Session 2: Effective Approaches for Promoting Weight Management and Physical Activity in Cancer Survivors and Other Populations

Lessons Learned from

Weight Management and Physical Activity Interventions in Other Populations

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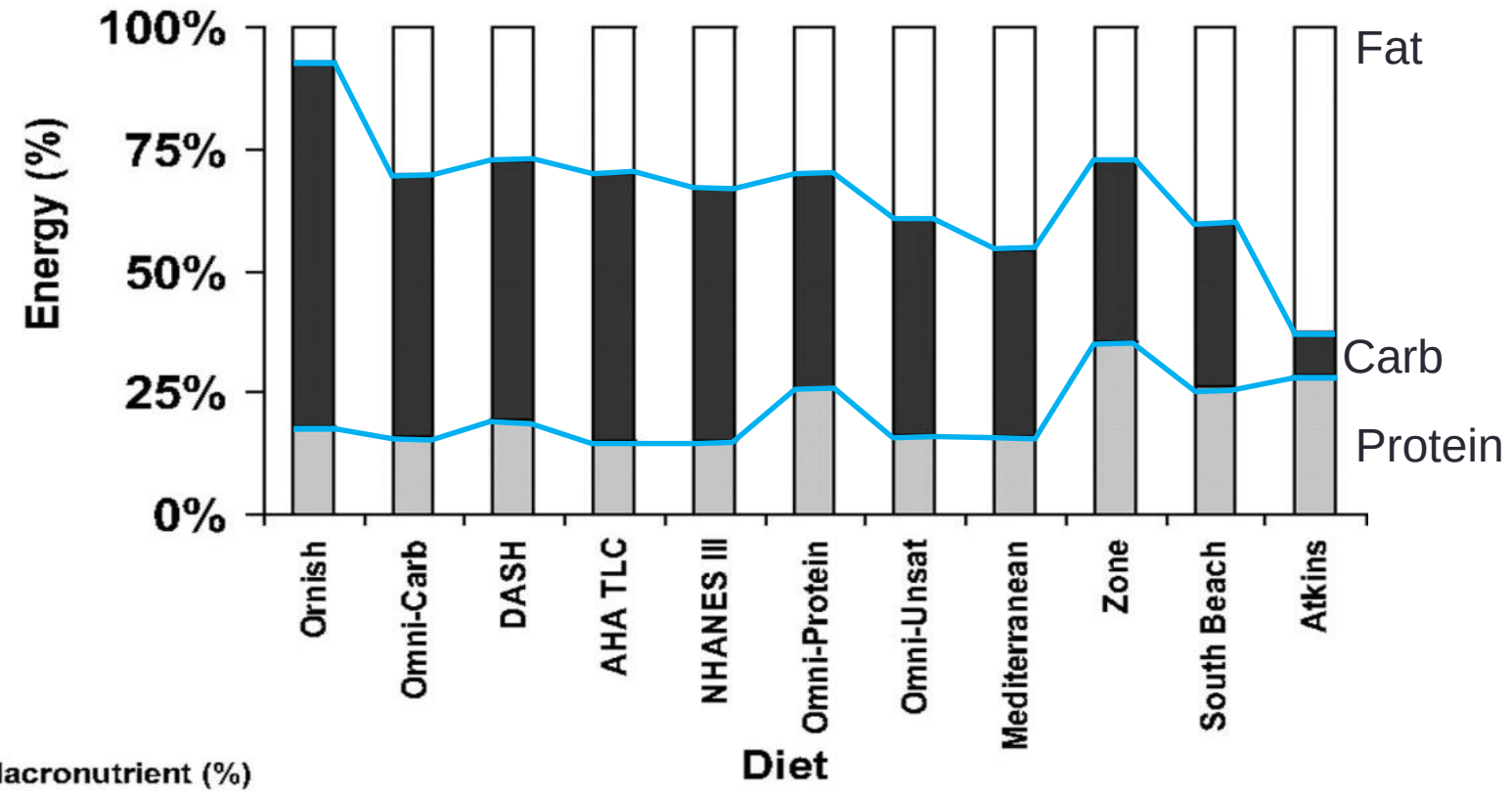
February 13, 2017

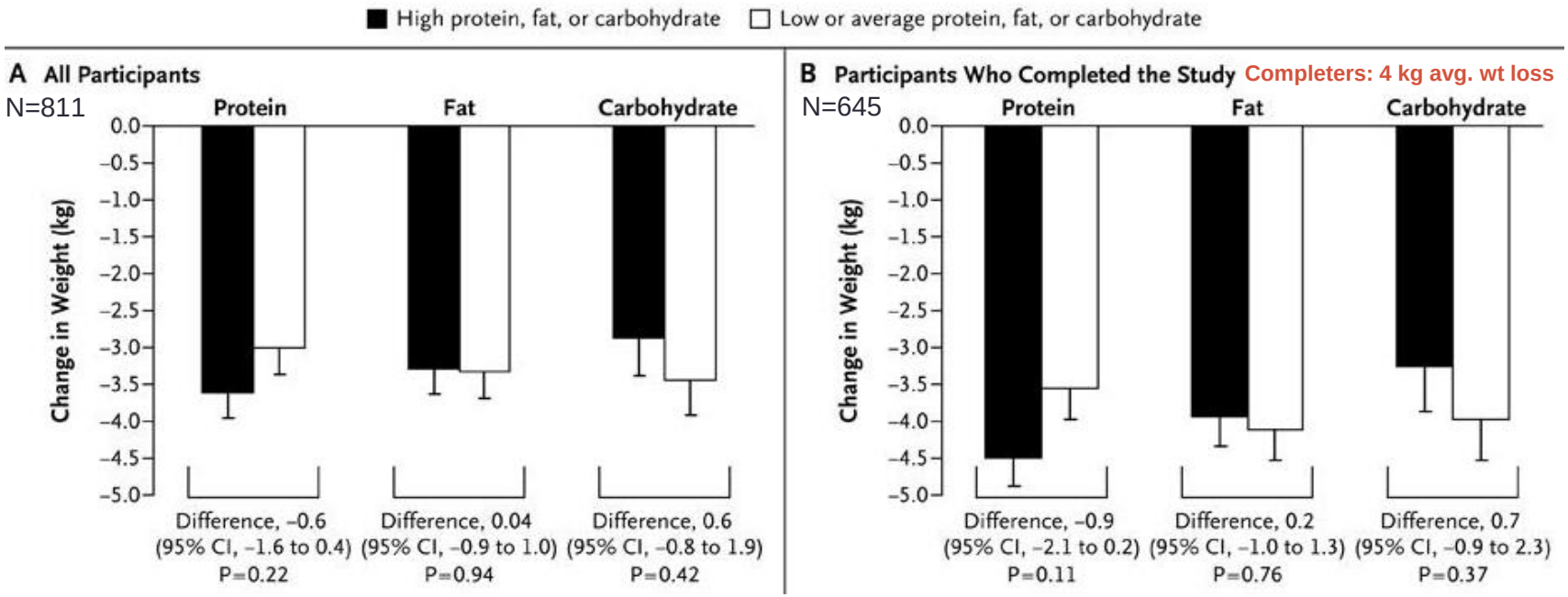
Great Variation in Macronutrient Profiles of Popular Diets



Macronutrient (%)											
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

de Souza RJ, et al. Am J Clin Nutr 2008;88:1-11.

Calories *not Macronutrients* Determine Weight Loss at Two Years



CONCLUSIONS:

Reduced-calorie diets

result in clinically meaningful weight loss regardless of which macronutrients they emphasize

Assigned Diets:
15 to 25% PRO
20 to 40% FAT
35 to 65% CHO
(P>0.20)

Sacks FM, et al. N Engl J Med. 2009 Feb 26;360(9):859-73.

Low-Carb Diets

Source of Calories or Caloric Intake?

Systematic Review

- 107 articles from 1966-2003
- 3,268 participants
- 5 studies > 90 days
- None were controlled trials

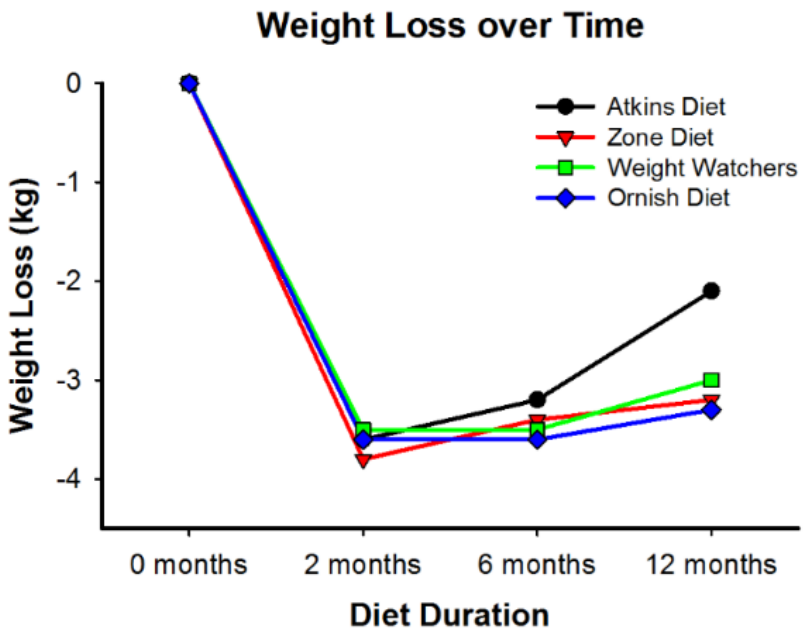
Conclusion:

- Weight loss principally associated with decreased caloric intake and increased diet duration, not reduced carbohydrates
- Insufficient evidence for recommendation for or against use of low-carbohydrate diets

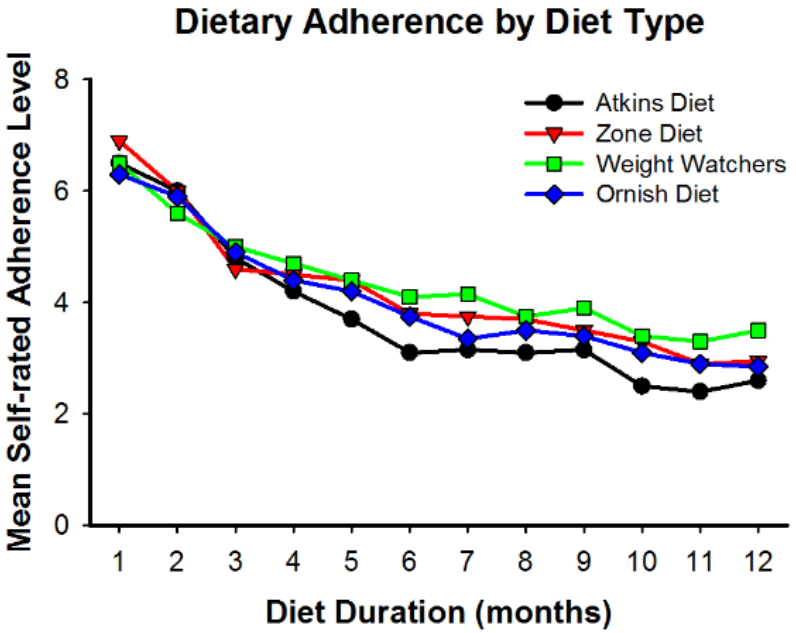
Bravata DM, et al., JAMA. 2003 Apr 9;289(14):1837-50.

Adherence - Not Diet - Predicts Success

Comparison of Four Popular Diets



Diet type does not predict weight loss



Adherence predicts weight loss

RESULTS: Amount of weight loss was associated with self-reported dietary adherence level ($r = 0.60$; $P<.001$) but not with diet type ($r = 0.07$; $P = .40$)

Dansinger ML, et al. JAMA. 2005 Jan 5;293(1):43-53.

Adherence - Not Diet - Predicts Success

5 Meta-analyses:
ADHERENCE
is key to weight loss

- Consistent finding in four 2012 meta-analyses, each summarizing 13 to 24 trials: adherence was most strongly associated with weight loss[1-4]
- Meta-analysis 2014: 48 trials, n = 7,286; conclusion: any diet a patient will adhere to lose weight is best[5]

1. Ajala O, English P, Pinkney J. Am J Clin Nutr. 2013 Mar;97(3):505-16.
2. Wycherley TP, et al. Am J Clin Nutr. 2012 Dec;96(6):1281-98.
3. Hu T, et al. Am J Epidemiol. 2012 Oct 1;176 Suppl 7:S44-54.
4. Bueno NB, et al. Br J Nutr. 2013 Oct;110(7):1178-87.
5. Johnston BC, et al. JAMA. 2014;312(9):923-933.

2013 AHA/ACC/TOS Guideline for the Management of Overweight and Obesity in Adults:

A Report of the American College of Cardiology/ American Heart Association Task Force on Practice Guidelines and The Obesity Society

July 1, 2014

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2013 AHA/ACC/TOS Guideline for the Management of Overweight and Obesity in Adults☆

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Endorsed by the American Association of Cardiovascular and Pulmonary Rehabilitation, American Pharmacists Association, American Society for Nutrition, American Society for Parenteral and Enteral Nutrition, American Society for Preventive Cardiology, American Society of Hypertension, Association of Black Cardiologists, National Lipid Association, Preventive Cardiovascular Nurses Association, The Endocrine Society, and WomenHeart: The National Coalition for Women With Heart Disease

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J Am Coll Cardiol. 2014 Jul 1;63(25 Pt B):2985-3023.

New Guidelines: Recommendations

2013 AHA/ACC/TOS Guideline for the Management of Overweight and Obesity in Adults

1. **Use BMI** to identify risk; advise patients of their risk
2. **Use waist circumference** to identify risk; advise patients of their risk
3. **3%-5% sustained weight loss reduces risk factors and risk of diabetes**

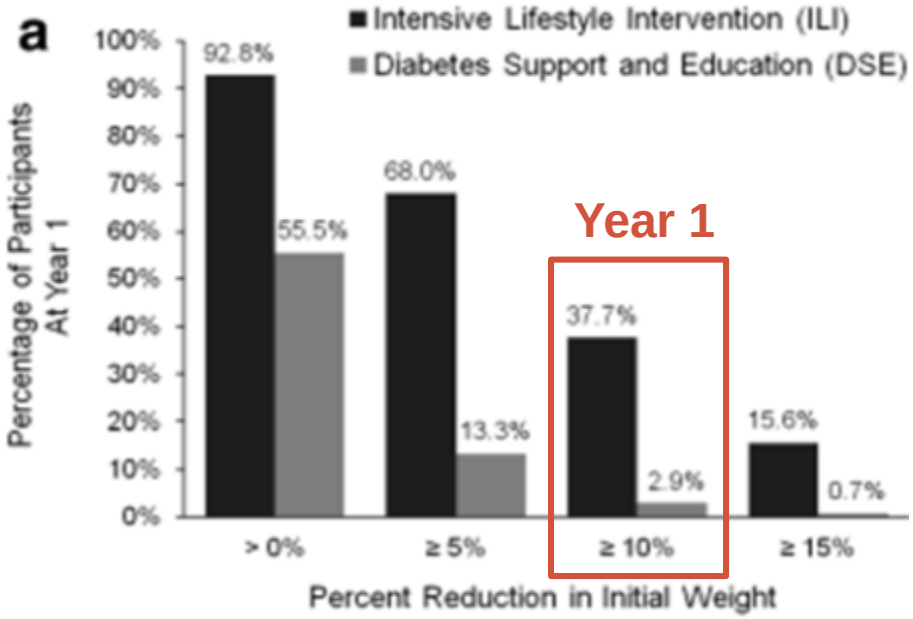
4. **Prescribe set number of calories** per day
5. There is **no ideal diet**
6. Advise obese adults who meet criteria that **surgery** may be an option

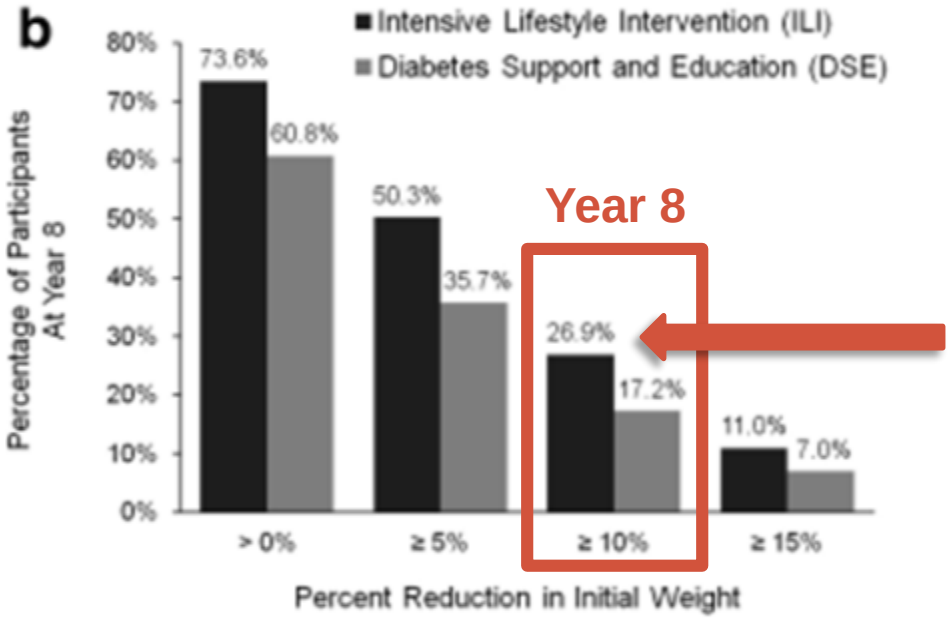
J Am Coll Cardiol. 2014 Jul 1;63(25 Pt B):2985-3023.
2013 AHA/ACC/TOS Guideline for the Management of Overweight and Obesity in Adults

Lessons Learned:

Successful Lifestyle Weight Loss Programs for Noncancer Patients

Look AHEAD Study





At 8 years:

26.9% of the ILI group had ≥10% initial weight loss

(vs. 17.2% DSE group)

($P < 0.001$)

Look Ahead Research Group. *Obesity (Silver Spring).* 2014 Jan;22(1):5-13.

DPP/DPPOS: 15 Year Results

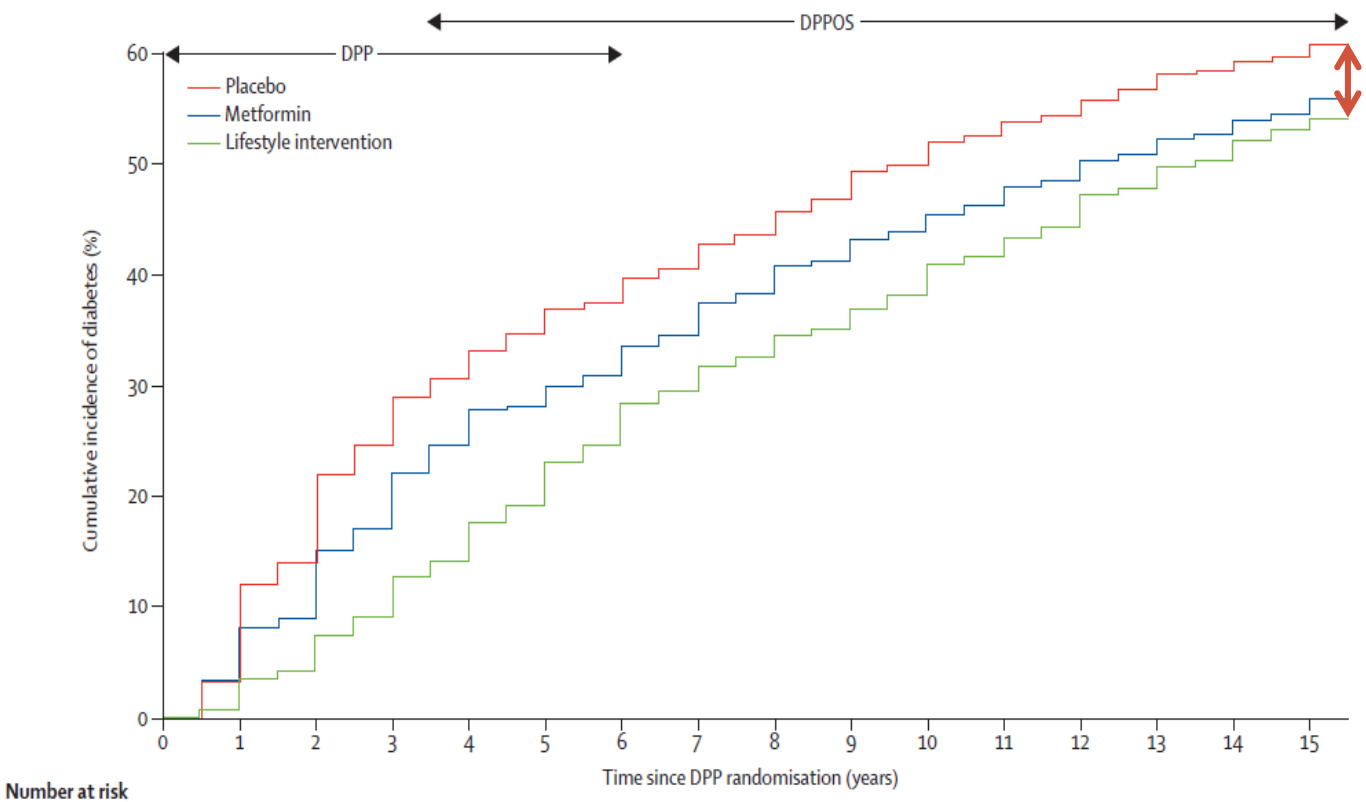


Figure 2: **Cumulative incidence of diabetes by treatment group in the 2776 DPP–DPPOS participants**
The Diabetes Prevention Program (DPP) and DPP Outcomes Study (DPPOS) periods, and the overlap between them, are shown. Over the entire study, the cumulative incidence was 27% lower for the lifestyle group than for the placebo group ($p<0.0001$) and 18% lower for the metformin group than for the placebo group ($p<0.0001$). The difference between the lifestyle and metformin groups was not significant ($p=0.10$).

Cumulative diabetes incidence 27% lower lifestyle group vs. placebo

For every 2.2 lbs (1 kg) of weight loss there is a 16% reduction in the risk of developing diabetes

Lancet Diabetes Endocrinol. 2015 Nov;3(11):866-75.

High Protein Diets: Literature Overview

Higher-protein diets provide improvements in:

- Appetite
- Body weight management
- Cardiometabolic risk factors, or
- All of these health outcomes

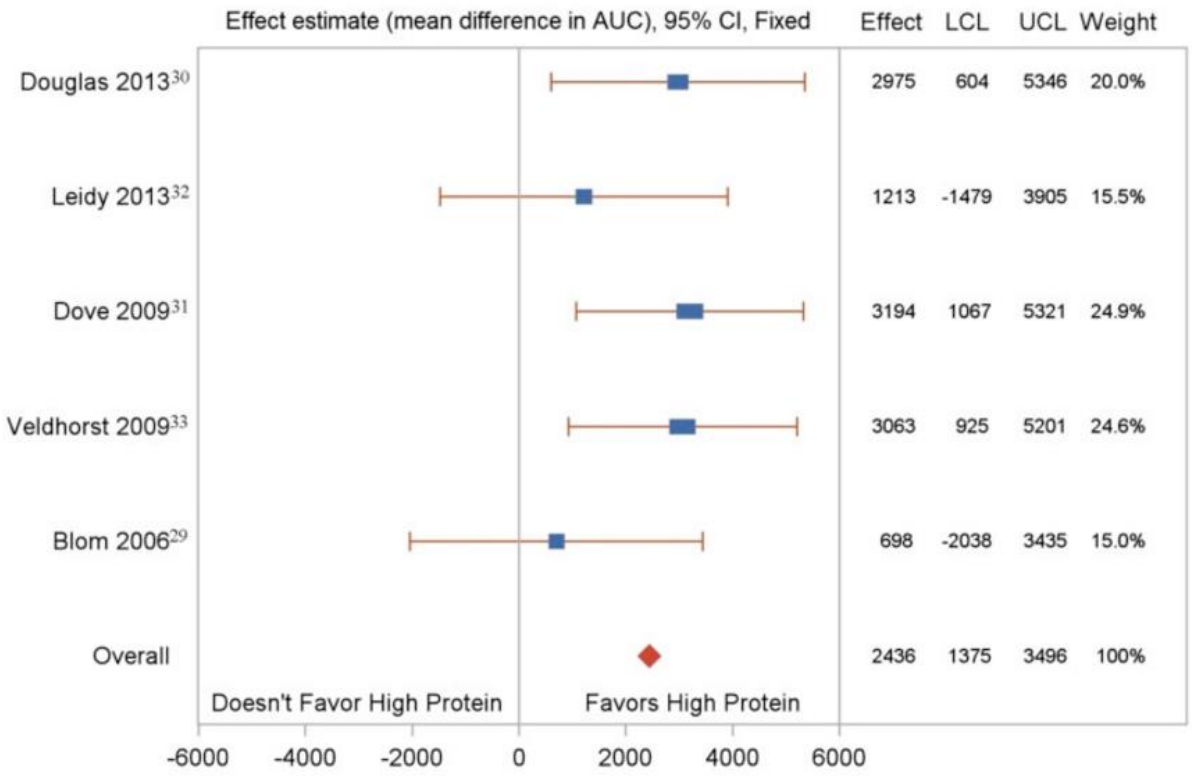
1.2-1.6 gm protein/ kg of body wgt *per day*

~25-30 gm protein *per meal*

Leidy HJ, et al. Am J Clin Nutr 2015;101(Suppl):1320S–9S.

Meta-Analysis: Effects of Increased Protein Intake on Fullness

Higher protein preloads have a greater effect on fullness than lower protein preloads

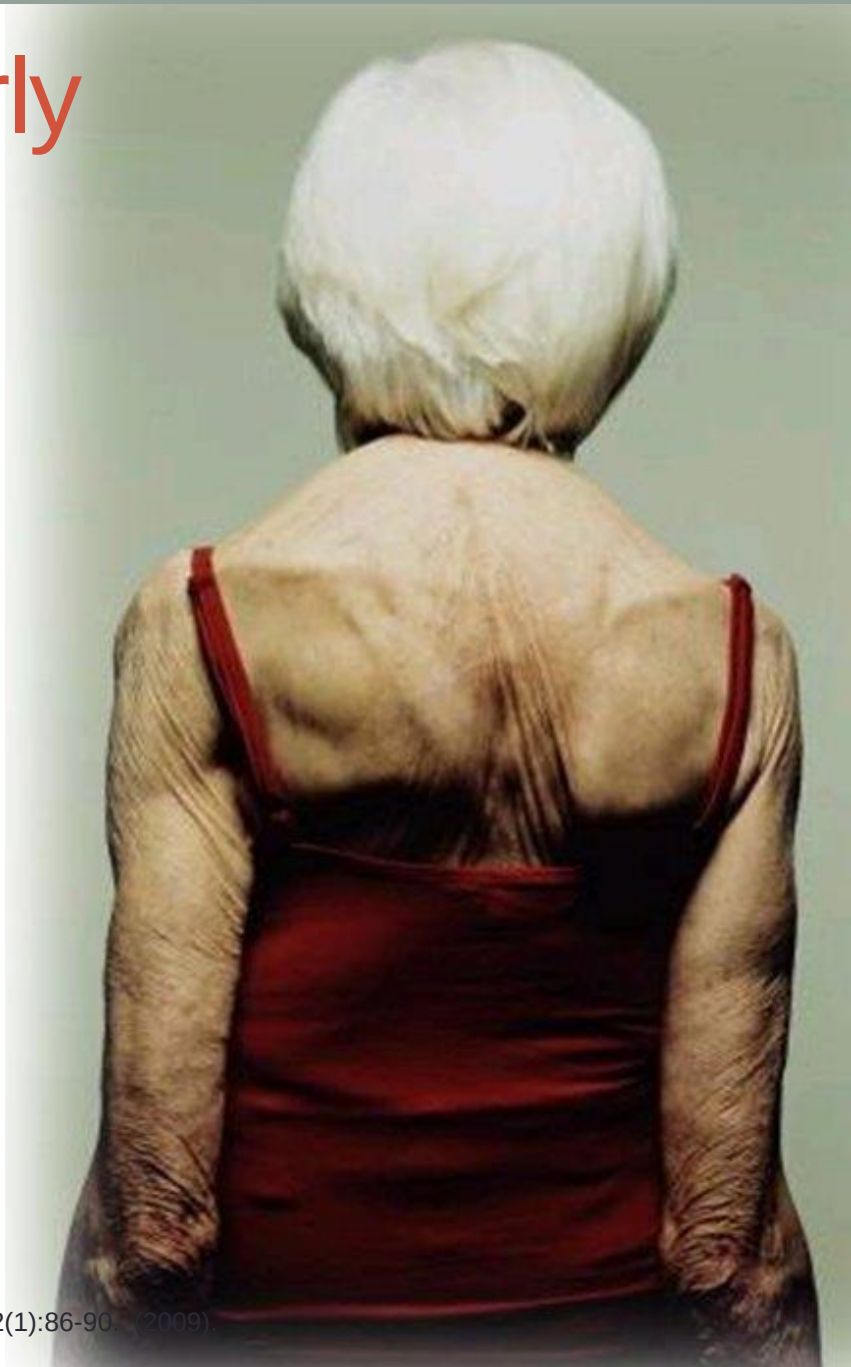


Overall effect estimate: 2,435.74 mm.240 min
(95% CI 1,375.18 to 3,496.31 mm.240 min; P<0.0001)

Dhillon J, et al. *J Acad Nutr Diet*. 2016 Jun;116(6):968-83.

Protein Intake in Elderly

- **1.6-1.8 g/kg/day supports anabolism at rest or after exercise in older men and women[1]**
- **Leucine enriched AA – beneficial in elderly[2]**
- **Prevent sarcopenia by including 25-30 gm high quality protein per meal to maximize muscle protein synthesis[3]**



1. Wolfe RR. *Am J Clin Nutr*. 2006 Sep;84(3):475-82.
2. Katsanos CS, et al. *Am J Physiol Endocrinol Metab*. 2006 Aug;291(2):E381-7.
3. Paddon-Jones D, Rasmussen BB. *Curr Opin Clin Nutr Metab Care*. 2009 Jan;12(1):86-90. (2009).

Best Sources of High Quality Protein

DIETARY SOURCES

- **Light skinless chicken**
- **Fish**
- **Egg white**
- **Skim milk** (casein and whey)

NUTRITIONAL SUPPLEMENTS

- **Whey**
- **Colostrum**
- **Casein**
- **Milk proteins**
- **Egg protein**

Kreider RB, et al. Int J Sport Nutr 2010;7:7.

Lessons Learned:

Pediatrics

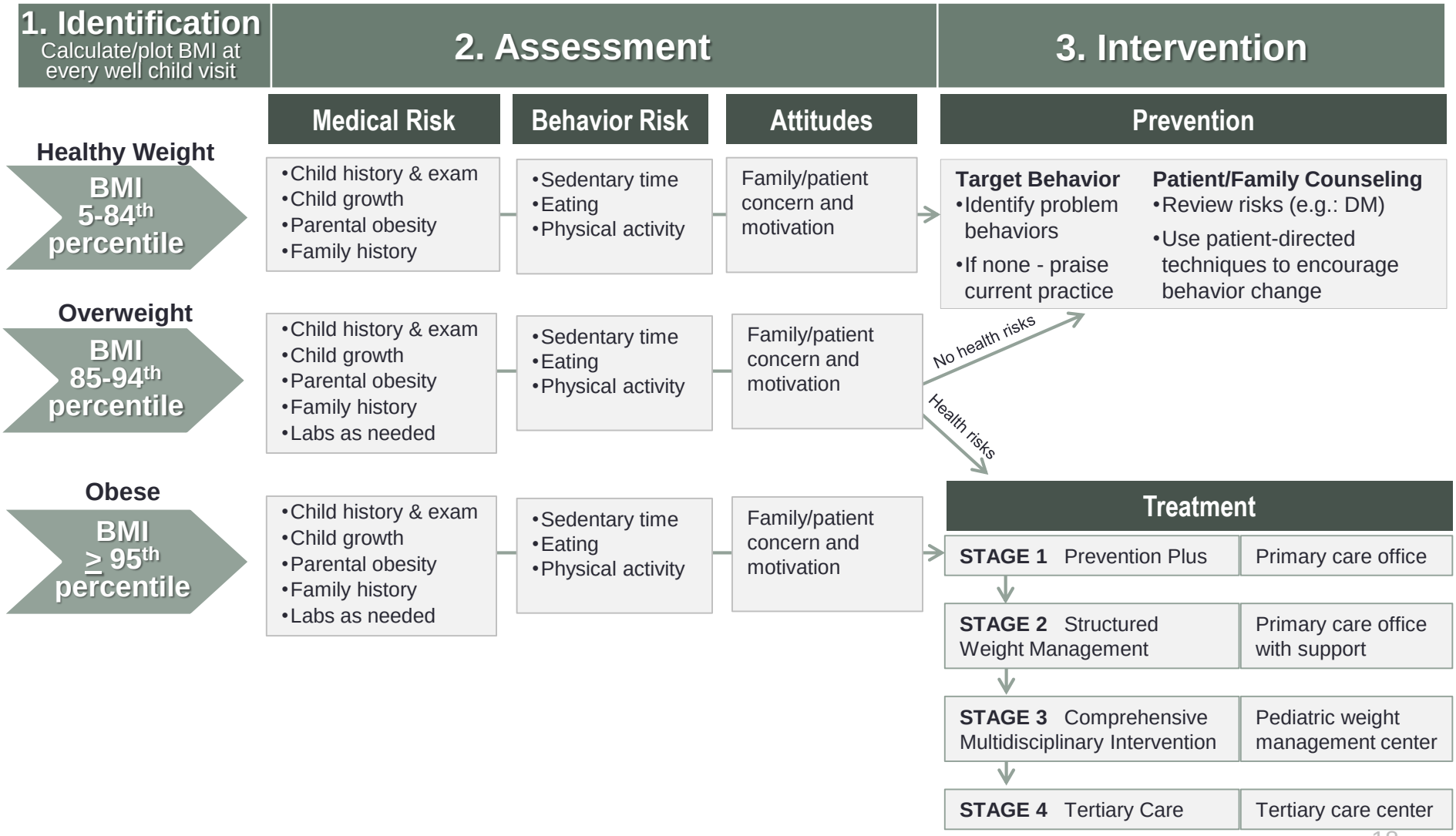
Stages of Treatment for Pediatric Obesity

Recommendations of American Academy of Pediatrics

Prevention Plus	Structured Weight Management	Comprehensive Multidisciplinary Intervention	Tertiary Care Intervention
Ambulatory care clinic: • Addresses medical evaluation and initial lifestyle counseling by primary care provider • Typically follow-up visits tailored to family needs	Ambulatory care clinic: • Addresses evaluation and lifestyle counseling by primary care • Providers and additional support from other health care professionals (e.g. registered dietitians, mental health providers) • Typically involves monthly follow-up	Weight management clinic: • Includes care by a multidisciplinary team consisting of specialists in medicine, dietetics, mental health, and exercise • Typically involves weekly or bi-weekly follow-up	Tertiary care center: • Intensive interventions for select patients by a specialty clinic multidisciplinary team • Tailored to the patient and may involve pharmacological and surgical options

Ireland K, Newby P, Keefe E, Meyers A, Lim-Miller A, Lenders C. In: Encyclopedia of Human Biology. Dulbecco and Abelson, eds. Chapter 626: Prevention and Treatment of Pediatric Obesity, 3rd edition. Elsevier; 2014 (In press)

Steps to Prevention and Treatment of Childhood Obesity: ≥ 2 Years Old



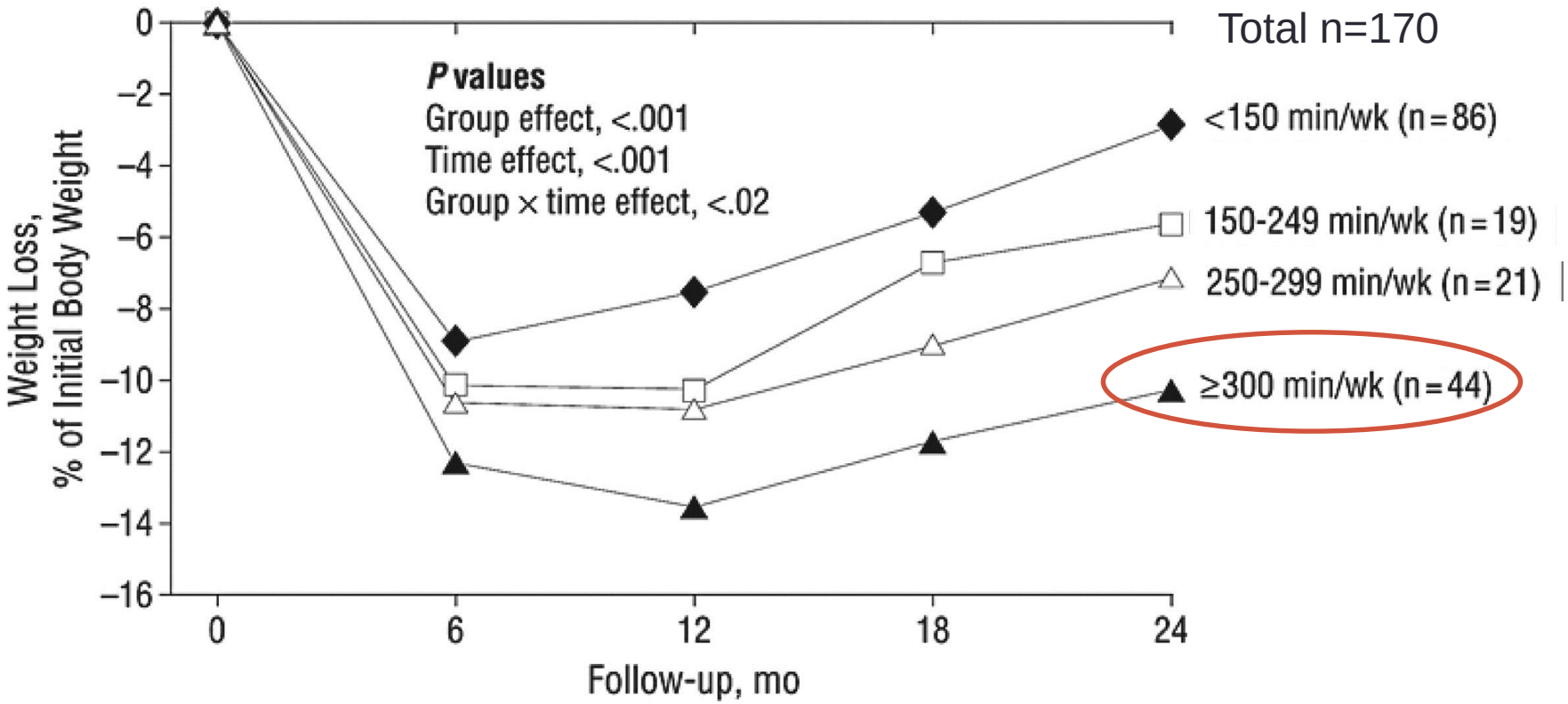
Barlow SE; Expert Committee. Pediatrics. 2007 Dec;120 Suppl 4:S164-92.

Lessons Learned:

Physical Activity

"The handle on your recliner does not qualify as an exercise machine."

Percentage Weight Loss by Minutes of Physical Activity *(calories per week)*



Those who exercised ≥300 min/wk (expending >2000 kcal/wk) maintained weight losses nearly **3 times** as great as those at 150 min/wk (expended 1000 kcal/wk)

Wadden TA, et al. Circulation. 2012 Mar 6;125(9):1157-70.

ACSM Position: Exercise and Aging

Participation in a regular exercise program is an effective intervention to reduce/prevent a number of functional declines associated with aging

AMERICAN COLLEGE of SPORTS MEDICINE
LEADING THE WAY

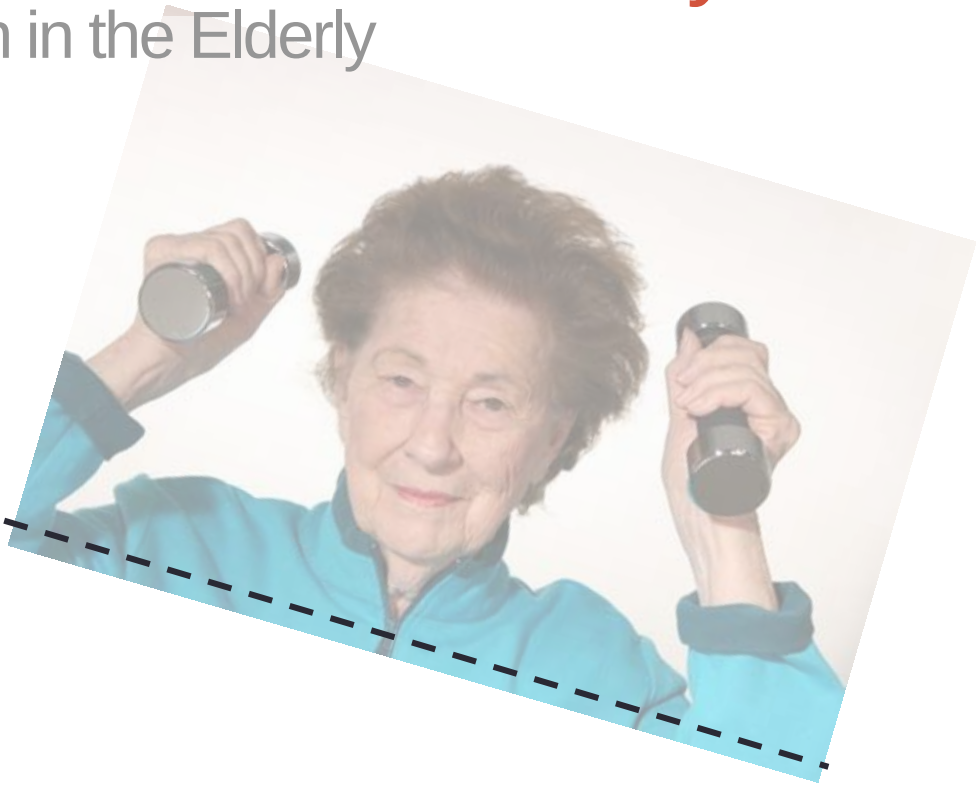
American College of Sports Medicine. Position Stand: exercise and physical activity for older adults. *Med Sci Sports Exerc*. 1998;30(6):992-1008.

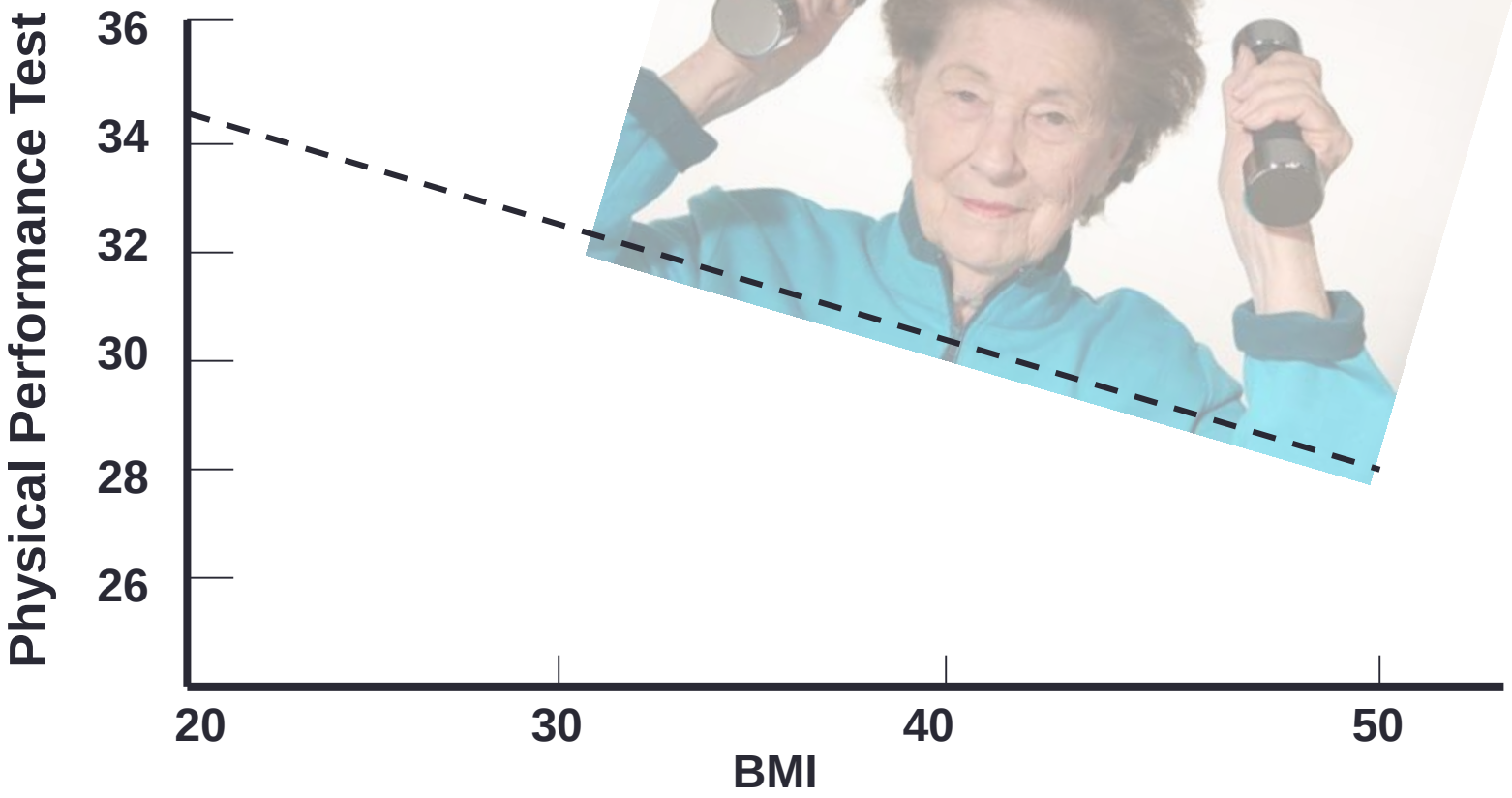
Goals of Exercise Intervention in Seniors

- **Increase strength**
- **Preserve lean body mass**
- **Rehabilitate from bed rest**
- **Increased functional capacity (activities of daily living)**
- **Reduce incidence of falls**
- **Improve Quality of Life**
- **Improve metabolic and biochemical markers**

Physical Function in Obese Elderly Women

A Quality of Life Concern in the Elderly





Apovian CM, et al. *Obes Res.* 2002 Aug;10(8):740-7. .

Progressive Resistance Training for Sarcopenia

PRT can reverse and at least partially prevent sarcopenia

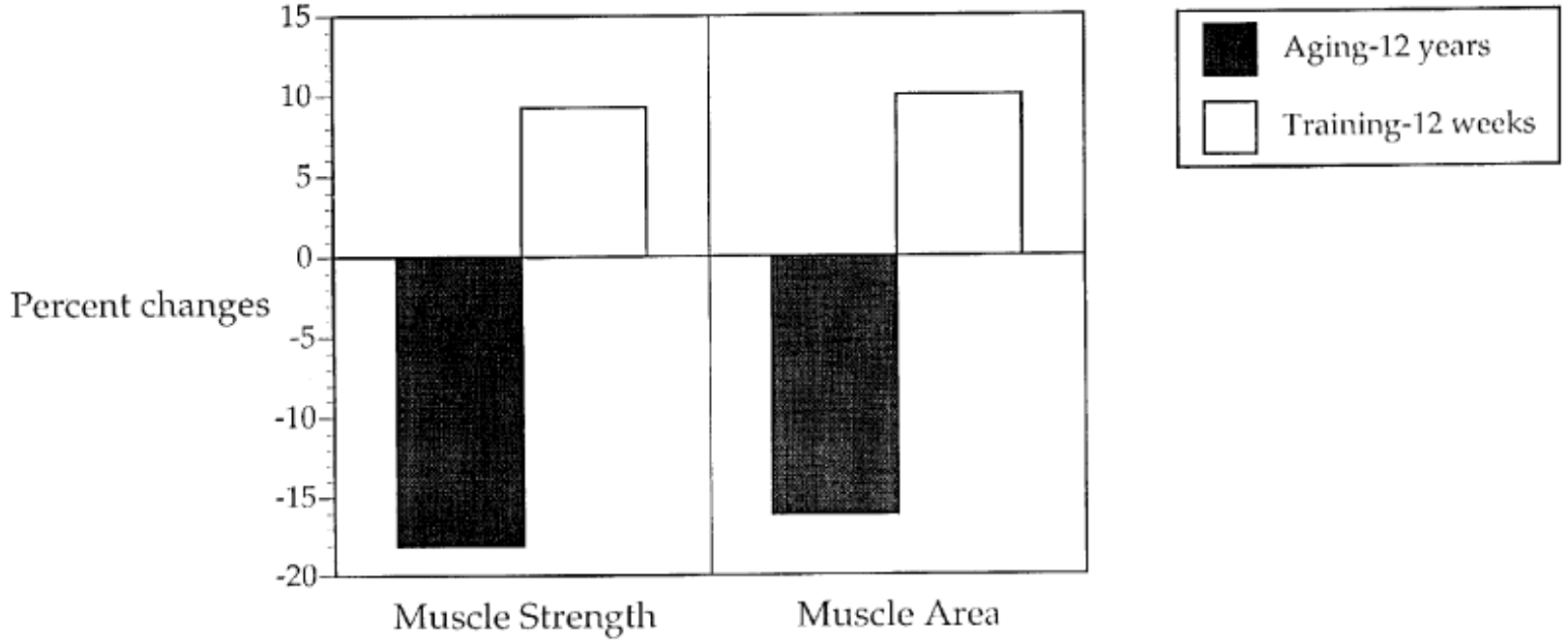


Figure 2 Change in strength and vastus lateralis area (measured by CT scan) over a 12 y follow-up period in 7 healthy men, and the amount gained during a 12 week period of intensive resistance training in the same men. (From Frontera *et al*, 2000).

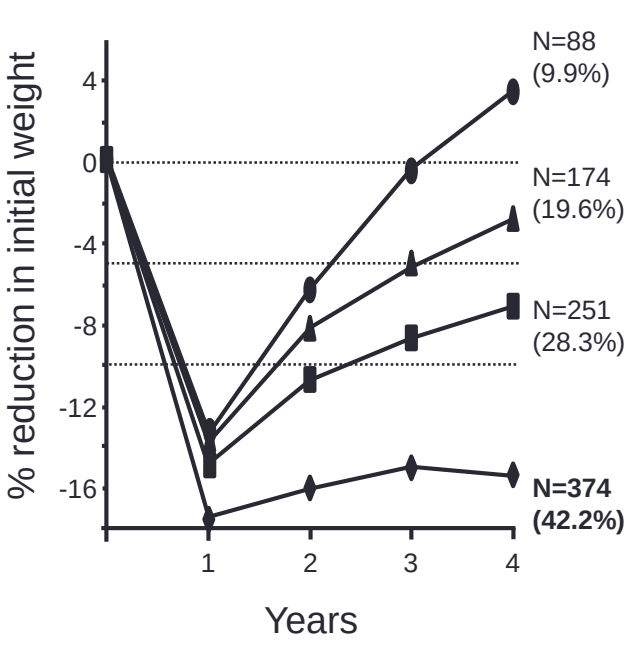
Roubenoff R. Sarcopenia and its implications for the elderly. *Eur J Clin Nutr*. 2000;54 Suppl 3:S40-47.

Lessons Learned:

Successful Long-term Weight Loss

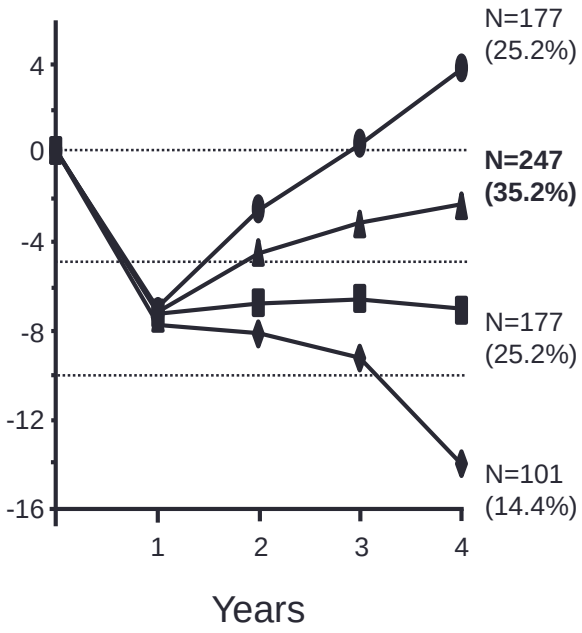
Initial Weight Loss Predicts Ultimate Success

ILI participants who lost ≥10% at year 1 (N=887)



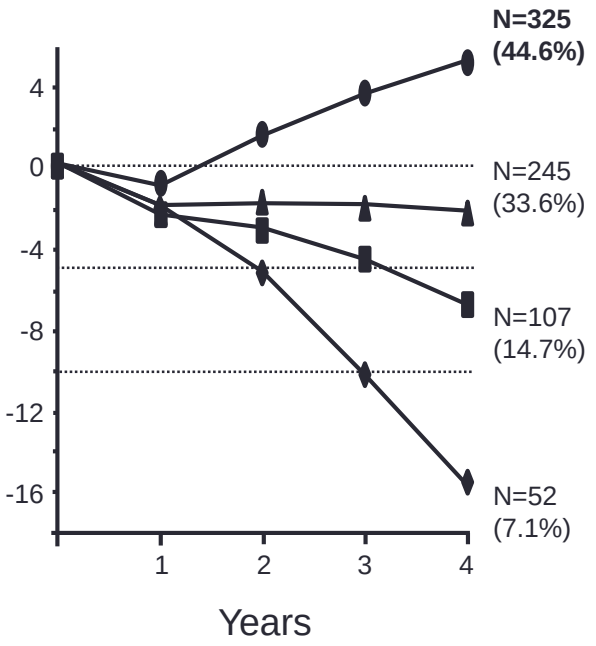
70% had ≥5% loss at 4 years

ILI participants who lost 5.0% to 9.9% at year 1 (N=702)



40% had ≥5% loss at 4 years

ILI participants who lost <5% at year 1 (N=729)

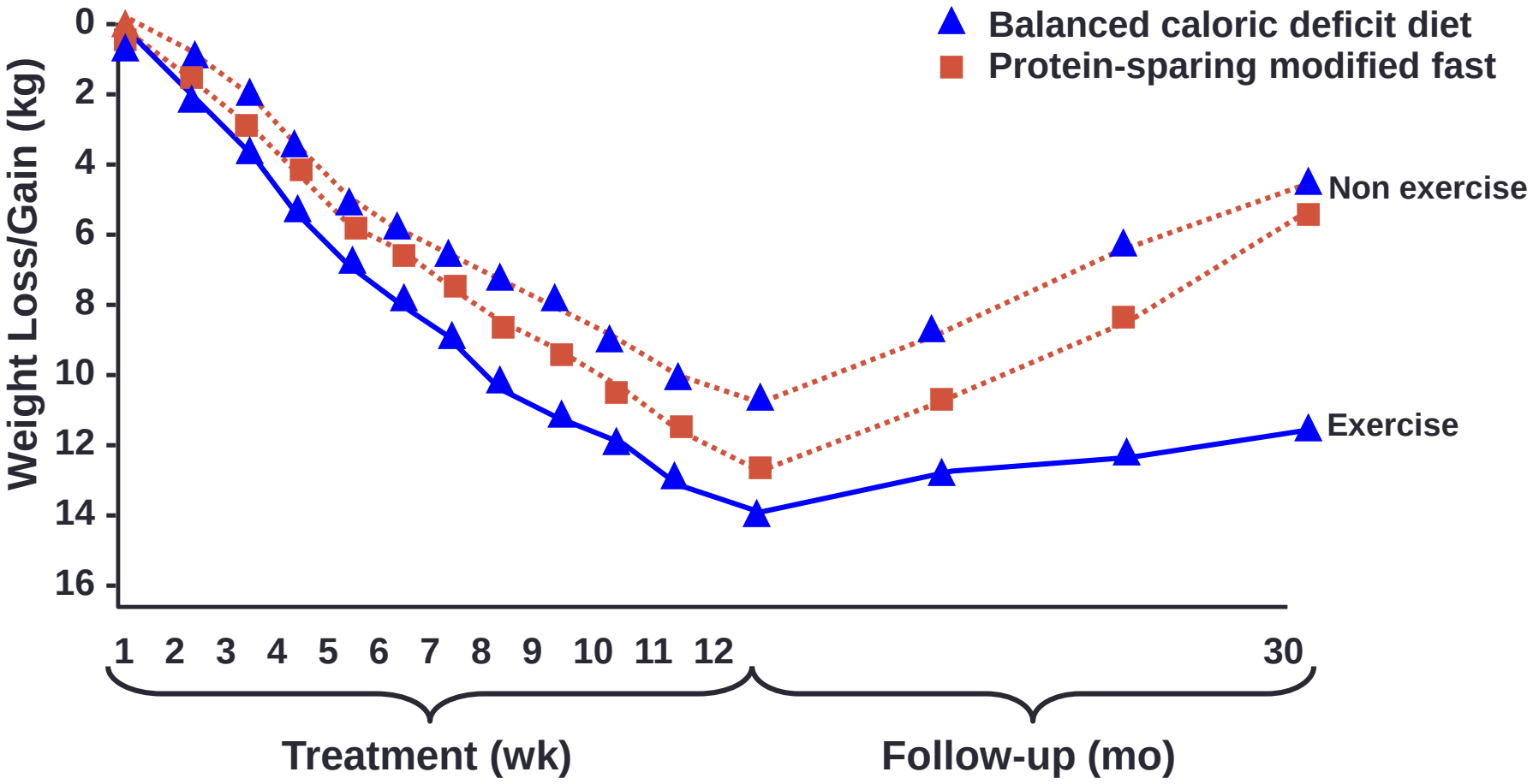


22% had ≥5% loss at 4 years

Wadden TA, et al. *Obesity.* 2011;19(10):1987–1998.

Diet *and* Physical Activity

For Best Results



Adapted from Pavlou KN, et al. *Am J Clin Nutr.* 1989;49(5 Suppl):1115-1123.

Successful Long-term Weight Loss

National Weight Control Registry

- 10,000 registrants
- Maintaining 33 kg loss for 5 years
- Eat 1800 kcal/day with 27% fat
- Perform 2700 kcal/week exercise
- 40% weigh themselves daily
- 20% weekly
- Reduced TV watching
- Limit diet variety
- 78% eat breakfast
- Eat fast food once per week
- Use more artificially sweetened beverages than others of normal weight
- They are VIGILANT

Ten Year NWCR Data

- **N=2886 who lost 31 kg maintained for 5 years**
- **Regain at end of 10 years but still lost 30% total body weight then gained to 22.6% total weight loss**
- **10 year loss = 23 kg**
- **Weight regain levels out from 5 years to 10**
- **85% of registrants lost 20%**
- **40% of registrants lost 30%**
- **If exercise decreased by 500 kcal per week they regain 9 kg**
- **If exercise is maintained they regain only 4.5% or 4.5 kg**

National Weight Control Registry http://www.nwcr.ws/

Long-term Weight Loss Best with Long-term Support

Long-term treatment with regular support can be effective[1-5]

Weight must be managed on an ongoing basis[5-9]

1. Elmer PJ, et al. Annals of Internal Medicine, 144:485–495, 2006.
2. Wadden TA. Annals of Internal Medicine, 119(7):688–693, October 1993.
3. Tate DF. JAMA, 289(14):1833–1836, April 9 2003.
4. Tate DF, Wing RR, Winett RA. JAMA 285(9):1172–1177, March 7 2001.
5. Ness-Abramof R, Nabriski D, Apovian CM. The Israel Medical Association Journal, 6:760–765, December 2004.
6. Wadden TA, Brownell KD, Foster GD. Journal of Consulting and Clinical Psychology, 70(3):510–525, 2002.
7. Wadden TA, Foster GD, Letizia KA. Journal of Consulting and Clinical Psychology, 62(1):165–171, 1994.
8. Wadden TA, et al. Archives of Internal Medicine, 161:218–227, 2001.
9. Wadden TA, et al. NEJM, 353(20):2111–2122, November 2005.

SUMMARY: Lessons Learned

- Adherence, not diet, predict weight loss success
- Calories, not macronutrients, determine weight loss
- **Guidelines**: there is no ideal diet
- **Guidelines**: prescribe set number of calories
- **Guidelines**: sustained weight loss of 3%-5% reduces risk factors and risk of diabetes
- High protein diets provide greater satiety
- 200 to 300 min/wk of moderately vigorous aerobic activity
  - Strength training also desirable
  - Strength training for seniors to prevent/reduce sarcopenia
- Long-term weight loss succeeds best with long-term support

END

Thank you!