesity, 2016***

# Weight, fat-free mass, and fat mass changes after 30 weeks of Biggest Loser competition and 6 years later



**Figure 2** Individual (•) and mean (gray rectangles) changes in (A) body weight, (B) fat-free mass, and (C) fat mass at the end of "The Biggest Loser" 30-week weight loss competition and after 6 years. Horizontal bars and corresponding  $P$  values indicate comparisons between 30 weeks and 6 years. \* $P < 0.05$  compared with baseline.

# Changes in RMR and Metabolic Adaptation after 30 weeks of Biggest Loser competition and 6 years later



**Figure 4** Individual (•) and mean (gray rectangles) changes in (A) resting metabolic rate and (B) metabolic adaptation at the end of “The Biggest Loser” 30-week weight loss competition and after 6 years. Horizontal bars and corresponding *P* values indicate comparisons between 30 weeks and 6 years. \**P* < 0.001 compared with baseline.

# Probability of an Obese Person Attaining Normal Body Weight: Cohort Study Using Electronic Health Records

Alison Fildes, PhD, Judith Charlton, MSc, Caroline Rudisill, PhD, Peter Littlejohns, MD, A. Toby Prevost, PhD, and Martin C. Gulliford, FFPH, MA

***American Journal of Public Health, July 16, 2015 (online)***

- United Kingdom's Clinical Practice Research Datalink from 2004 to 2014
- 76,704 obese men and 99,791 obese women
- 9 years of follow-up



# Results

- **1283 men and 2245 women attained normal body weight**
- **Annual probability of attaining normal weight:**
  - **1 in 210 for men; 1 in 124 for women,**
  - **1 in 1290 for men and 1 in 677 for women with BMI 40.0–44.9**
- **Annual probability of achieving a 5% weight reduction was 1 in 8 for men and 1 in 7 for women with BMI 40.0-44.9**

**Two Billion Reasons  
for a New Perspective on Obesity  
Prevention and Treatment**

# Obesity Prevalence by State, 1985 - 2010

Obesity Trends\* Among U.S. Adults  
BRFSS, 1985

(\*BMI  $\geq 30$ , or  $\sim 30$  lbs. overweight for 5' 4" person)



Source: Behavioral Risk Factor Surveillance System, CDC.



Obesity Trends\* Among U.S. Adults  
BRFSS, 1990

(\*BMI  $\geq 30$ , or  $\sim 30$  lbs. overweight for 5' 4" person)



Source: Behavioral Risk Factor Surveillance System, CDC.



Obesity Trends\* Among U.S. Adults  
BRFSS, 1995

(\*BMI  $\geq 30$ , or  $\sim 30$  lbs. overweight for 5' 4" person)

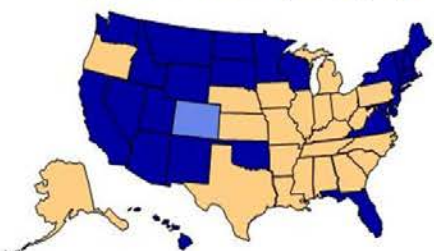


Source: Behavioral Risk Factor Surveillance System, CDC.



Obesity Trends\* Among U.S. Adults  
BRFSS, 2000

(\*BMI  $\geq 30$ , or  $\sim 30$  lbs. overweight for 5' 4" person)



Source: Behavioral Risk Factor Surveillance System, CDC.



Obesity Trends\* Among U.S. Adults  
BRFSS, 2005

(\*BMI  $\geq 30$ , or  $\sim 30$  lbs. overweight for 5' 4" person)



Source: Behavioral Risk Factor Surveillance System, CDC.



Obesity Trends\* Among U.S. Adults  
BRFSS, 2010

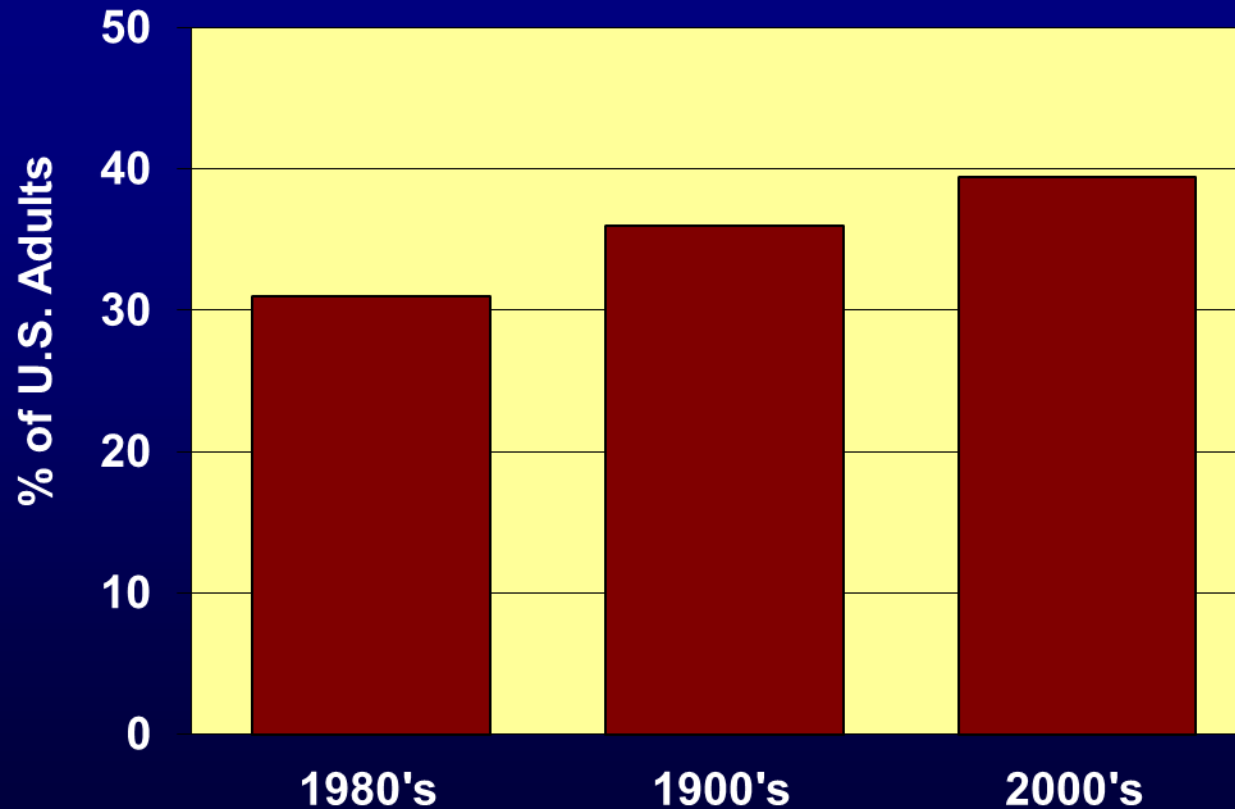
(\*BMI  $\geq 30$ , or  $\sim 30$  lbs. overweight for 5' 4" person)



Source: Behavioral Risk Factor Surveillance System, CDC.



# Prevalence of Weight Loss Attempts 1980's – 2000's



Yaesmiri et al, *Int J Obes* 2011; Bish et al, *Obes Res* 2005;  
Serdula et al, *JAMA* 1999; Serdula et al, *Am J Publ Health* 1994

# Cumulative Weight-Loss Attempts by U.S. Adults, 1980 - present

- ~ 2 Billion weight-loss attempts
- ~ 7 weight loss attempts for every U.S. adult during the past thirty years

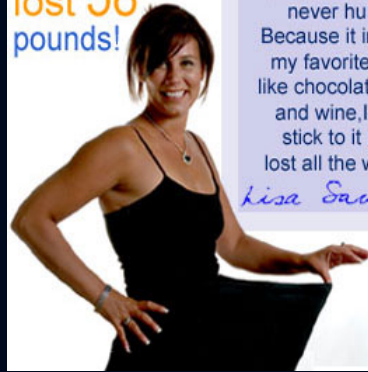
LOST 34.5 POUNDS  
IN 8 WEEKS!

Sandi  
AVON, NY, USA



AFTER

Lisa Samuel  
lost 58  
pounds!



"The plan was easy to follow and I was never hungry. Because it included my favorite treats like chocolate, chips and wine, I could stick to it until I lost all the weight."

Lisa Samuel

As Seen On  
NBC CNN abc



"It Literally Melted  
Away 25 Pounds in  
Just 2 Weeks!"

-Kathleen Hodges, California  
\*Results Not Typical

New Weight-Loss "Wonder Nutrient" Helps  
Women and Men Lose 10-25-50 lbs or More!

Hi, I'm James Zeta,  
and I'm going to show you how I lost . . .



LOSE  
WEIGHT  
4EVER



BURN FAT  
LOSE WEIGHT!

Reduce Belly Fat! with 5 key all natural super-foods

- ✓ BURN BELLY FAT
- ✓ Get a Huge ENERGY BOOST
- ✓ SHED INCHES
- ✓ DETOXIFY while losing fat
- ✓ ACCELERATED calories burned

1,000'S OF  
SATISFIED  
CUSTOMERS

Transform  
Your Body!

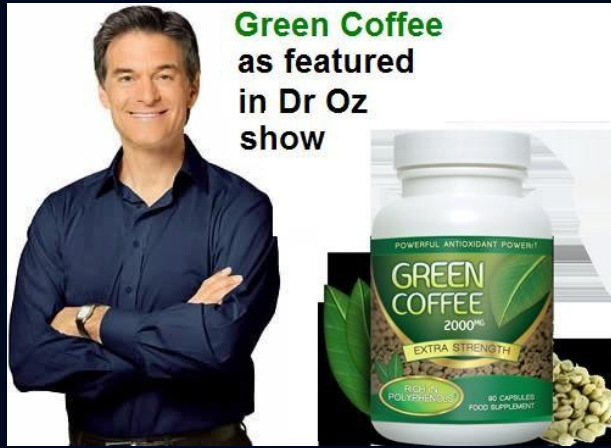


ACT NOW AND CLAIM YOUR  
WEIGHT LOSS KIT



Lose 20 Lbs  
In Just 10 days!

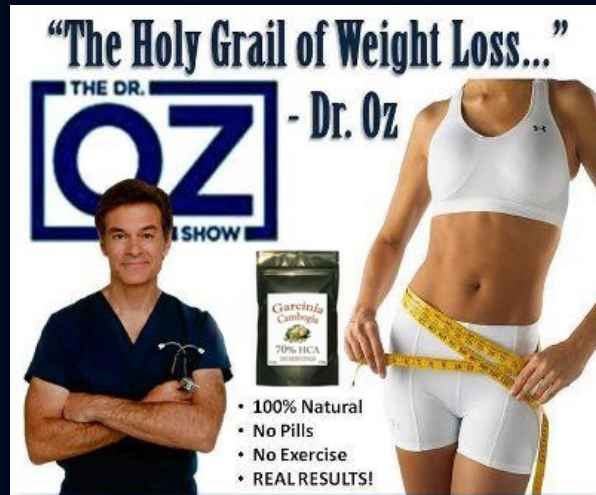




**Green Coffee**  
as featured  
in Dr Oz  
show

POWERFUL ANTIOXIDANT POWER!  
**GREEN COFFEE**  
2000<sup>MG</sup>  
EXTRA STRENGTH  
RICH IN POLYPHENOLS  
90 CAPSULES  
FOOD SUPPLEMENT

**"The Holy Grail of Weight Loss..."**  
THE DR. **OZ** SHOW - Dr. Oz



- 100% Natural
- No Pills
- No Exercise
- REAL RESULTS!

**Garcinia Cambogia**  
as reviewed on Dr OZ



**Dr. Oz Announced Saffron Extract to be a  
Miracle Hunger Suppressant to Kill your Hunger**

**MIRACLE PILL  
URN FAT FAST**



**NEW WEIGHT LOSS SOLUTION**



**"This miracle pill can  
Burn Fat FAST!"**

DR. OZ [LEARN MORE](#)

**Raspberry  
Ketones** as  
featured  
in Dr Oz  
Show



NEW ADVANCED FORMULA  
**RASPBERRY  
KETONE PLUS**  
WITH ALCA  
AFRICAN MANGO &  
GREEN TEA  
90 CAPSULES  
FOOD SUPPLEMENT

**Dr. Oz Reports:**



**"This Miracle Pill Can Burn Fat FAST!"**  
*Learn More >>*

**Mediterranean Diet**

**Paleo**

**Protein Power**

**Sugar  
Busters!**

**Dr. Atkin's  
New Diet  
Revolution**



**Pritikin**

**Gluten-Free**

**Ornish**

**The South Beach Diet**

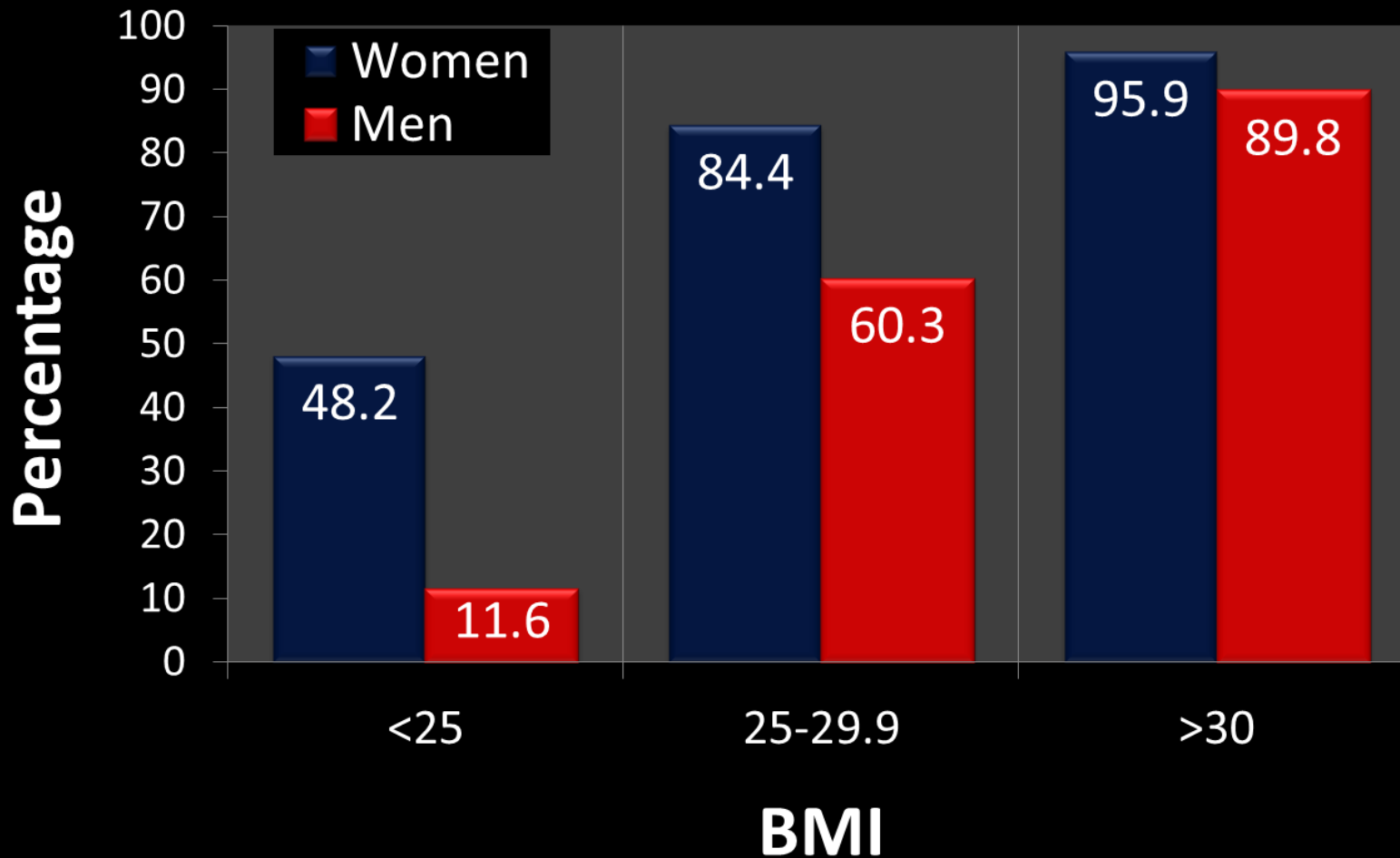
**Dr. Phil's Ultimate  
Weight Solution**

**Enter the Zone**

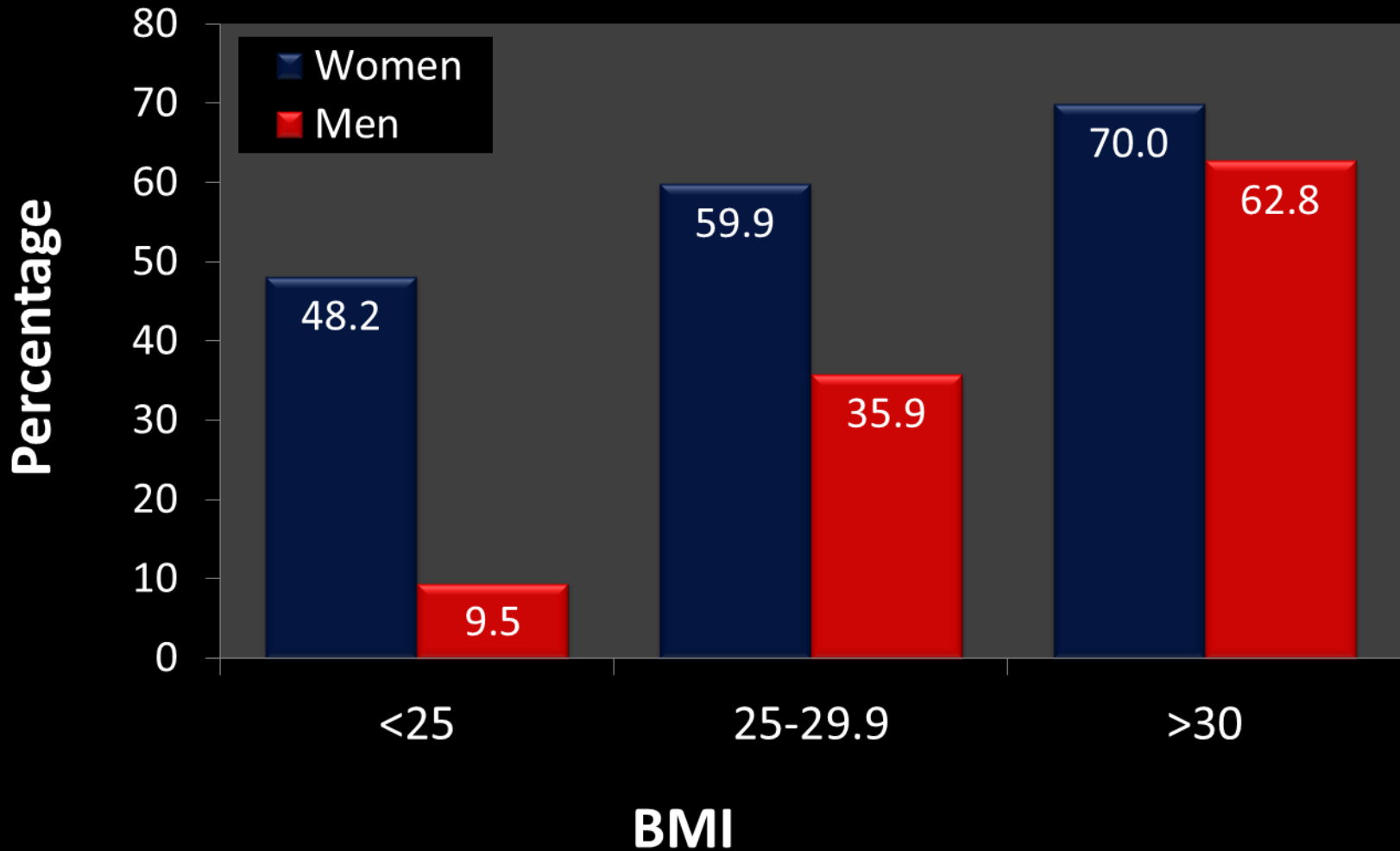


# Prevalence of Desire to Weigh Less

## National Health and Nutrition Examination Surveys 2003-2008



# Prevalence of Trying to Lose Weight Among BMI Categories BRFSS 2000



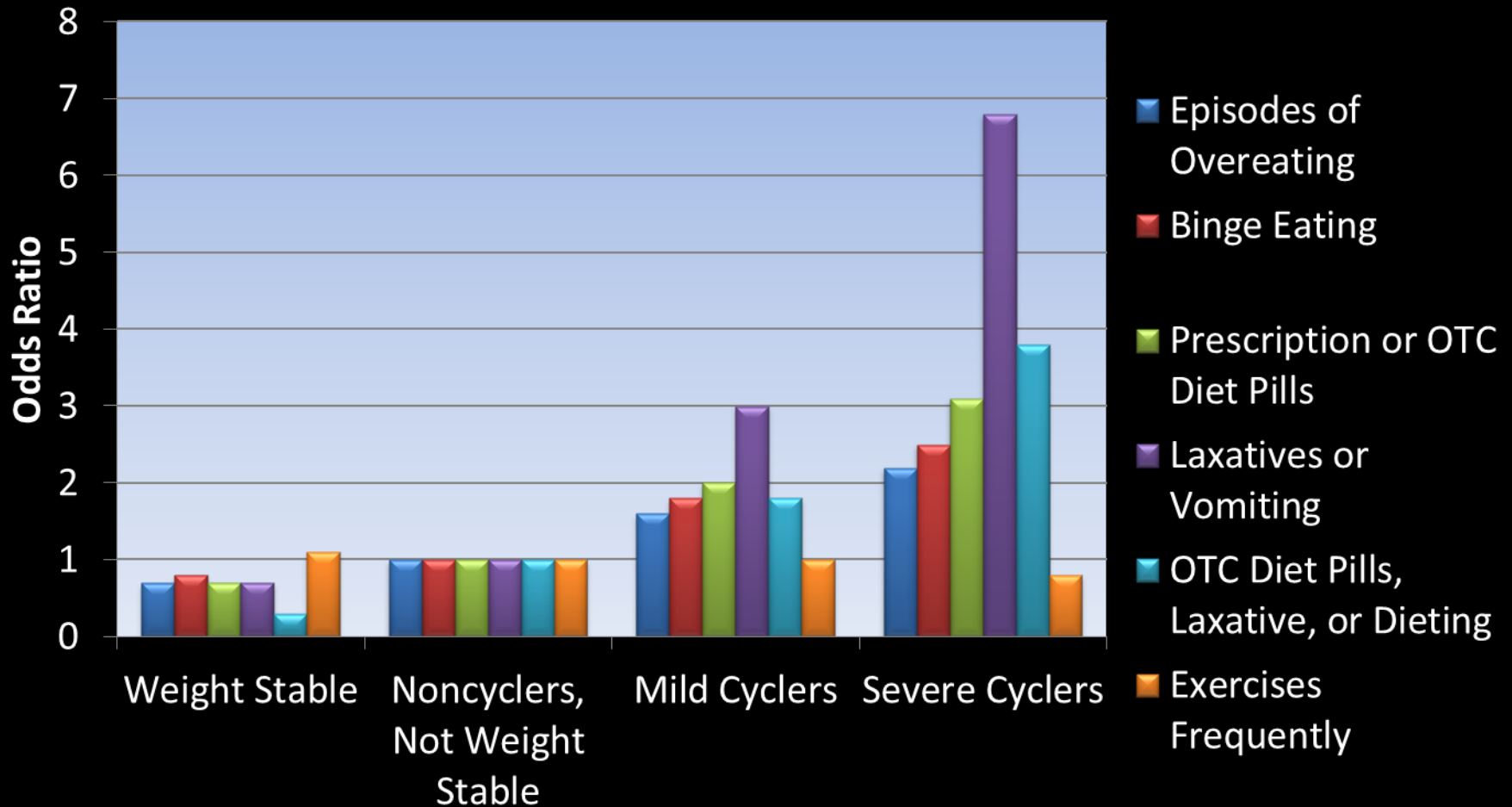
**Most obese persons will not stay  
in treatment for obesity.**

**Of those who stay in treatment,  
most will not lose weight  
and of those who do lose weight,  
most will regain it.**

**--Albert Stunkard, 1958**

## Nurses' Health Study II: 1989 -1993

### Binge Eating and Weight Control Practices by Weight Cycling Status



# Published Risks Associated With Weight Cycling:

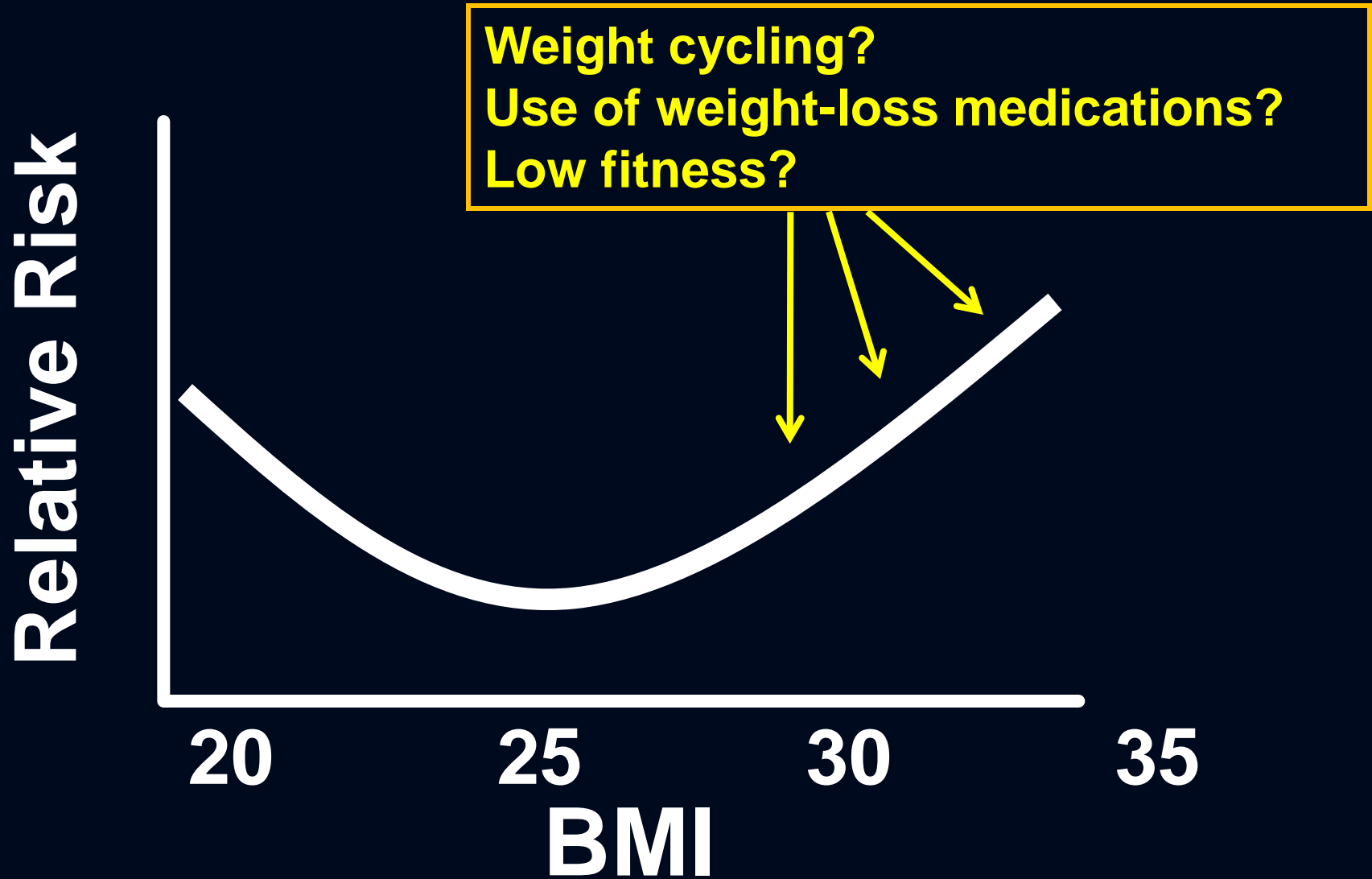
- Higher mortality rates
- Cardiovascular Disease
- Metabolic Syndrome/Diabetes
- Hypertension
- Higher HbA1c
- Hyperinsulinemia
- Dyslipidemias; lower HDL
- Decreased resting and endothelium-dependent myocardial blood flow
- Decreased adiponectin
- Inflammation (elevation in CRP)
- Gall bladder disease; cholecystectomy

# Published Risks Associated With Weight Cycling:

- Endometrial cancer
- Renal Cancer
- Colorectal cancer
- Lymphohematopoietic cancers
- Decreased Natural killer cell activity  
(compromised immune function)
- Poor physical function
- Attenuated improvements in health markers  
with weight loss
- Android fat pattern
- Decreased BMD
- Forearm fractures
- Hip fractures
- Decreased telomere length
- Loss of lean body mass

# BMI and Mortality

Typically a U- or J-Shaped Relationship



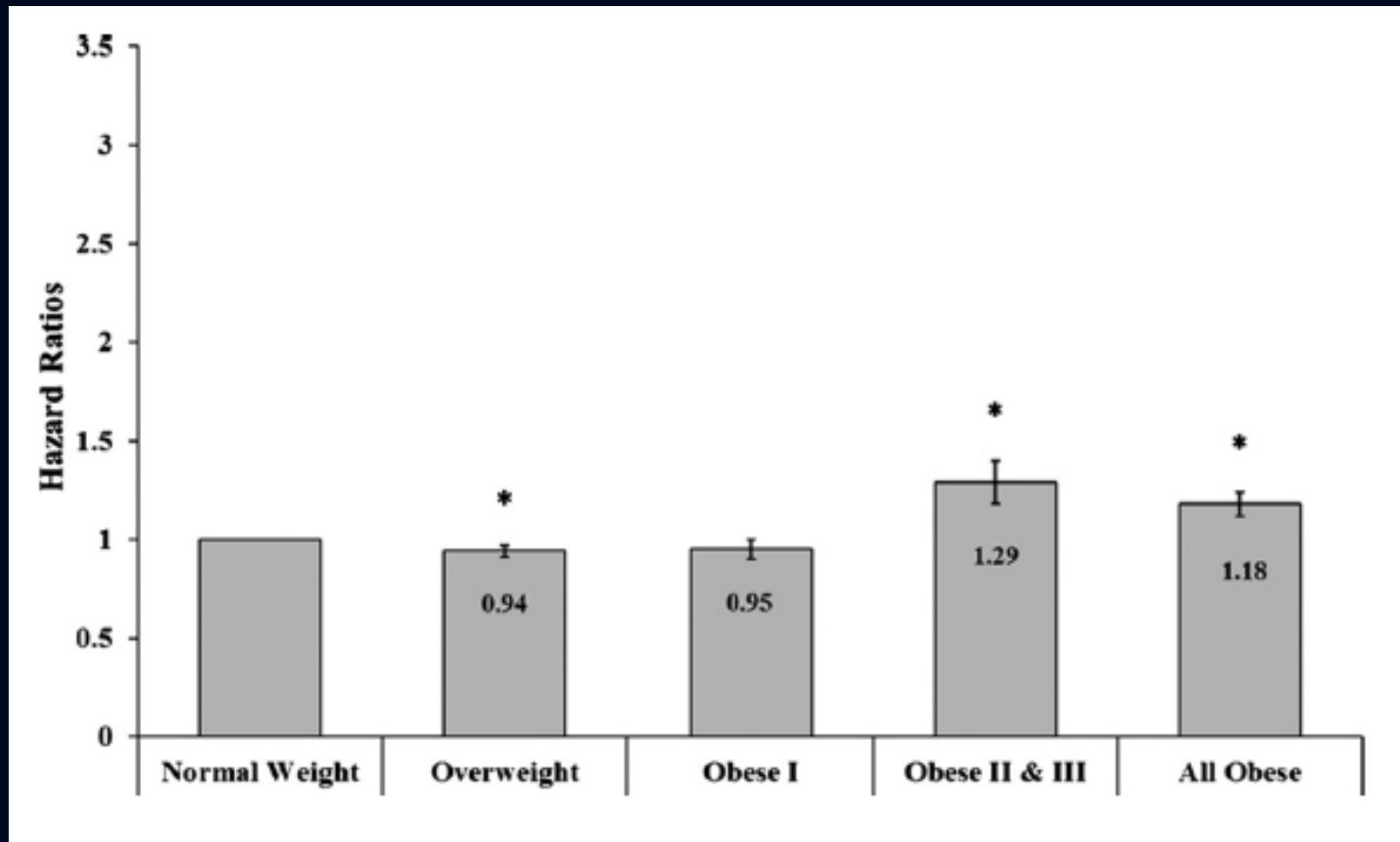
# Fitness versus Fatness: Which Influences Health and Mortality Risk the Most?

Glenn A. Gaesser, PhD; Wesley J. Tucker, MS, RD; Catherine L. Jarrett, MS, RD;  
and Siddhartha S. Angadi, PhD

***Current Sports Medicine Reports, 2015***

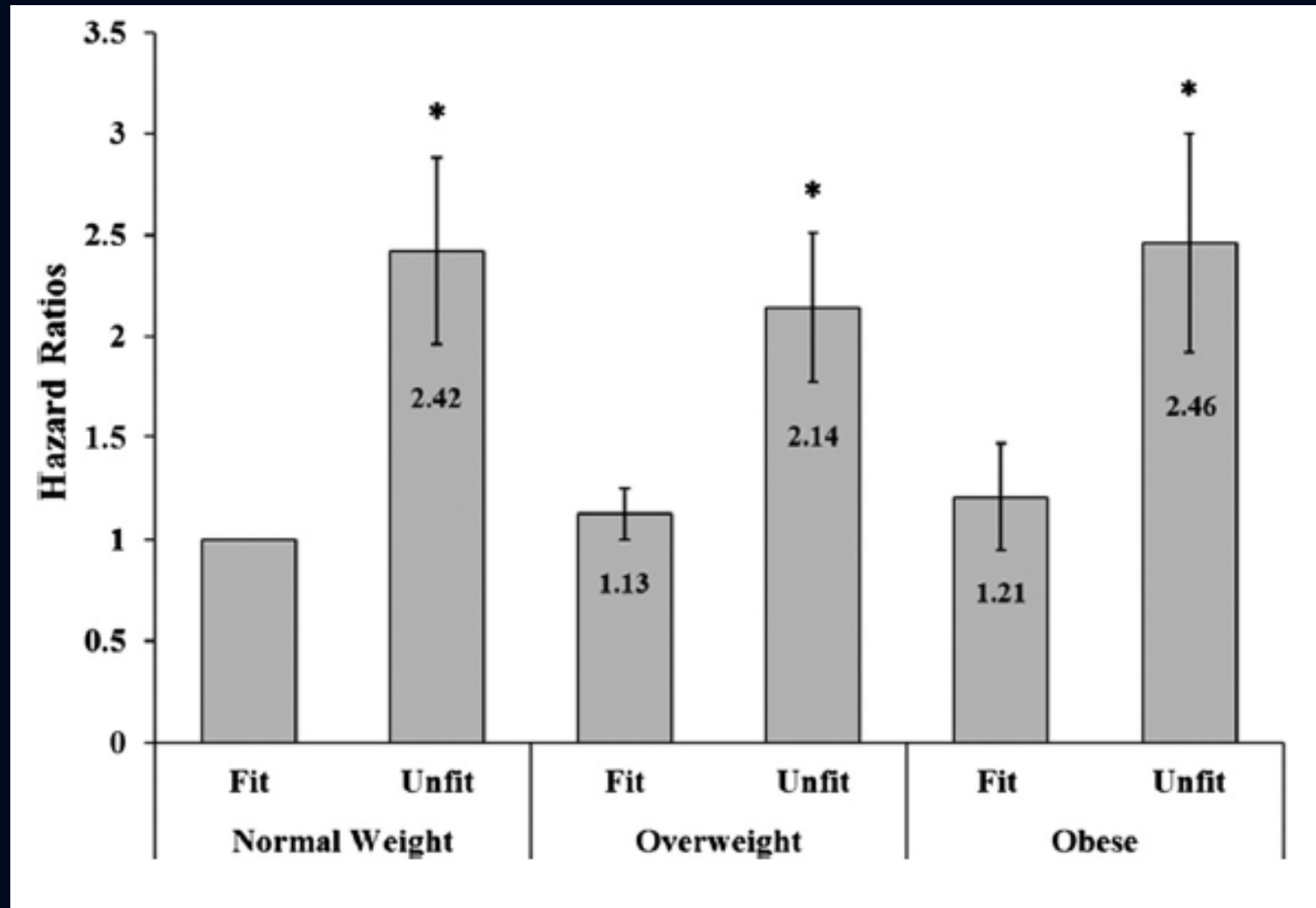



# Association of BMI and all-cause mortality in U.S. adults [from Flegal et al, *JAMA* 2013]



# Association of cardiorespiratory fitness, BMI, and all-cause mortality in U.S. adults

[from Barry et al, *Prog Cardiovasc Dis*, 2014]





# Long-term Effects of Dieting: Is Weight Loss Related to Health?

A. Janet Tomiyama<sup>1</sup>, Britt Ahlstrom<sup>1</sup> and Traci Mann<sup>2\*</sup>

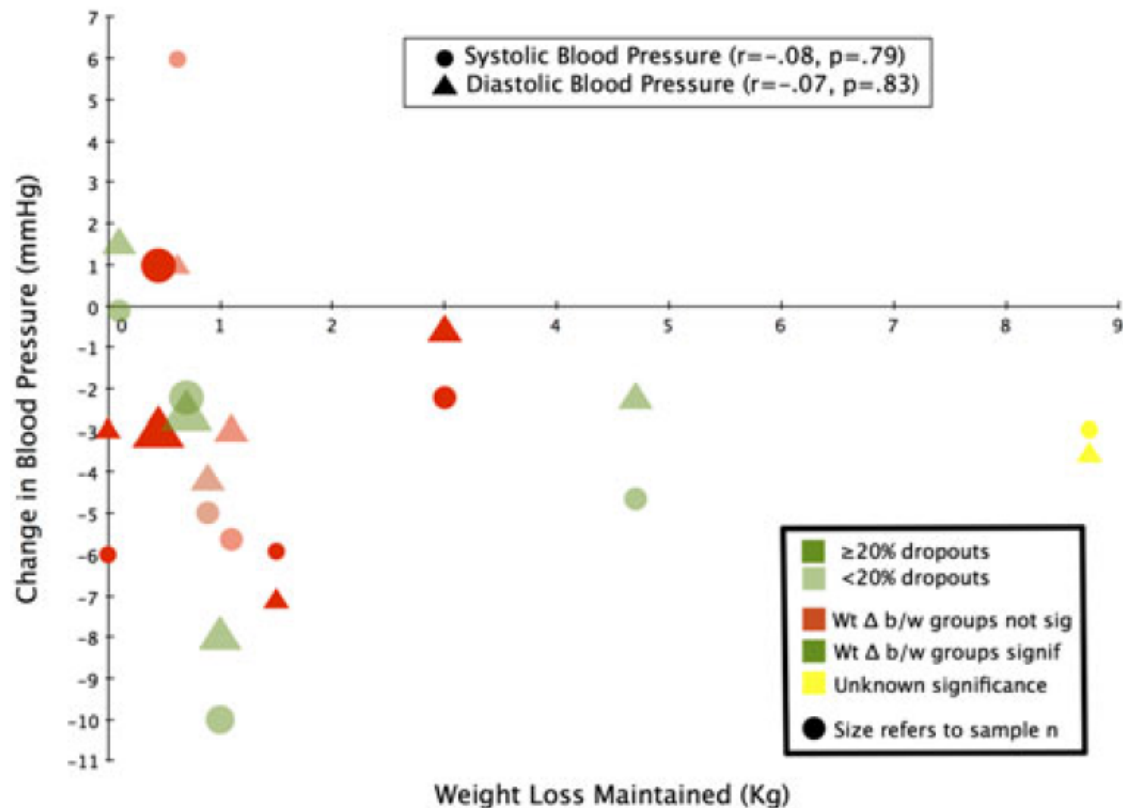
<sup>1</sup>*UCLA*

<sup>2</sup>*University of Minnesota*

We believe the ultimate goal of diets is to improve people's long-term health, rather than to reduce their weight. Our review of randomized controlled trials of the effects of dieting on health finds very little evidence of success in achieving this goal. If diets do not lead to long-term weight loss or long-term health benefits, it is difficult to justify encouraging individuals to endure them.

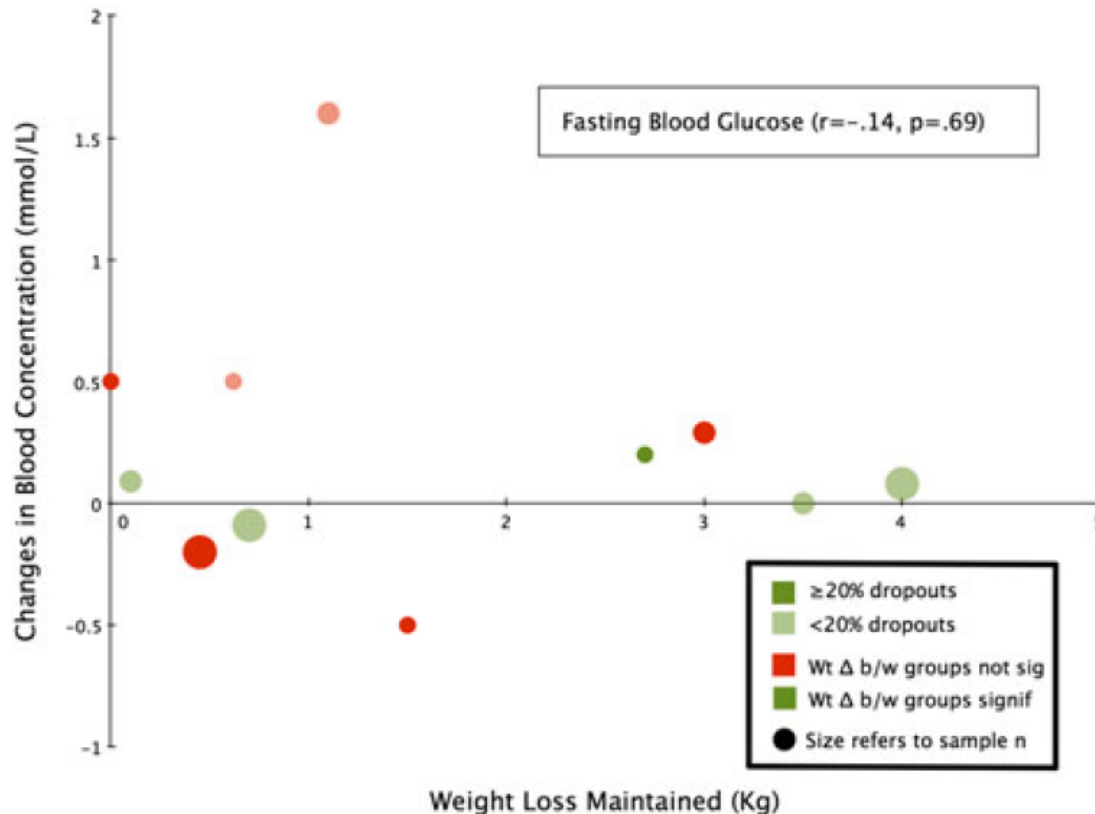
***Social & Personality Psychology Compass, 2013***

# Change in systolic and diastolic blood pressure by amount of weight loss maintained



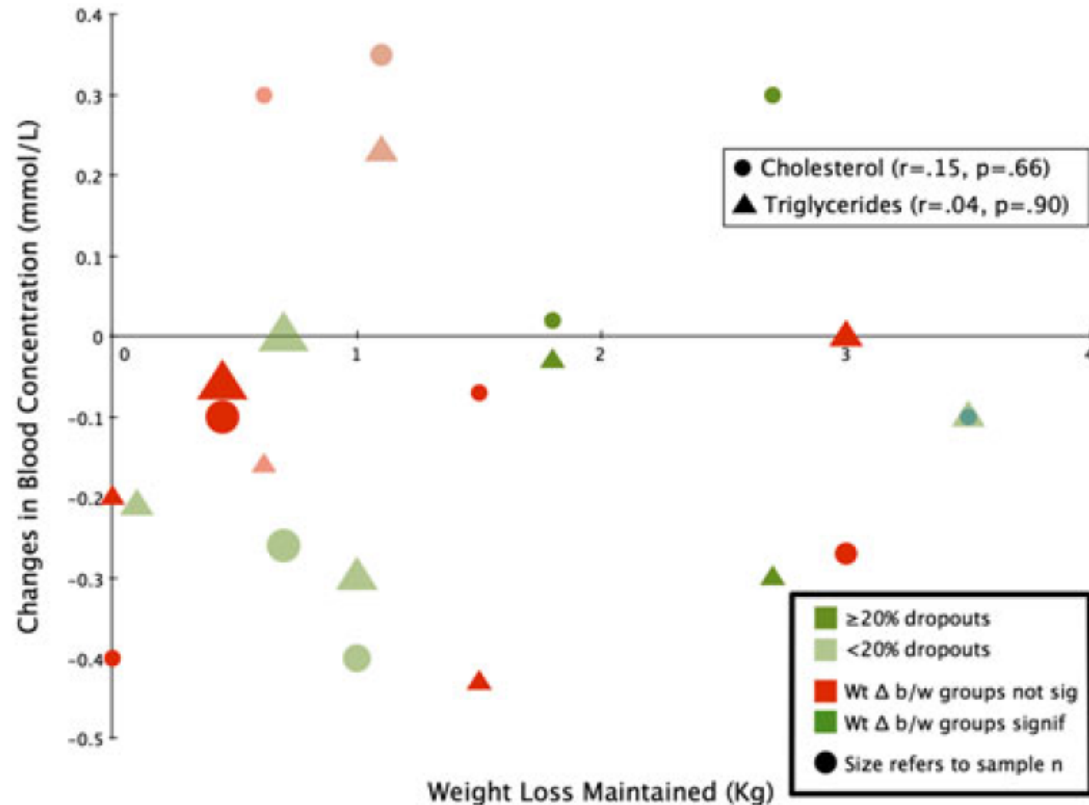
**Figure 1** Change in systolic and diastolic blood pressure (mmHg) by amount of weight loss (kg) maintained. Symbol size refers to sample size, with, from smallest to largest symbol,  $n \leq 100$ ,  $100 < n \leq 500$ ,  $500 < n \leq 1000$ , and  $n > 1000$ . Percent dropouts from each study are depicted by the opacity of the symbol ( $>20\%$  or  $<20\%$ ). The statistical significance of the difference between diet and control groups in amount of weight lost is depicted by color, with green = statistically significant difference, red = no statistically significant difference, and yellow = unknown statistical significance.

# Change in blood glucose by amount of weight loss maintained



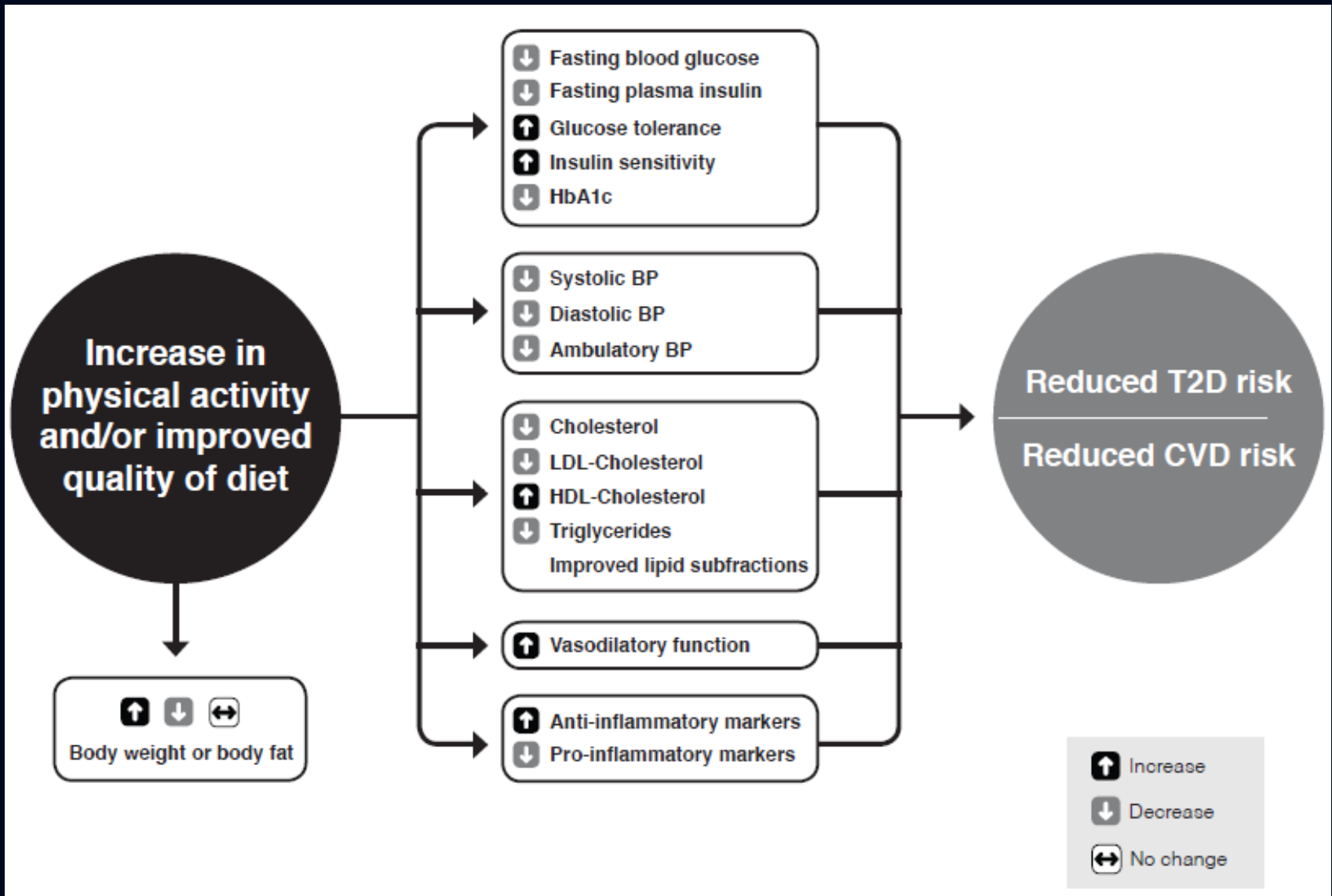
**Figure 2** Change in blood glucose (mmol/L) by amount of weight loss (kg) maintained. Symbol size refers to sample size, with, from smallest to largest symbol,  $n \leq 100$ ,  $100 < n \leq 500$ ,  $500 < n \leq 1000$ , and  $n > 1000$ . Percent dropouts from each study are depicted by the opaqueness of the symbol ( $>20\%$  or  $<20\%$ ). The statistical significance of the difference between diet and control groups in amount of weight lost is depicted by color, with green = statistically significant difference and red = no statistically significant difference.

# Change in cholesterol and triglycerides by amount of weight loss maintained



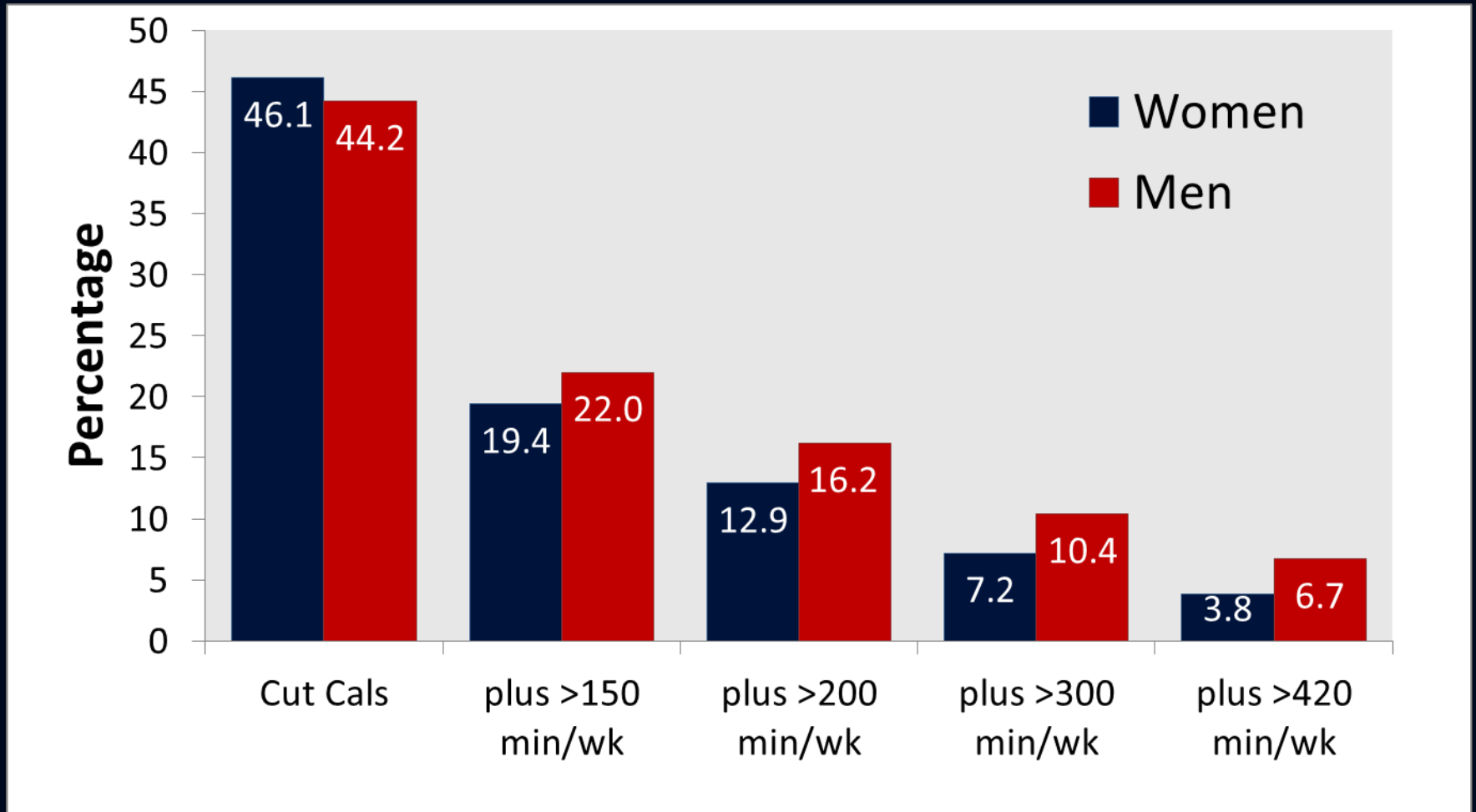
**Figure 3** Change in cholesterol and triglycerides (mmol/L) by amount of weight loss (kg) maintained. Symbol size refers to sample size, with, from smallest to largest symbol,  $n \leq 100$ ,  $100 < n \leq 500$ ,  $500 < n \leq 1000$ , and  $n > 1000$ . Percent dropouts from each study are depicted by the opaqueness of the symbol ( $> 20\%$  or  $< 20\%$ ). The statistical significance of the difference between diet and control groups in amount of weight lost is depicted by color, with green = statistically significant difference and red = no statistically significant difference.

# *Non-weight-loss-centered approach to treating “obesity-related” health conditions*



# BRFSS 2000

## Prevalence of Dieting and Physical Activity Among Those Trying to Lose Weight





UNPLEASANT  
TRUTHS

COMFORTING  
LIES

