

THE CRITICAL NEED FOR LIFESTYLE INTERVENTION: HOW TO BEGIN?

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Is it okay to be fat?



"I cannot stand fat people. Fat is like a pet peeve of mine. I know there are people who have glandular problems and can't do anything about it, but a person who's fat who could lose the weight if they weren't so lazy, I just can't stand."

—Chris Nissen, 18, Kettering Ohio

JUNE 2, 1998

People

weekly



TOO FAT? TOO THIN?

How media images of celebrities
teach kids to hate their bodies



Wendy Levy, 27,
of New York City,
ponders how her body
compares with those
of TV stars like (from
left) Courtney Cox,
Pamela Lee and
Heather Locklear

\$25,000 REWARD



**— IF YOU SEE THIS MAN —
EATING IN ANY RESTAURANT
ANYWHERE FOR A PERIOD OF ONE YEAR.
OR, UNTIL HE BRINGS HIS WEIGHT DOWN
TO 200 LBS. OR LESS!**

**CALL PREVENTIVE PLUS —
DR. LIVA OR DR. ZITO**

670-7616

*REWARD WILL BE GIVEN TO YOUR FAVORITE CHARITY!

DISCRIMINATION: THE PAIN OF OBESITY

Former severely obese patients:

- 100% preferred to be deaf, dyslexic, diabetic or have heart disease or bad acne than to be obese again**
- Leg amputation was preferred by 91.5% and blindness by 89.4%**
- 100% preferred to be a normal weight person rather than a severely obese multimillionaire**

star
25
YEARS
OF
TEARS
& JOY



ANNIVERSARY SPECIAL

FOREIGN CALL-GIRLS IN CAPITOL HILL SEX SCANDAL

February 9, 1999

Star

SHOCKING REPORT FROM
THE GOLDEN GLOBES

How thin can they get?



Dixie Chicks divorce shocker



MONICA GETS REVENGE

Sneak
peek at
her shocking
new book



PREVALENCE (%) OF OVERWEIGHT (BMI_≥25) AMONG U.S. ADULTS

	<u>%</u>
1980 ¹	46.0
1990 ¹	56.0
2000 ¹	64.5
2010 ²	73.5
2020 ²	82.5
2030 ²	91.5
2040 ²	100.0

¹Flegal et al., **JAMA**, 2002 ²Projected

PREVALENCE (%) OF OBESITY (BMI \geq 30) AMONG U.S. ADULTS

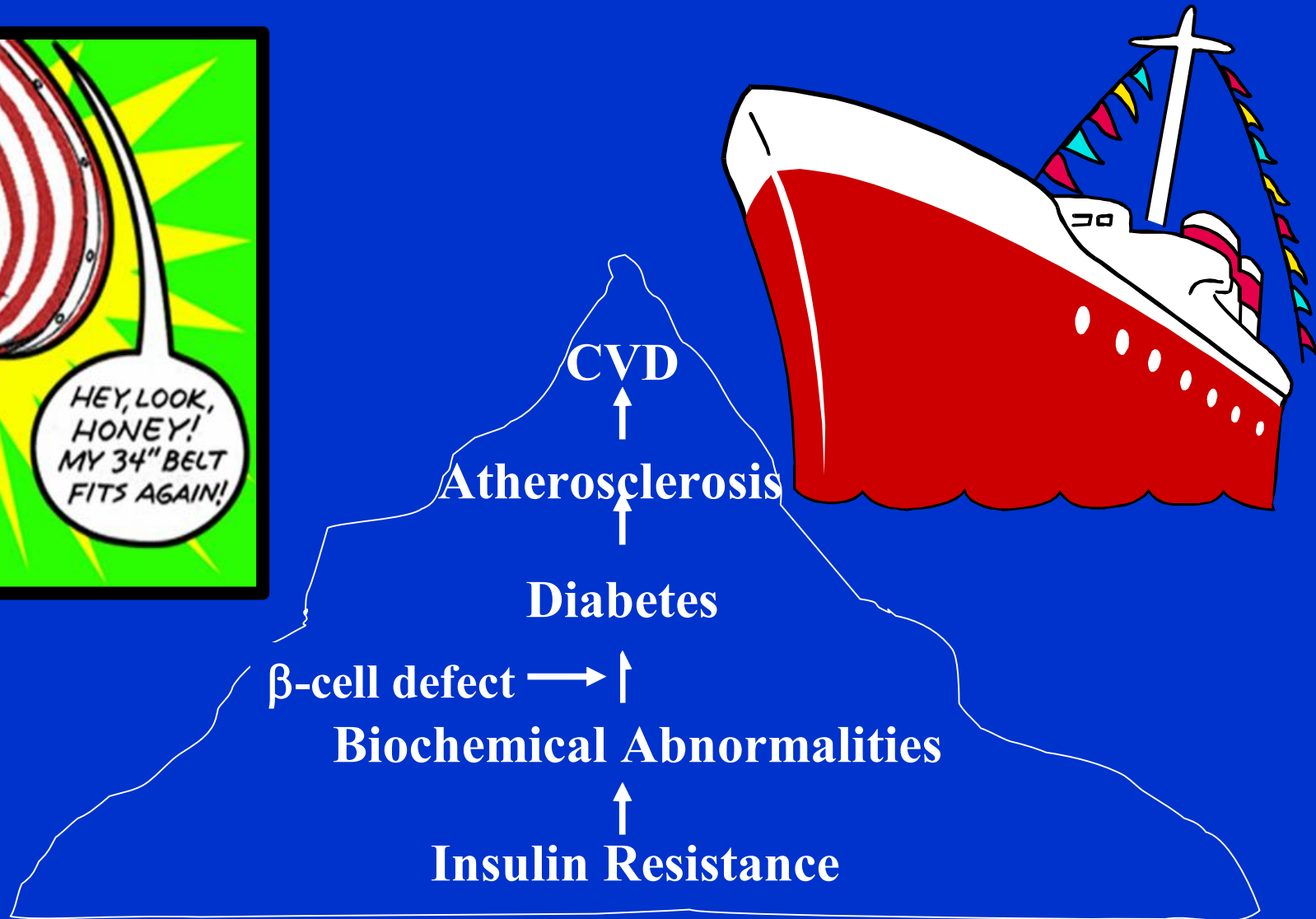
	<u>%</u>
1980 ¹	14.4
2000 ¹	30.5
2020 ²	46.5
2040 ²	62.5
2060 ²	78.5
2080 ²	94.5
2100 ²	100.0

¹Flegal et al., **JAMA**, 2002 ²Projected

FAT! SO?



The Metabolic Syndrome



METABOLIC SYNDROME

- Abdominal obesity (waist circumference)
 - Men > 40 in (102 cm)
 - Women > 35 in (88 cm)
- Triglycerides ≥ 150 mg/dl
- High density lipoprotein
 - Men < 40 mg/dl
 - Women < 50 mg/dl
- Blood Pressure $\geq 130 / > 85$ mm Hg
- Fasting Glucose ≥ 110 mg/dl

CLINICAL MANAGEMENT OF METABOLIC SYNDROME: ADA RECOMMENDATIONS

- Lifestyle interventions first, followed by pharmacologic interventions if necessary
- Target levels of risk factors:
 - Blood pressure < 130/80
 - LDL-cholesterol < 100 mg/dl
 - Triglycerides < 150 mg/dl
 - HDL-cholesterol > 40 mg/dl (women > 50)
 - Glycosylated hemoglobin < 7%

CLINICAL MANAGEMENT OF METABOLIC SYNDROME

Management of underlying causes:

- Weight control enhances LDL lowering and reduces all risk factors**
- Physical activity reduces VLDL and LDL and increases HDL**

Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults. JAMA, 2001; 285: 2486-2497.

CLINICAL MANAGEMENT OF METABOLIC SYNDROME

Treat lipid and nonlipid risk factors:

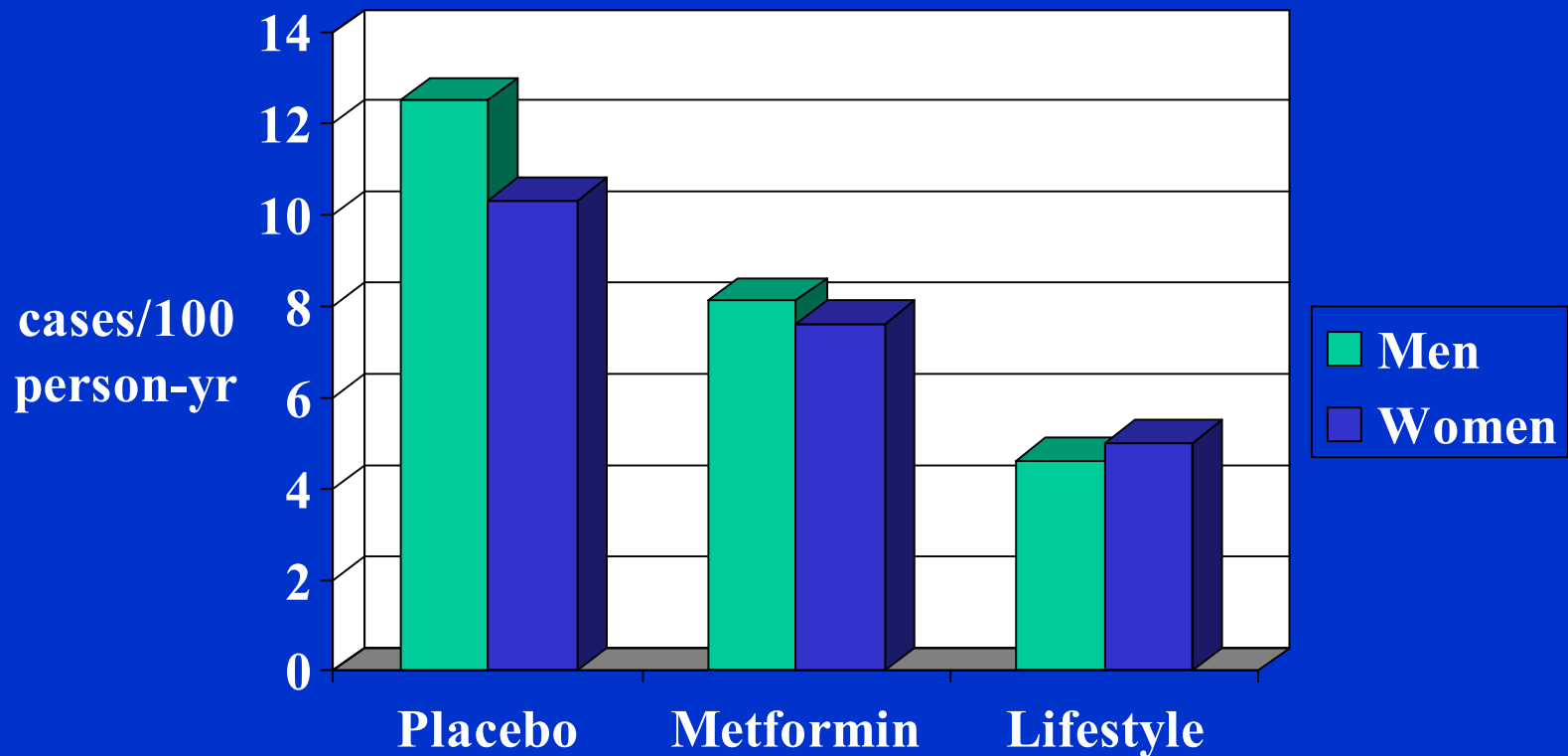
- **Hypertension**
- **Aspirin in CHD patients**
- **Elevated triglycerides**
- **Low HDL**

Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults. JAMA, 2001; 285: 2486-2497.

DIABETES PREVENTION PROGRAM

INCIDENCE OF DIABETES

Lifestyle = 7% weight loss, 150 min physical activity/week



Diabetes Prevention Program. NEJM, 2002; 346: 393-403

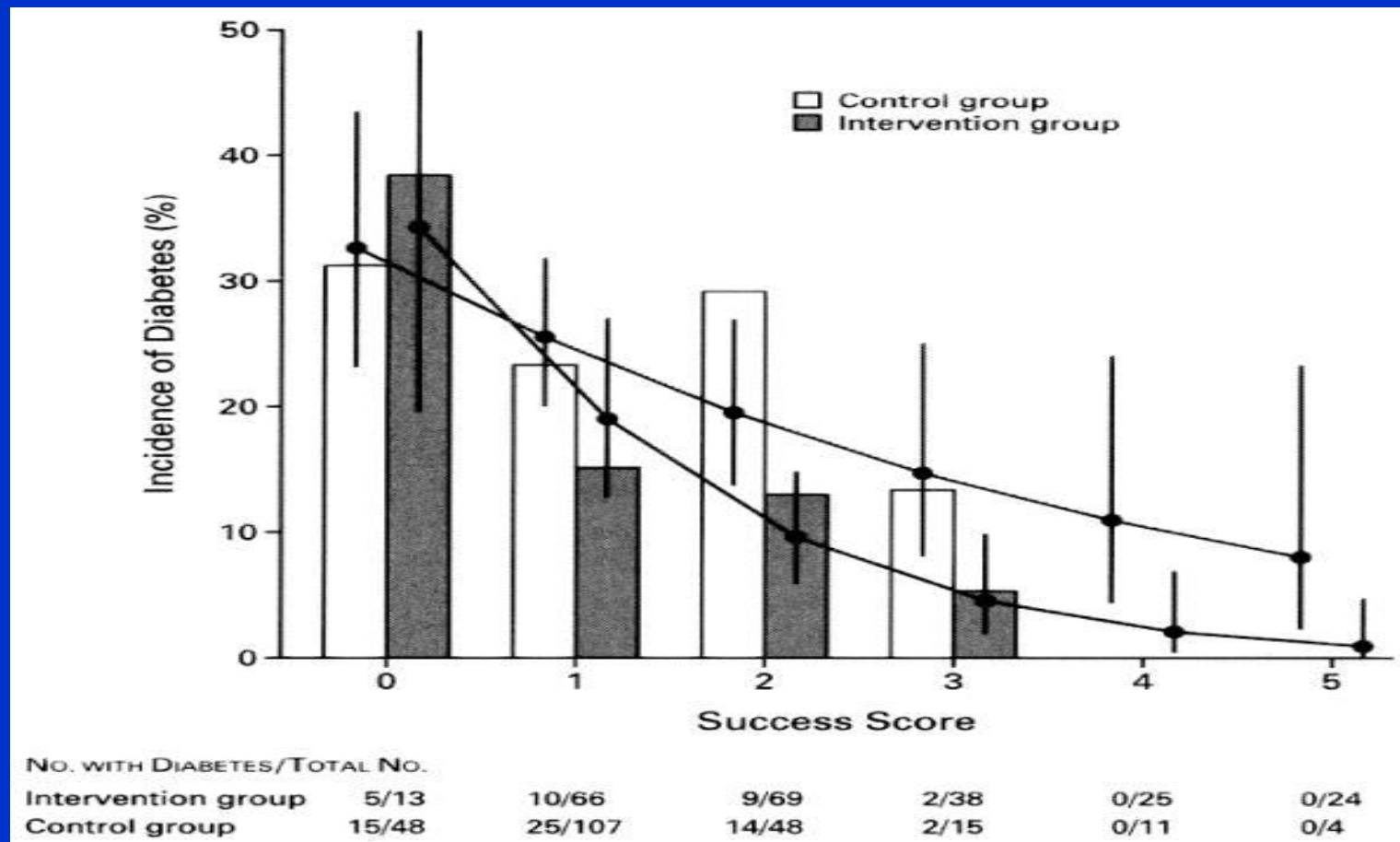
FINNISH DIABETES PREVENTION STUDY

- **Design:**
 - **522 middle-aged overweight (BMI 31)**
 - **172 men and 350 women**
 - **Mean duration 3.2 years**
- **Intervention Group: Individualized counseling**
 - **Reducing weight, total intake of fat and saturated fat**
 - **Increasing uptake of fiber, physical activity**

Tuomilehto J. et al., NEJM, 2001; 344: 1343-1350

FINNISH DIABETES PREVENTION STUDY

After 4 years – risk of diabetes reduced by 58%



Tuomilehto J. et al., NEJM, 2001; 344: 1343-1350

PARADOX OF INCREASING OBESITY PREVALENCE

- ↑ Focus on healthy eating and physical activity
- ↑ Awareness of dangers of obesity, but...
- Obesity prevalence continues to rise
 - Work & commuting demands
 - Little time to exercise
 - Little time to prepare food
 - Availability of high-fat/calorie foods

THE “TOXIC ENVIRONMENT”

- 7% of U.S. population eats at McDonald's every day
- The average child sees 10,000 food commercials each year, mostly for candy, fast food, soft drinks, and sugared cereals
- Energy-saving devices reduce physical activity

Brownell & Battle, 2003

RATIONALE FOR PUBLIC POLICY INTERVENTIONS

- **Increases in obesity prevalence due to genes?**
 - **Increased calories (e.g., 200 Kcal/day over 10 years)**
 - **Increased portion sizes (e.g., 22 oz. steaks and 44 oz. sodas)**
 - **Western diets in developing nations increase risk of obesity**

Brownell & Battle, 2003

FOOD PRODUCTION UNITED STATES

- Food industry produces 3800 kcal per person per day
- Average adult requires < 2000 kcal

USDA, 1997

PER CAPITA FOOD CONSUMPTION (KCAL/CAPITA/DAY)

Industrial Countries

1965	1975	1985	1998	2015	2030
2947	3065	3206	3380	3440	3500

WHO, 2003

TRENDS IN DIETARY SUPPLY OF FAT (GRAMS/CAPITA/DAY)

North America

1968	1978	1988	1998	Change (gms) (1968-1998)
117	125	138	143	+26

WHO, 2003

OVER 100 WEEKS ON
The New York Times BESTSELLER LIST

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



**REVISED
AND
UPDATED**

ROBERT C. ATKINS, M.D.

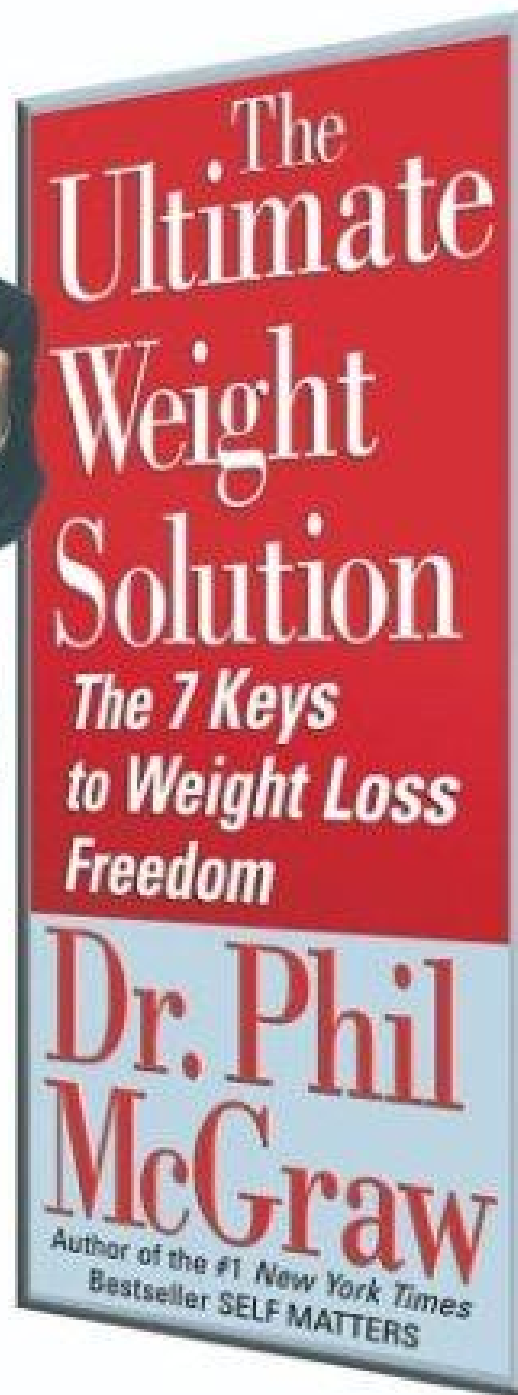
THE SOUTH BEACH DIET

Lose
Belly Fat
First!



The Delicious, Doctor-Designed, Foolproof Plan
for Fast and Healthy Weight Loss

Arthur Agatston, M.D.



COMPARATIVE DIETARY GUIDELINES

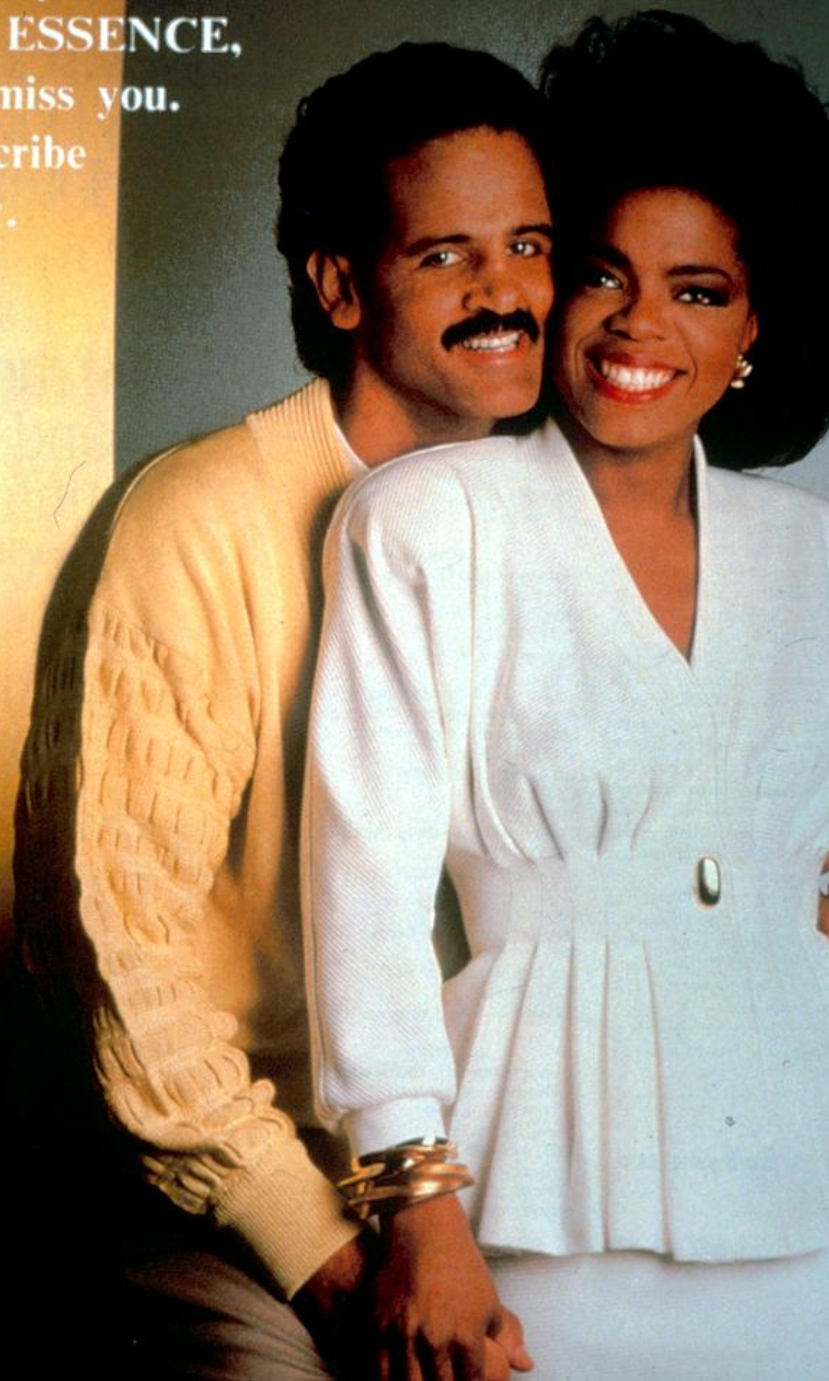
	Carb%	Fat%	Protein %
Mediterranean Diet	45-55	25-35	20
NIH Dietary Ref. Intakes	45-65	25-35	15
Am. Heart Assoc.	40-60	< 30	10-30
NCEP-ATPIII	50-60	25-35	15
Am. Diet Assoc.	45-65	25-35	15
Food Guide Pyramid	60	30	15
<u>NCI, NIA, NIDDK, NHLBI</u>	<u>60</u>	<u>25</u>	<u>15</u>
Atkins Diet	11	56	33
South Beach	36	43	22
Zone Diet	40	30	30

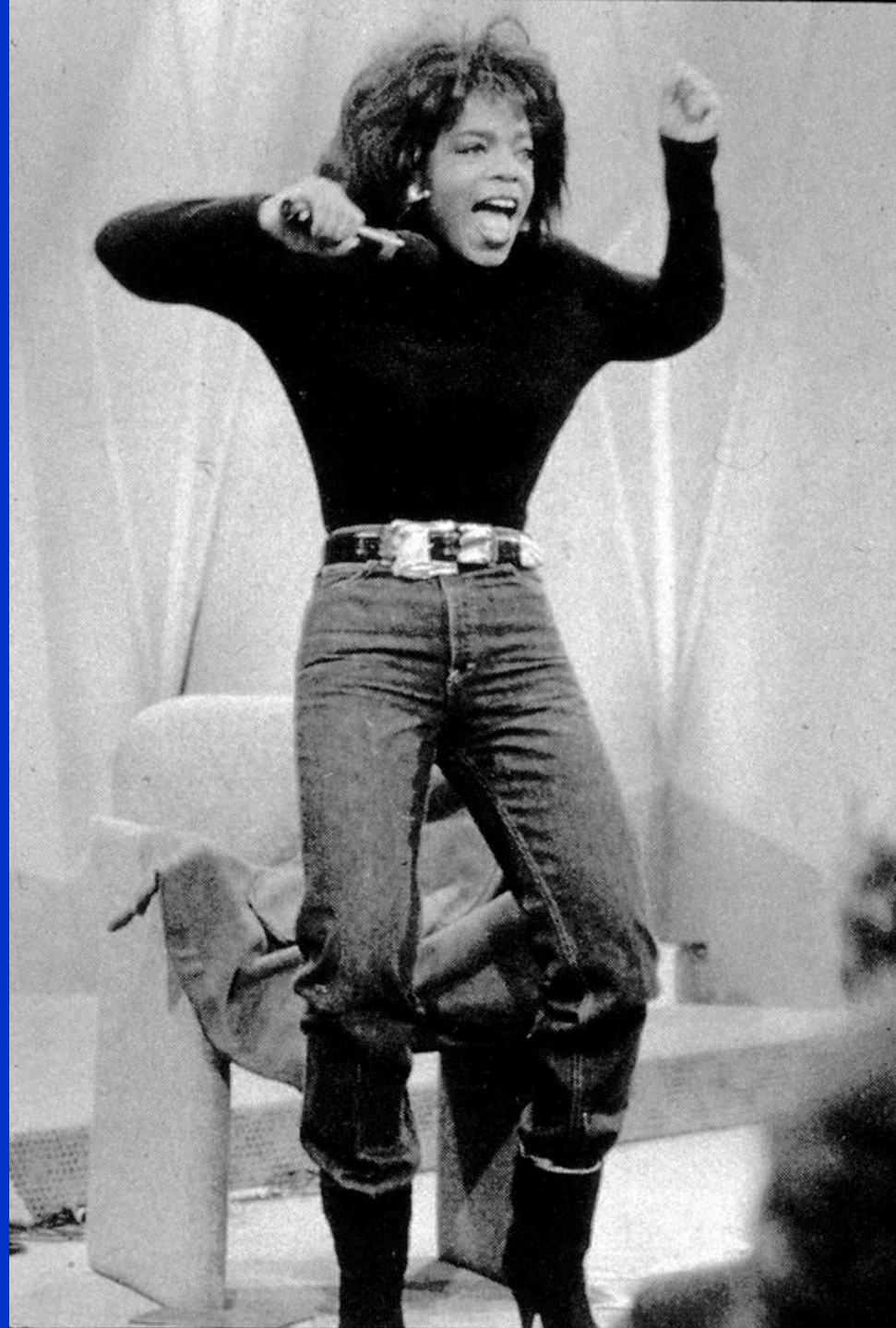
Trends in Dietary Treatment of Obesity

High Protein/Low Carbohydrate

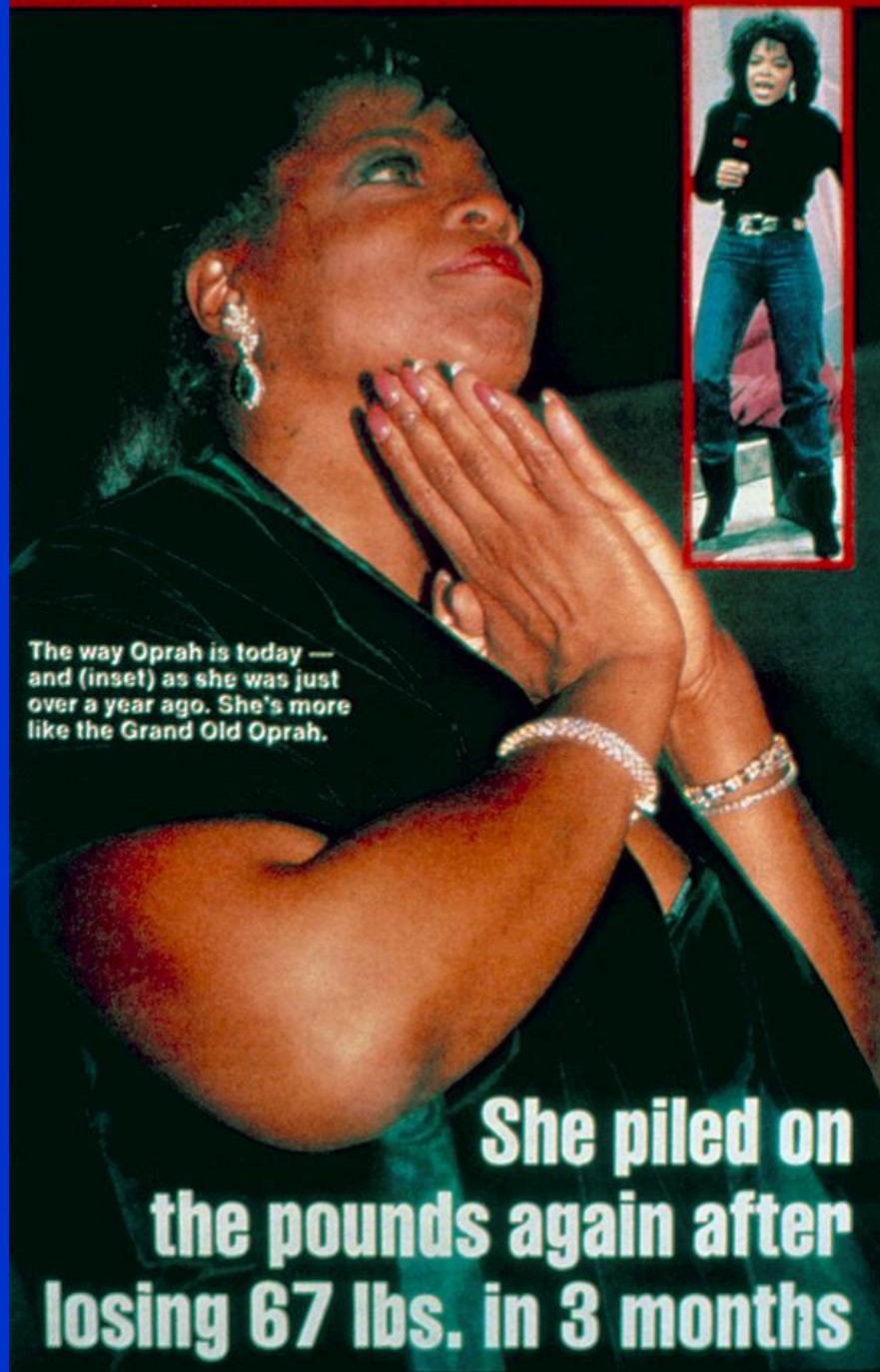
- Banting Diet (Banting, 1864)
- Protein-sparing-modified fast (Blackburn et al., 1973)
- Very-low-calorie diet (Blackburn et al., 1975)
- Dr. Atkins diet (Brehm et al 2002; Foster et al., 2003; Samaha et al., 2003, Westman et al., 2003)

When you
miss ESSENCE,
you miss you.
Subscribe
today.





DON'T BE A DIET DISASTER LIKE OPRAH



The way Oprah is today —
and (inset) as she was just
over a year ago. She's more
like the Grand Old Oprah.

**She piled on
the pounds again after
losing 67 lbs. in 3 months**



Exclusive Interview
Tony Danza:
Womanizing
wrecked my
marriage



Gay furor on 'Empty
Nest' — execs furious
as Kristy McNichol
dates gal pal

NATIONAL

ENQUIRER

June 18, 1991

85¢/89¢ CANADA

LARGEST CIRCULATION OF ANY PAPER IN AMERICA

OPRAH HITS DEADLY 205 LBS.

Doctors alarmed as
she refuses to diet
to save her life



NOW

SOON

Woody's going bald!
'Cheers' star in frantic
fight to save his hair



25

Tom Cruise's secret wedding in Telluride

JANUARY 14, 1991 • \$1.95

People

weekly



OPRAH'S VOW: "I'LL NEVER DIET AGAIN!"

Fed up with her
14-year fight for
a model figure,
OPRAH WINFREY
is learning to
love the robust
shape she's in



Oprah
as a
lean
machine
in 1988



SEPTEMBER 9, 1996

JFK Jr. hosts the Democratic party

weekly

EXCLUSIVE
Book Excerpt

HOW OPRAH DID IT!

She tried all the food fads. Now Oprah shares the diet and fitness plan that finally worked for her

000009 7708 WAINW ST HOUSTON TX 77074-5319

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



www.usnews.com

Big Texan Steak Ranch

Amarillo, Texas



72-oz Steak FREE if eaten within 1 hour





Public Health Goal: Stop Weight Gain of Population

- **Combination of reduction in energy intake and increase in physical activity of 100 kcal/day**
- **Eat 3 bites less of fast food hamburger (=100 kcal)**
- **Walk additional 20 min (= 100 kcal)**

Hill et al., Science, 2003

READINESS TO CHANGE

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

Mark Twain

COMMUNICATION STRATEGIES: FACILITATING BEHAVIORAL CHANGE

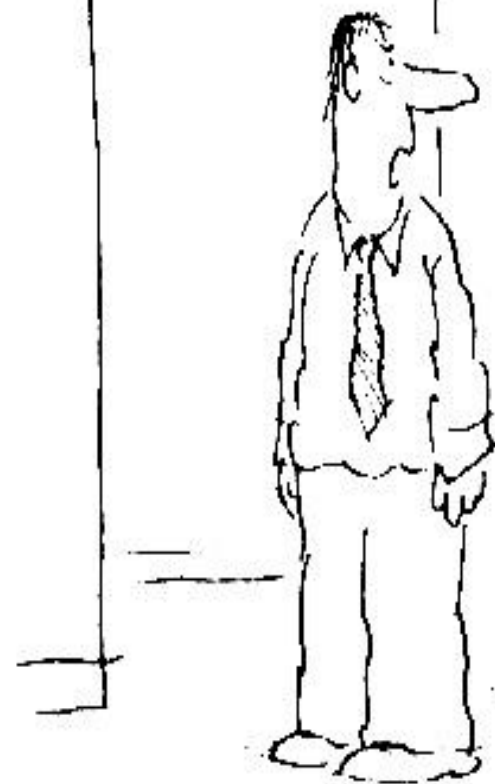
- **Self-Monitoring**
- **Stimulus Control**
- **Cognitive Restructuring**
- **Stress Management**
- **Social Support**

Behavioral Methods for Weight Loss: The Patient Diary

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

Adapted from Brownell, Rodin. *The Weight Maintenance Survival Guide*; 1990:chap 5.

HOW YOU STAND
MAKES NO DIFFERENCE!



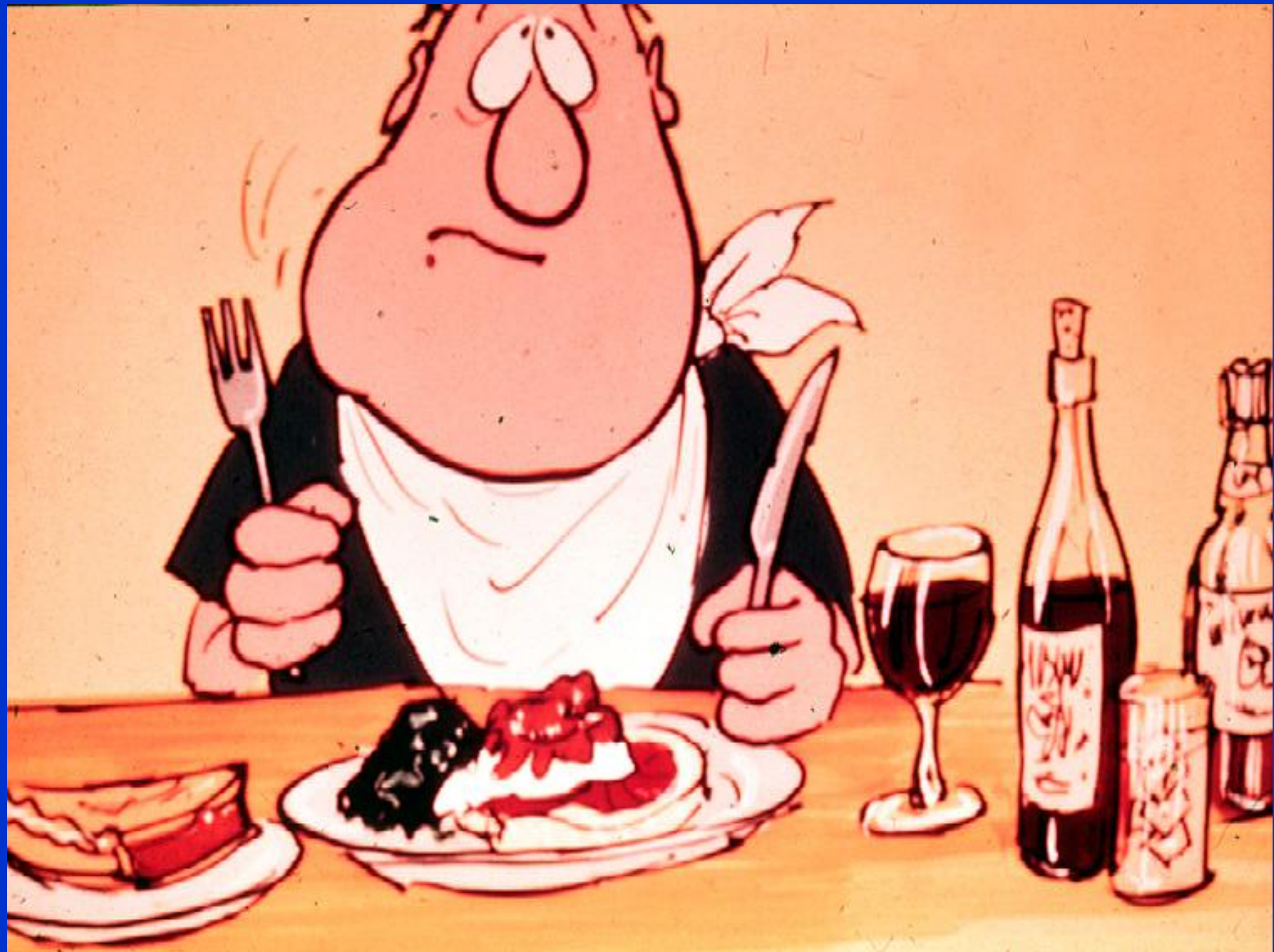
SELF-MONITORING

- Food Record
- Activity Record
- Weight Record



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

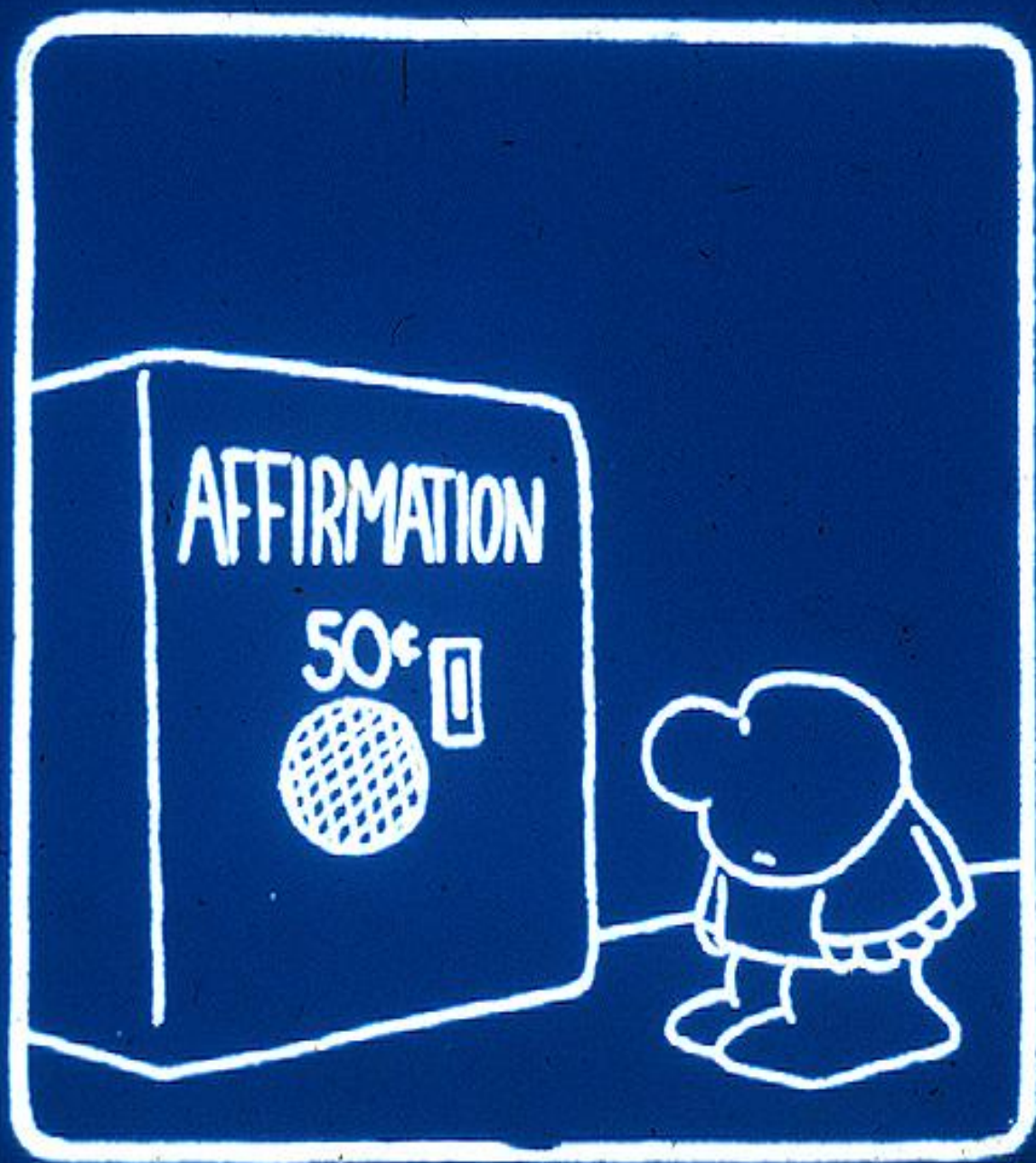






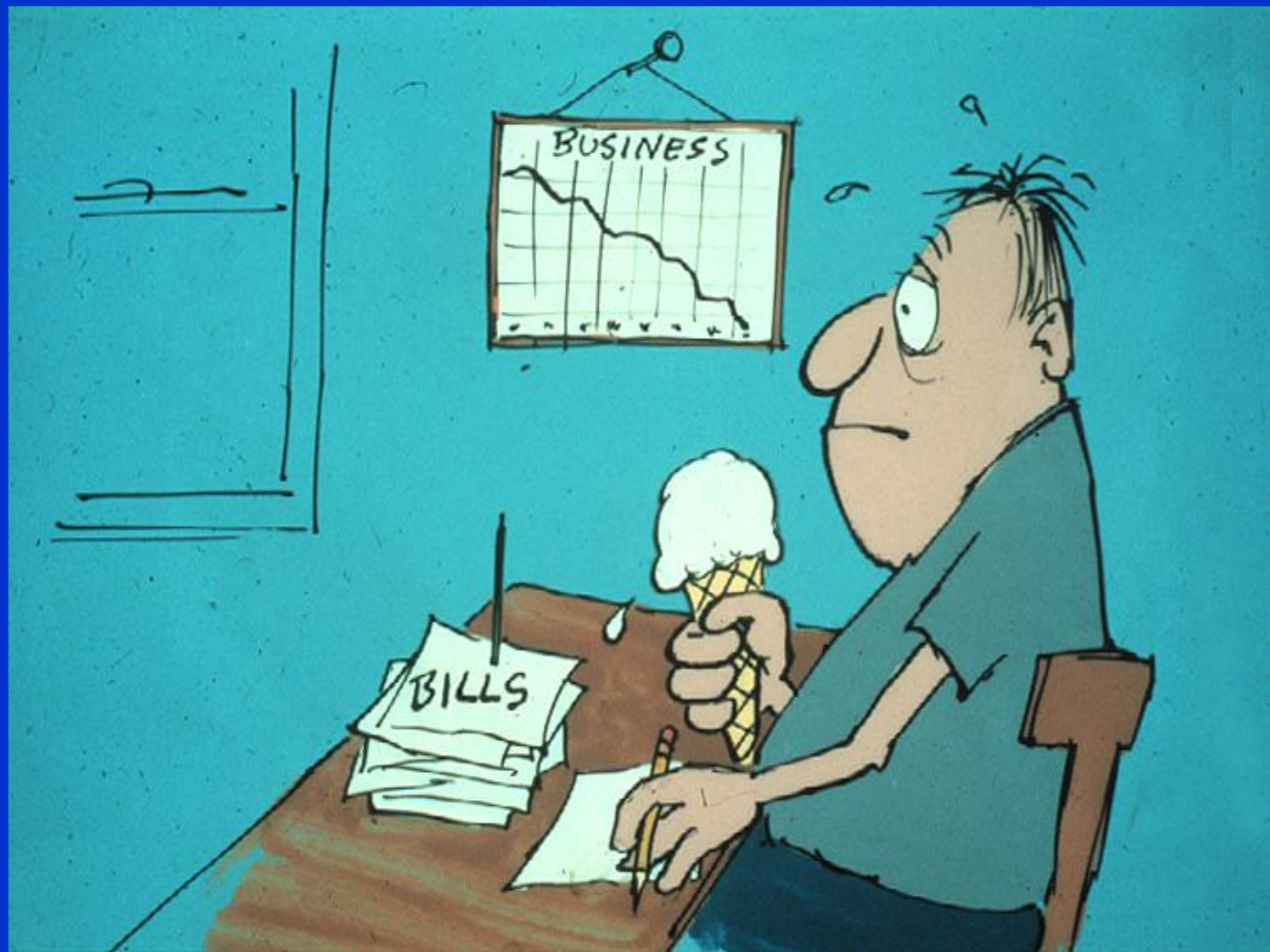
STIMULUS CONTROL

- **Normalize eating pattern**
- **Lay out exercise clothes**
- **Find new ways to be active**



COGNITIVE RESTRUCTURING

- Realistic expectations
- Small changes
- Get a life



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

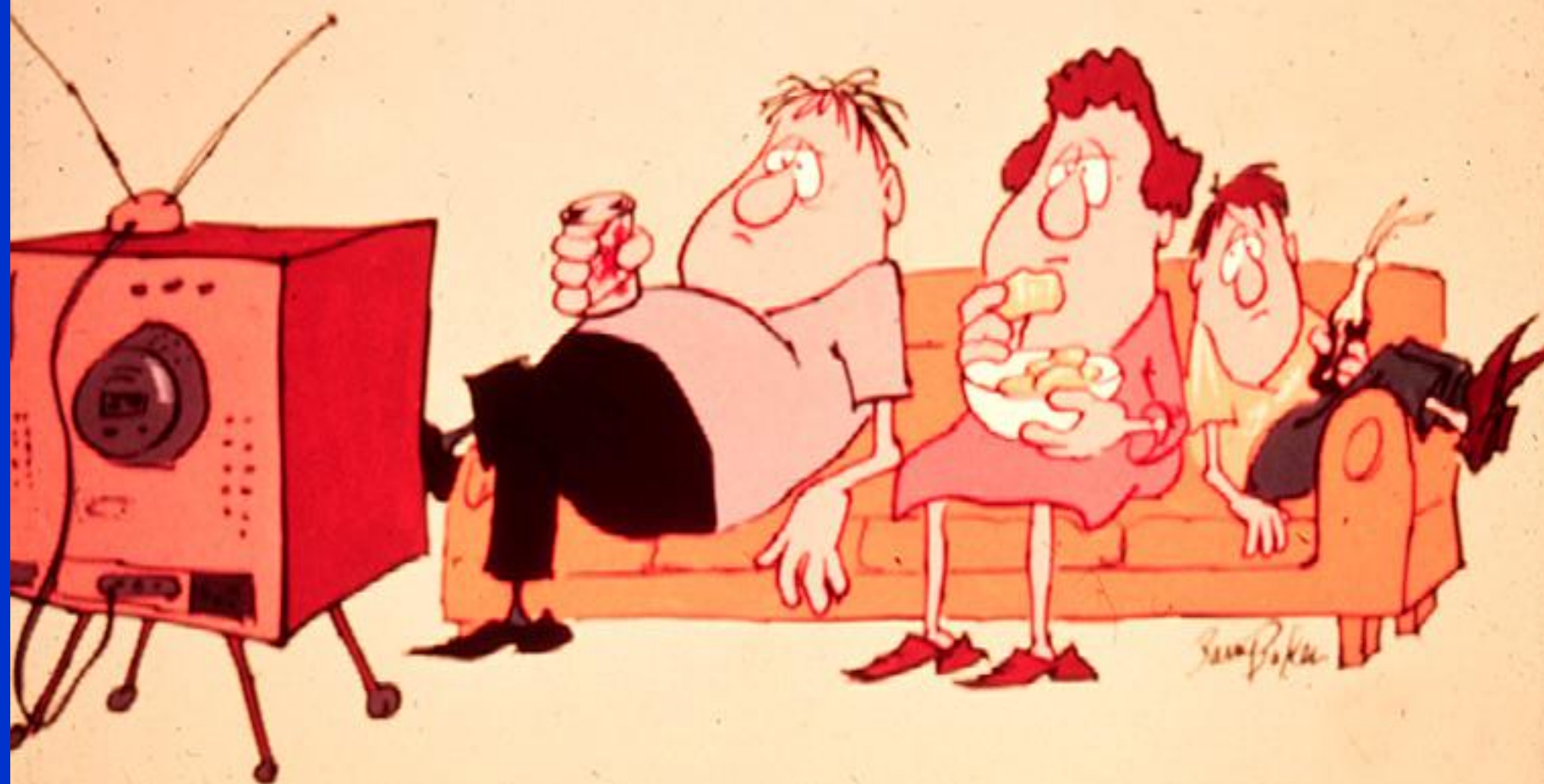


***That Old Man
Rivers, He
Keeps on Rolling
Along***

Mickey Rivers' philosophy in the Texas Ranger media guide: "Ain't no sense in worrying about things you got control over, 'cause if you got control over them, ain't no sense worrying. And there ain't no sense worrying about things you got no control over, 'cause if you got no control over them, ain't no sense worrying."

STRESS MANAGEMENT

- **Physical Activity**
- **Meditation**
- **Progressive Relaxation**



SOCIAL SUPPORT

- Family
- Peer
- Community

TREATMENT PREDICTORS OF INCREASED WEIGHT LOSS

- Lifestyle modification
- Longer treatment
- Increased physical activity
- Pharmacotherapy

HOW MUCH EXERCISE IS ENOUGH FOR WEIGHT LOSS?

- 2800 kcal/wk (including 800 kcal/wk of high intensity exercise [> 6 METS] e.g. running, aerobic dance)

NWCR, 1999

- 2550 kcal/wk (including 800 kcal/wk of high intensity exercise)

Jeffrey, JCCP, 1998

WHY DON'T PATIENTS MAINTAIN THEIR LOSSES?

- **Physiological:** Reduced metabolic rate
- **Environmental:** Constant exposures to energy dense foods and low levels of physical activity
- **Psychological:** Small weight losses (8-10%) are disappointing

FACTORS ASSOCIATED WITH WEIGHT MANAGEMENT SUCCESS: CORRELATIONAL

- **Attendance at intervention sessions**
- **Early adherence to behavioral strategies**
- **Absence of depression or binge eating**
- **Large initial weight losses**
- **Low-fat, low-calorie diet**
- **Diet and weight self-monitoring**
- **High levels of physical activity**

Perri & Foreyt, 2004

FACTORS ASSOCIATED WITH WEIGHT MANAGEMENT SUCCESS: CLINICAL TRIALS

- **Continuing care through professional contacts**
- **High frequency of moderate-intensity, home-based aerobic exercise**
- **Providing exercise equipment and prescribing short bouts of exercise**
- **Portion controlled meals plus continuing care**
- **Combining behavior therapy, portion control, and pharmacotherapy**

Perri & Foreyt, 2004

LONG-TERM WEIGHT MAINTENANCE: NATIONAL WEIGHT CONTROL REGISTRY

- **> 3200 members**
- **Maintained average weight loss of 30 kg for 5.5 yrs**
- **> 15% have maintained their weight loss > 10 yrs**
- **Members have lost an average of 10 BMI units from 35 to 25 kg/m²**

LONG-TERM WEIGHT MAINTENANCE: NATIONAL WEIGHT CONTROL REGISTRY WEIGHT LOSS STRATEGIES

- **89% used both diet and exercise**
- **9% used diet only**
- **1% used exercise only**
- **No common dietary strategy**
- **50% lost weight on their own**
- **50% used a formal program**
- **Triggering event: medical (32%); emotional (32%); lifestyle (26%)**

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**

HOW MUCH EXERCISE IS ENOUGH FOR WEIGHT MAINTENANCE?

- 80 min/day of moderate activity (4 METS) (e.g. brisk walking, pleasure cycling)
- 35 min/day of intense activity (6 METS) (e.g. running, aerobic dance)

Schoeller, AJCN, 1997

STRENGTH TRAINING VS. AEROBIC TRAINING

- **Diet and exercise calories the same**
- **Strength: 2 set/6 reps + 1 set to max (8)**
- **Aerobic: 30 @ 70% HR**
- **Both groups lost 9 kg (9.2%) in 8 wks**
- **Strength group lost sig. less LBM**

MULTIPLE SHORT BOUTS VS. ONE CONTINUOUS BOUT OF EXERCISE

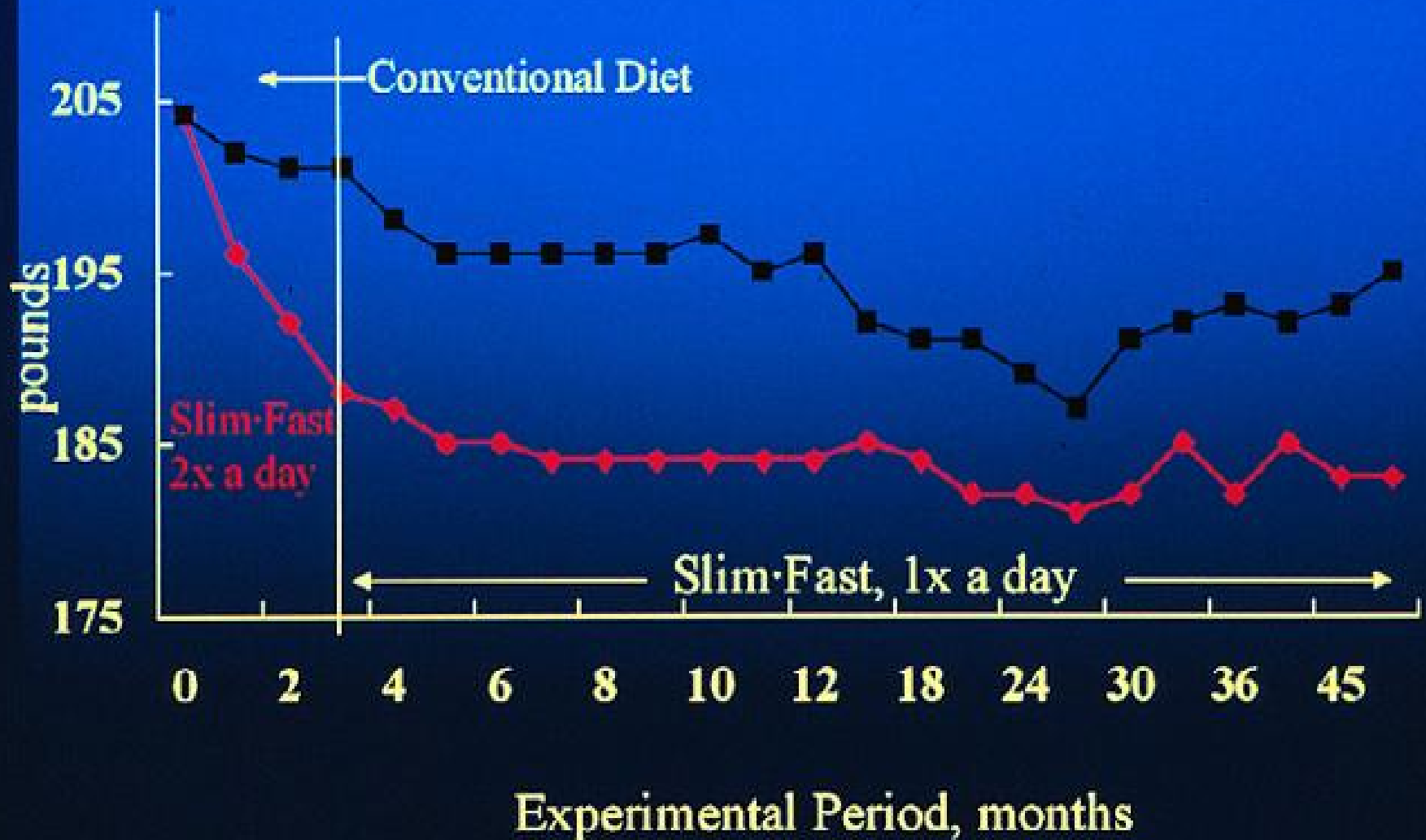
- **Exercise 5 d/wk, progressed from 20-40 min, 20 wks**
- **MSB increased adherence (87 d vs. 69 d)**
- **MSB greater duration (233 vs. 188 min/wk)**
- **MSB lost 9 kg; CB lost 6 kg**
- **CV benefits similar**

Jakicic, IJO, 1999

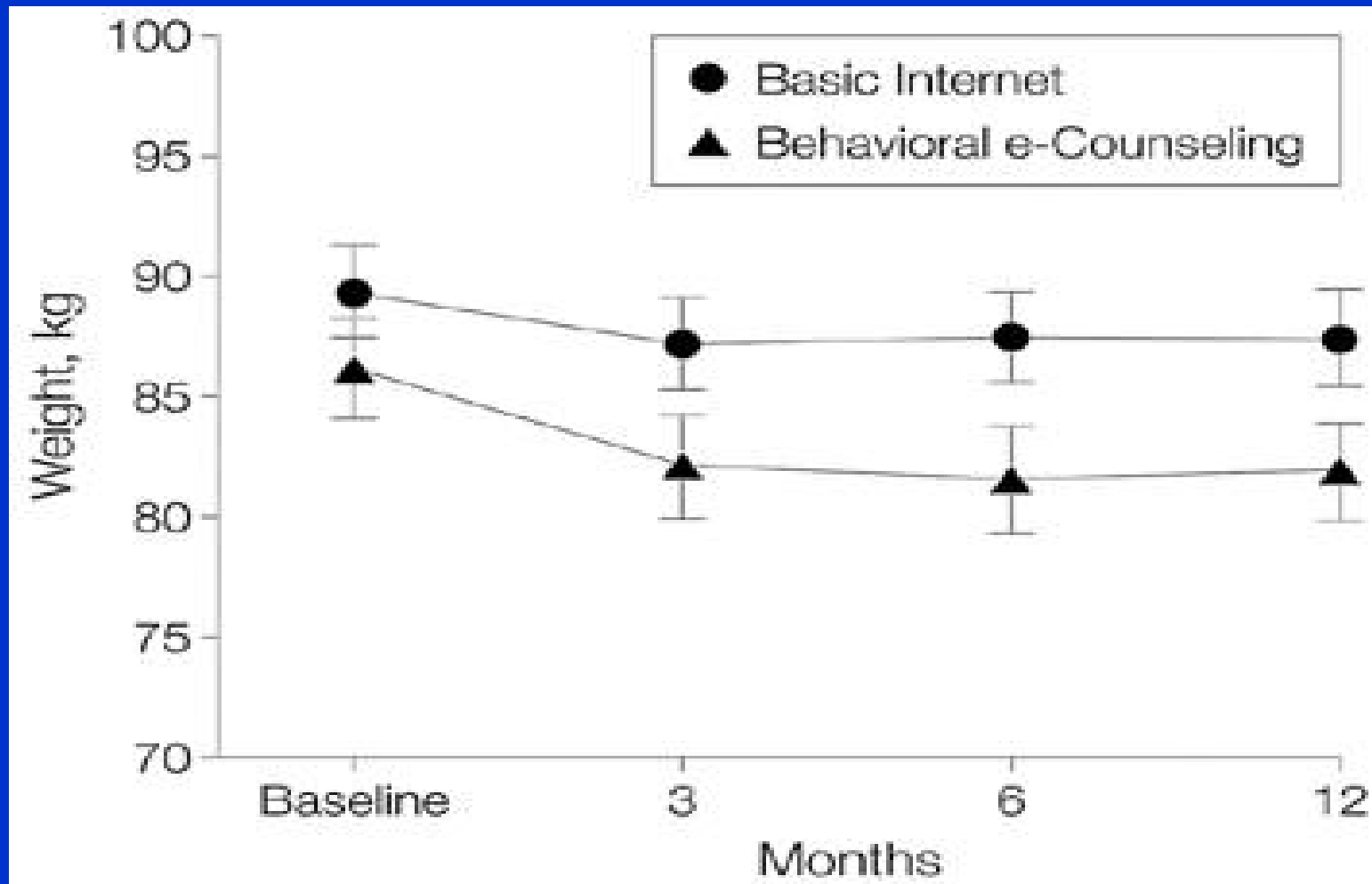
TRENDS IN THE LONG-TERM MANAGEMENT OF OBESITY

- **Meal Replacements**
- **Internet Behavioral Counseling**
- **Pharmacotherapy + Behavioral Counseling**

Four Year Body Weight Loss



INTERNET: BEHAVIORAL COUNSELING (1 YEAR)



Tate, Jackvony, & Wing, JAMA, 2003

OBESITY PHARMACOTHERAPY

Systemically Acting

System	Mechanism	Examples
CNS	Noradrenergic Stimulate norepinephrine and dopamine release	Phentermine
CNS	Noradrenergic & serotonergic Block norepinephrine, serotonin and dopamine reuptake	Sibutramine

Nonsystemically Acting

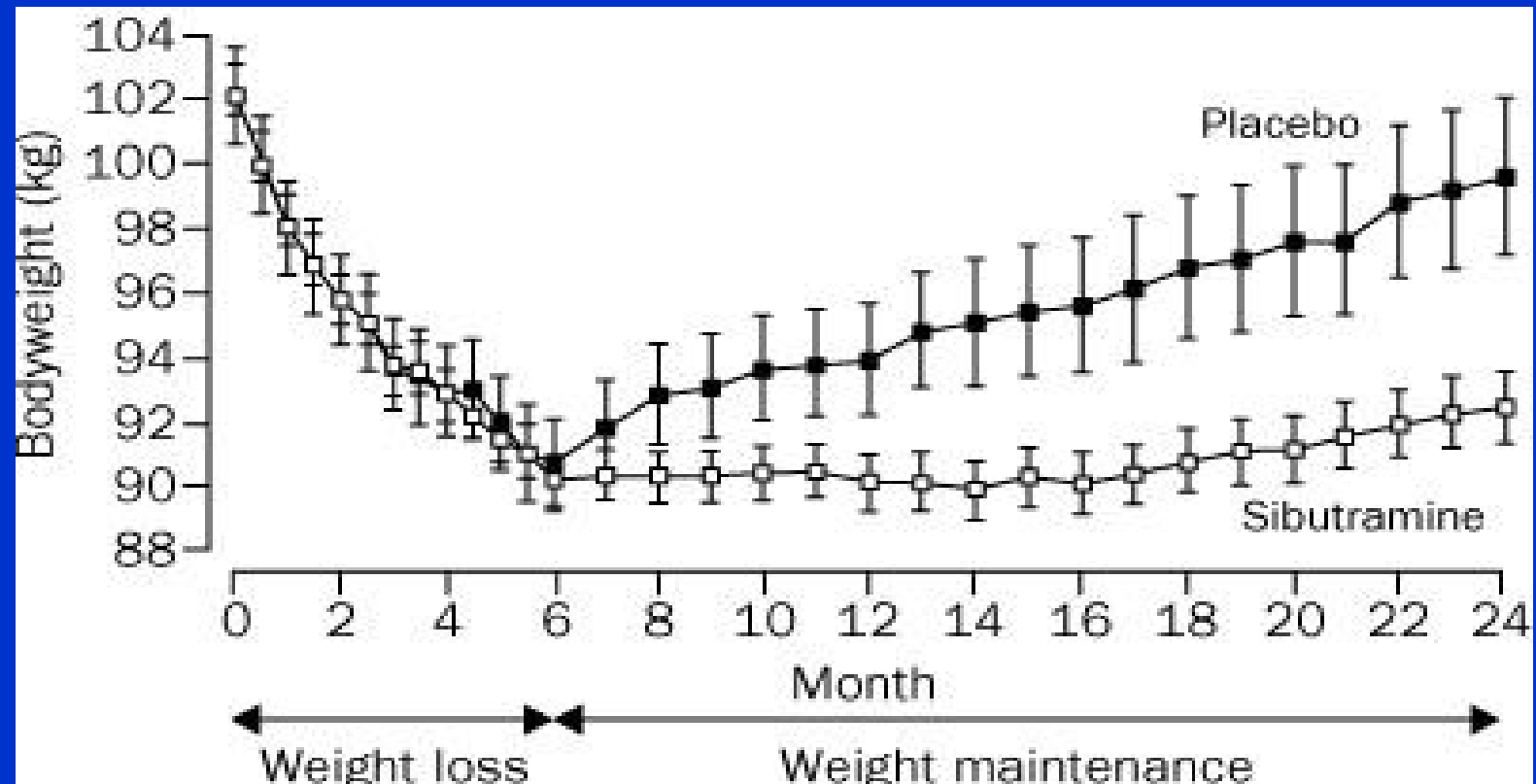
Digestive	Inhibition of lipase	Orlistat
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SIBUTRAMINE: MODE OF ACTION

- **Inhibition of Serotonin and Noradrenaline Reuptake**
- **Enhancement of Satiety**
- **Increased Energy Expenditure**

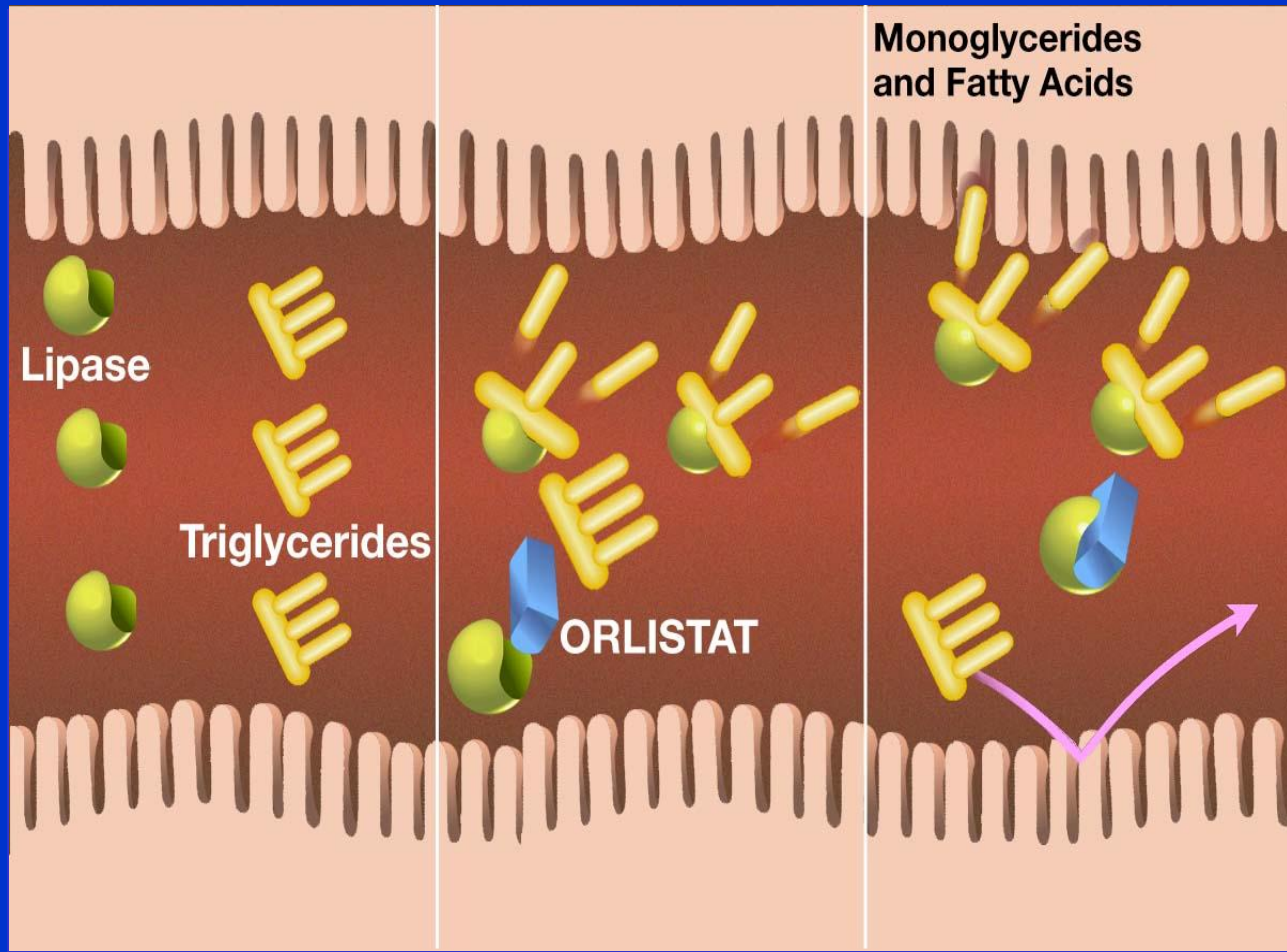
STORM

Study Results



James WPT et al., *The Lancet* 2000;356:2119-2125

ORLISTAT (XENICAL) MECHANISM OF ACTION



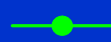
XENDOS RESULTS: EFFECT OF XENICAL ON BODY WEIGHT

Change in

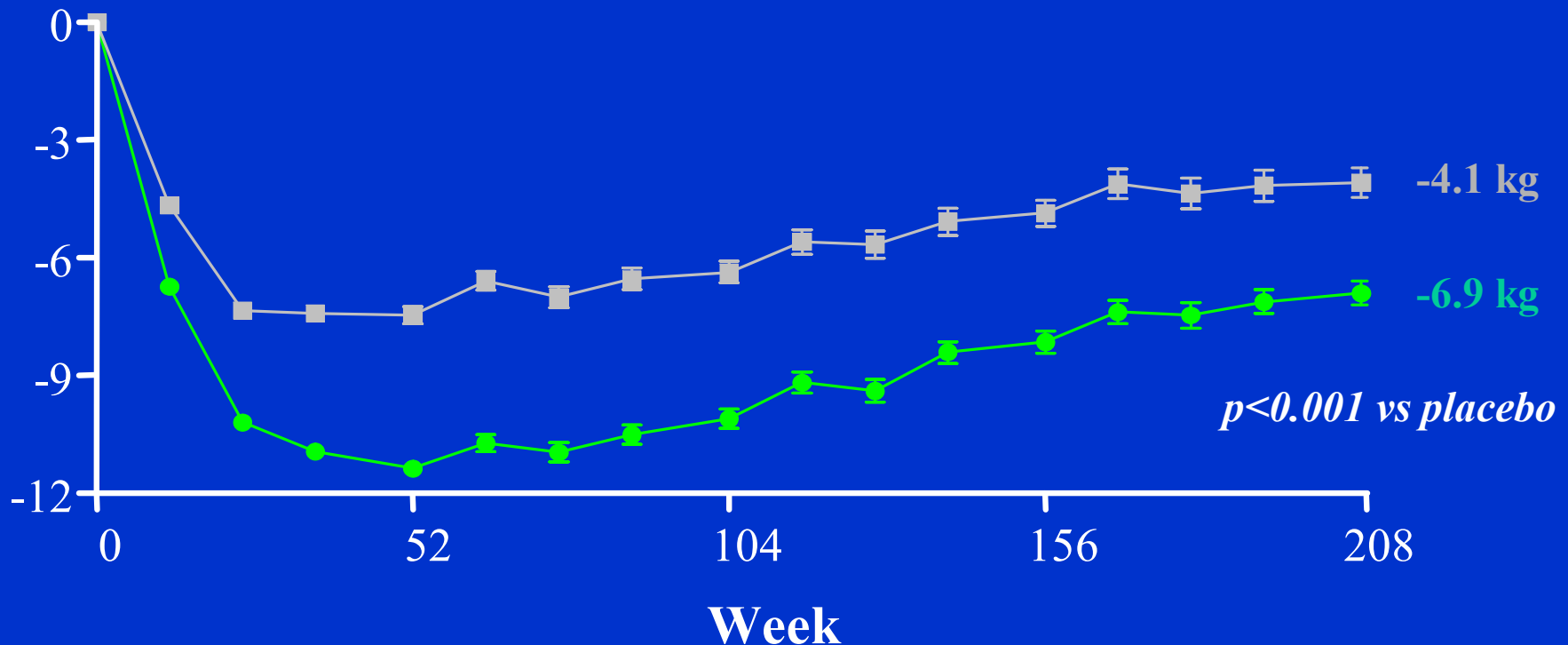
weight (kg)



Placebo + lifestyle

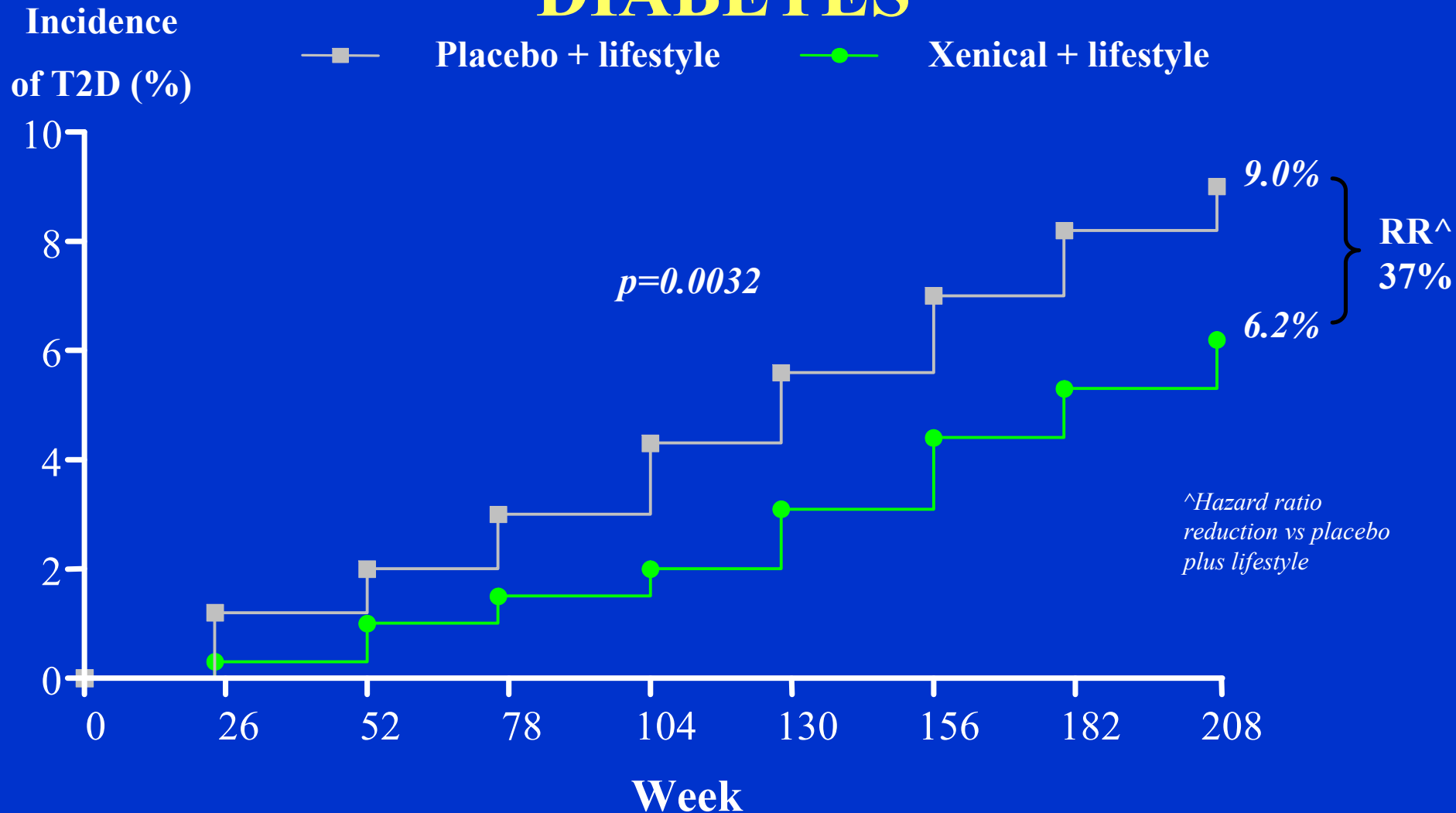


Xenical + lifestyle

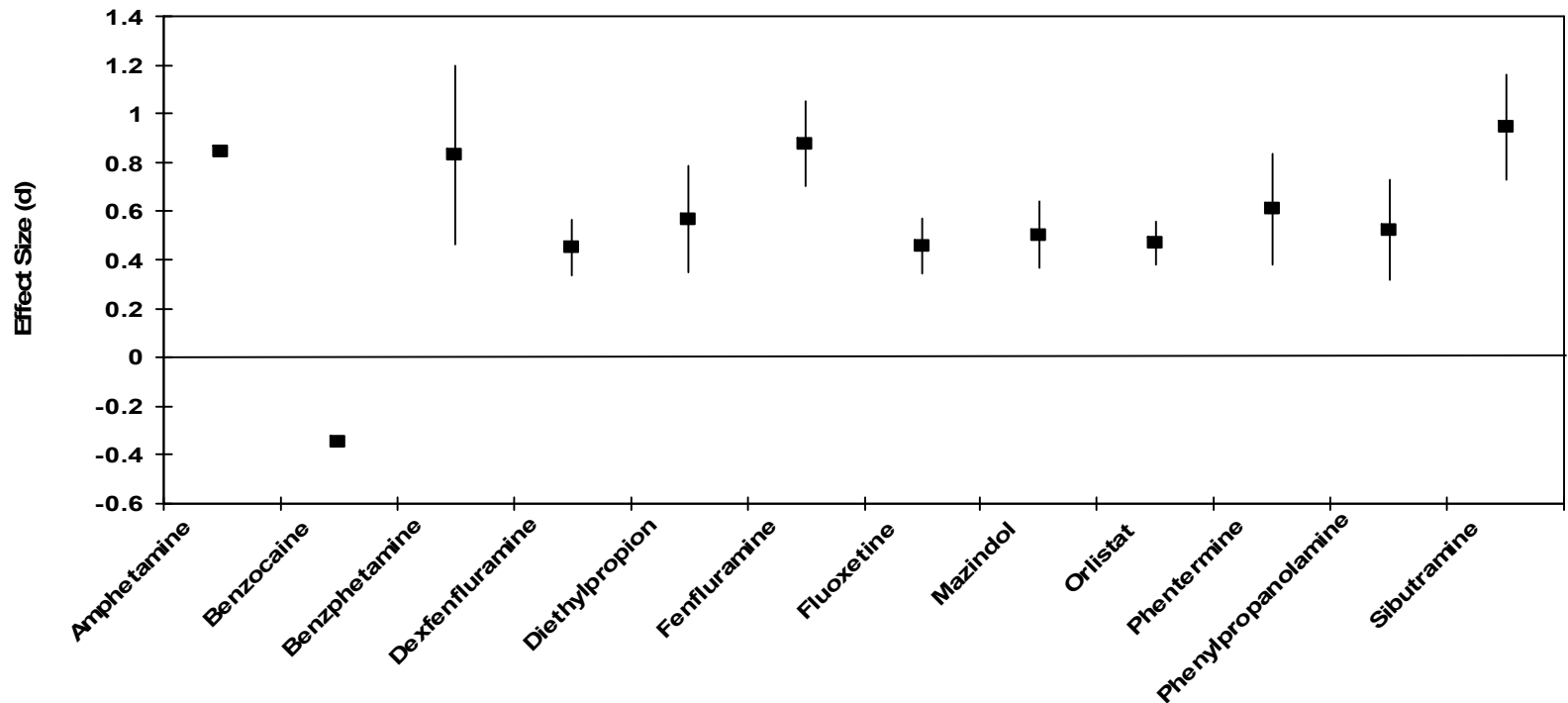


Sjostrom et al., 9th ICO, Sao Paulo 2002. Poster Presentation

XENDOS RESULTS: CUMMULATIVE INCIDENCE OF TYPE 2 DIABETES



Pharmacotherapy of Obesity



The maximal placebo-subtracted weight loss never exceed 4.0 kg for any single drug comparison.

Haddock, Poston, Foreyt, & Ericsson, 2002

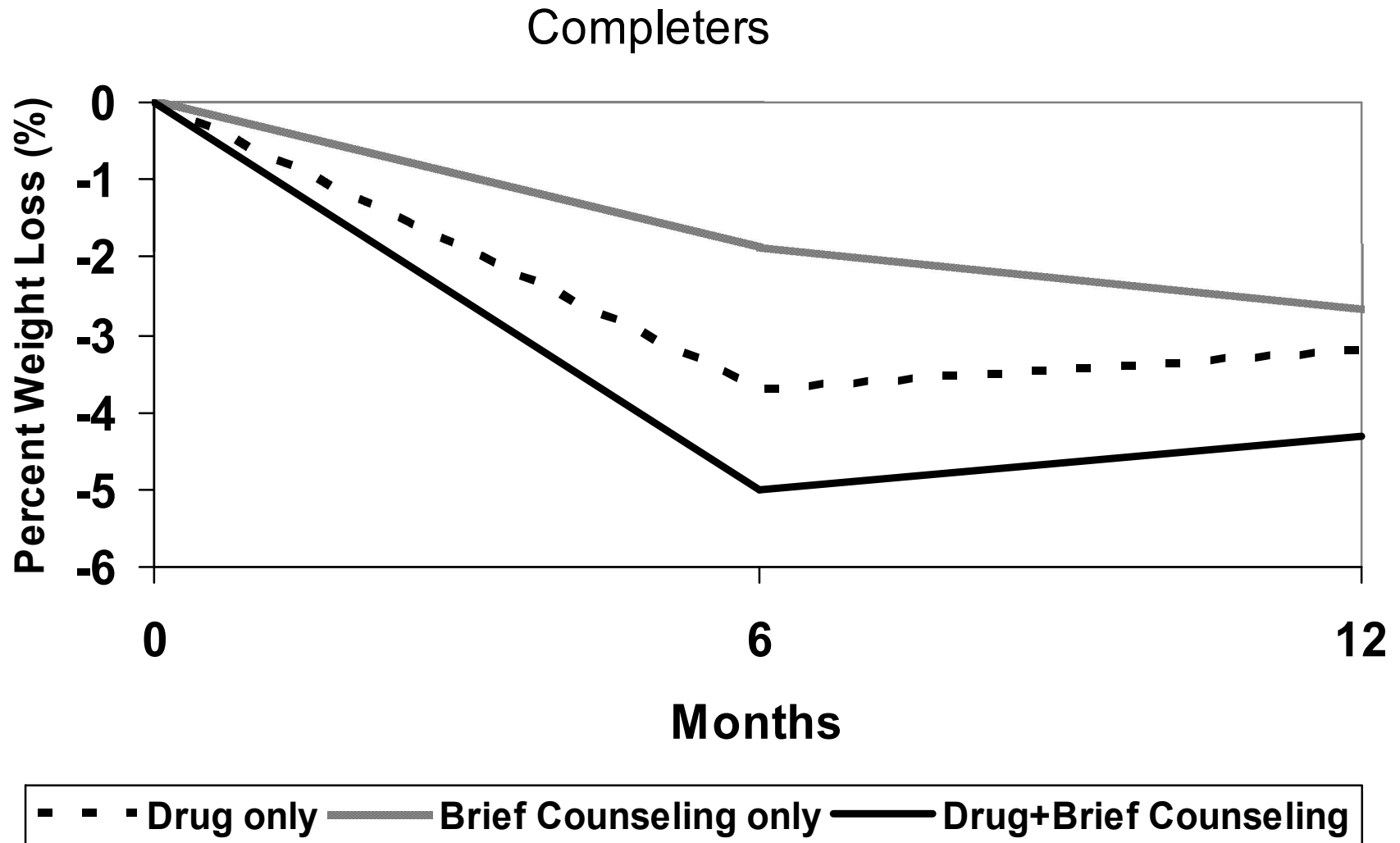
BRIEF COUNSELING STUDY

- **15 minute counseling/month**
- **Drug only**
- **Behavioral counseling only**
- **Drug + behavioral counseling**

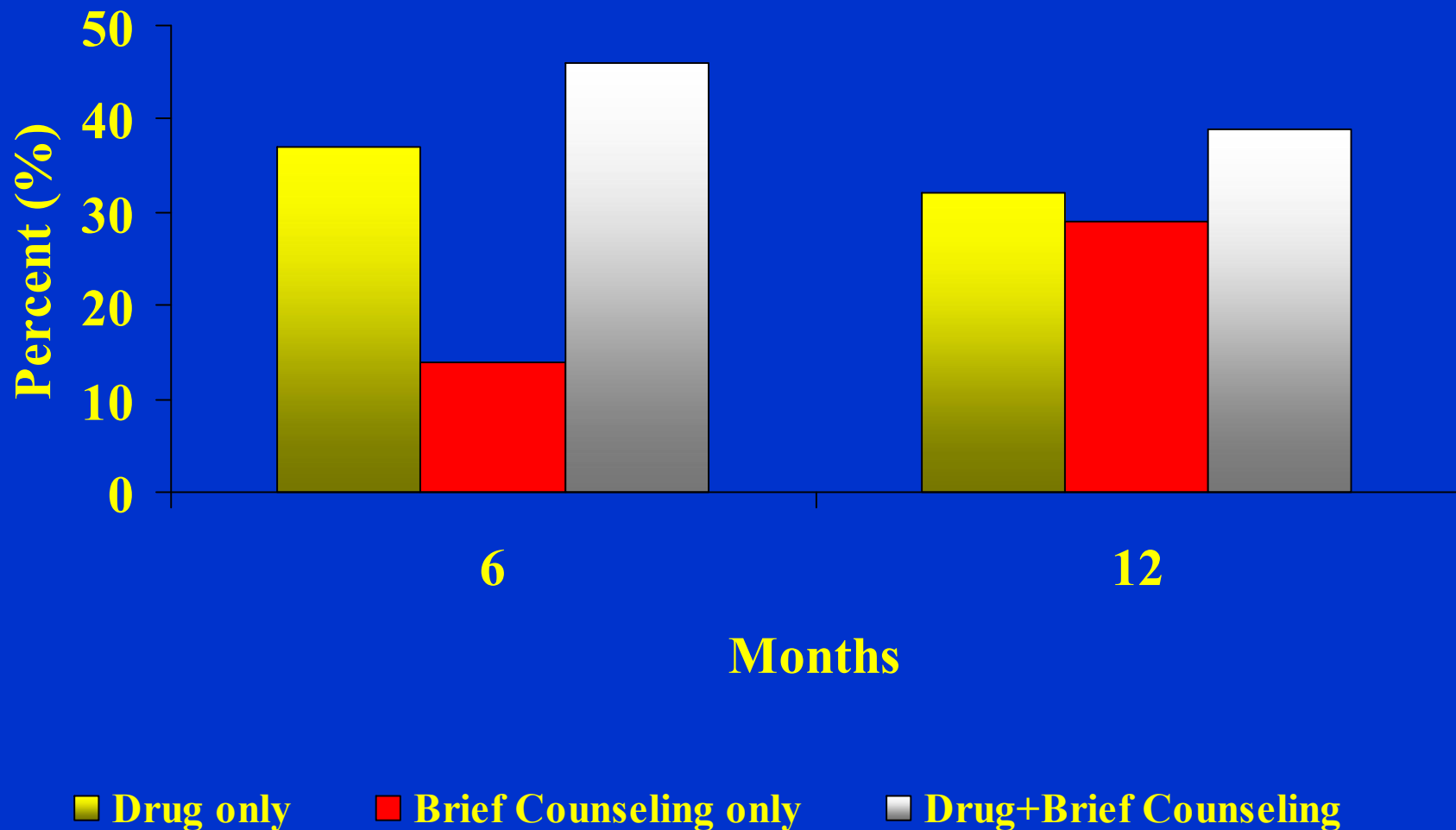
BRIEF COUNSELING STUDY

- **Review food/physical activity records**
- **Review goals from last visit**
- **Review problems & solutions**
- **Set realistic goals**
- **Give positive feedback**
- **Sign contract**

Percent Weight Loss in Completers



Proportion Meeting $\geq 5\%$ Weight Loss Criterion Among Completers



BIOCHEMISTRY OF FAT METABOLISM

Biochemical Interest	Believed Mechanism	Potential Drug
Leptin Receptor	When mutated, resists leptin binding	Repairs receptor; tailored leptin-like molecule
Neuropeptide Y	Stimulates carbohydrate craving	NPY antagonist

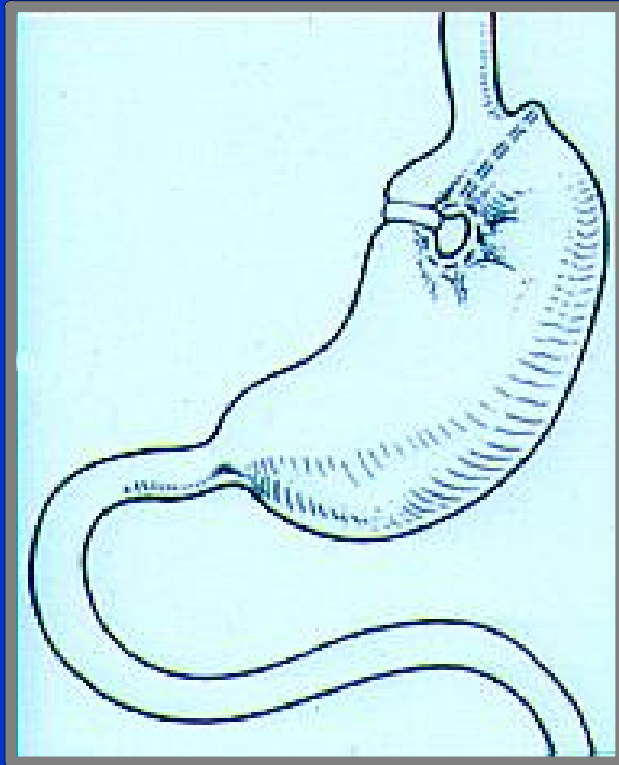
BIOCHEMISTRY OF FAT METABOLISM

Biochemical Interest	Believed Mechanism	Potential Drug
Peptide YY ₃₋₃₆	Reduces appetite and food intake	PYY agonist
Ghrelin	Increases appetite	Ghrelin antagonist

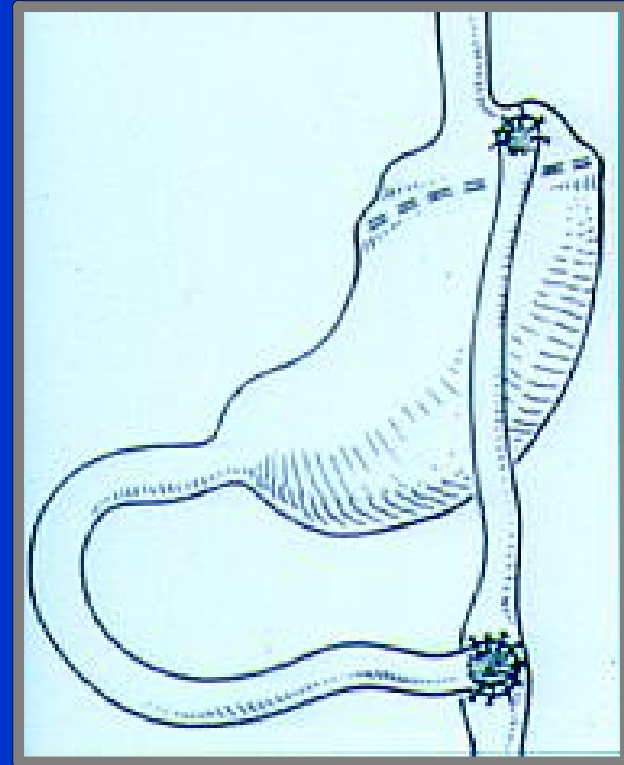
BIOCHEMISTRY OF FAT METABOLISM

Biochemical Interest	Believed Mechanism	Potential Drug
Galanin	Stimulates fat intake and lowers insulin levels	Galanin antagonist
Cholecystokinin	Signals brain to stop eating	CCK agonist
Dopamine	Signals brain to stop eating	Dopamine/fatty acid combination drug

Gastric Surgery



Vertical Banded Gastroplasty



Roux-en-Y Gastric Bypass

Consensus Development Conference Panel
Ann Int Med 1991; 115:956

Bottom Line

- Obesity is an environmental problem
- Despite progress in genetic research, public health advances only will occur when we take the environment seriously
- Acknowledging the role of the environment in the etiology of obesity will help us stop focusing on the individual, which is encouraged by genetic and biological explanations, and begin focusing on changing the toxic environment
- Until we do this, we will not make substantial progress in addressing the epidemic of obesity

Poston & Foreyt, Atherosclerosis, 1999

REALISTIC MANAGEMENT GOALS

- 5-10% weight loss
- Health, energy and fitness
- Well-being and self-esteem
- Mood and appearance
- Functional and recreational activity

KEY ELEMENTS

- **Focus on health and energy**
- **Food and physical activity diaries**
- **Gradual increase in physical activity**
- **Gradual reduction in dietary fat**
- **No feelings of food deprivation**
- **Social support groups**

SUMMARY: FACILITATING BEHAVIORAL CHANGE

- **Have patient keep ongoing records (food and physical activity diaries)**
- **Have patient set realistic goals**
- **Help patient identify when, where, and how behaviors will be carried out**
- **Follow up patient's progress**
- **Congratulate patient's successes: do not criticize**

BENEFITS OF MODEST WEIGHT LOSS

“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
- ↓ Glycated hemoglobin
- ↓ Triglyceride levels
- ↑ HDL cholesterol levels
- ↓ LDL cholesterol levels
- ↓ Blood pressure
- ↑ Quality of life levels

WEIGHT MAINTENANCE

“The Current Epidemics of Chronic Diseases are a Result of Discordance Between Our Ancient Genes and Modern Lifestyle.”

Eaton et al., *The Paleolithic Prescription*. 1988.

WEIGHT MAINTENANCE

**“Accuse not nature.
She has done her part.
Do Thou but Thine.”**

John Milton (1687), *Paradise Lost*

LIVING

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