

The 3500 Calorie Rule is Dead!



Guy Andrews, MA, CSCS

- Master's Degree, Education
- Certified Strength & Conditioning Specialist (NSCA)
- Senior Fitness Specialist & Performance Enhancement Specialist (NASM)
- Columnist / Blogger for "Sun Sentinel Group"



How to Get Your CE Certificates

- View the complete webinar
- Make sure your printer is "on"
- Log on to our website: www.exerciseetc.com
- Click on "Administration"
- Click on "Webinar on Demand Certificates"
- Complete all required fields & click "submit"
- Your CE certificate will appear on the screen; you may either save or print your certificate; even if you do not have a working printer, make sure to complete this form
- Remember: The WebEx program records when you log on and off; logging off early or fast forwarding to the end of the meeting may result in denial of your CEs.

What Are People Talking About These Days?



1. What "Causes" Obesity
2. Obesity Myths
3. Niche Diets
4. Top Trends for 2016
5. New Motivational Techniques
6. Mindful Eating

1) What Causes Obesity?

- "People who are fat simply eat more than people who are lean."
– *The End of Overeating*, 2009, David Kessler, MD



The always delicious "Krispy Kreme Bacon Cheeseburger."

Really.

What's More Effective? Diet or Exercise?

- "People are not fat because they exercise too little. They are fat because they eat too much."
– World Health Organization, 2012



10 Obesity Myths

(New England Journal of Medicine, February 2013)

1. Small changes yield big results
2. Ambitious goals are unlikely to be met
3. Slow weight loss is likely to be long-term weight loss
4. The "stages of change model" effectively predicts outcomes
5. PE classes affect rates of childhood obesity
6. Breast fed babies are less obese than bottle fed babies
7. Eating breakfast protects against obesity
8. Eating more fruits & vegetables results in weight loss
9. Yo-yo dieting is associated with higher mortality rates
10. Losing 3,500 calories will result in a weight loss of 1 pound

Obesity as Disease

- Obesity is a now defined as a chronic disease
- *(American Medical Association, June, 2013)*



What We (Still) Know...

- Weight Management is "Calories in Vs. Calories Out."
- This is the foundation of all successful weight management programs



Why Do We Overeat?

- We are hardwired to eat as much as we can
- We especially seek out salt, sugar, fat
- Traditionally, salt sugar & fat were hard to come by
- Welcome to the 21st Century!

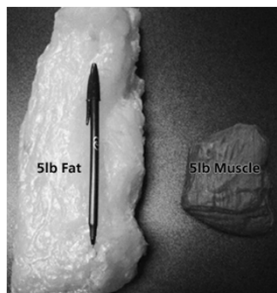


"Everyone wants to go to heaven...."



....but no one wants to die."

Losing "Weight" is not Losing "Fat"



- What is "Fat"
- Adipose tissue is comprised of fat, water, lean mass, cholesterol, triglycerides and assorted odds & ends.

Conventional Wisdom

- "A total of 3,500 calories equals 1 pound of body fat. This means if you decrease (or increase) your intake by 500 calories daily, you will lose (or gain) 1 pound per week."
– *Journal of the American Medical Association*; patient handout titled *Healthy Weight Loss*, September, 2014.

3500 Calories = Bad Science


- It's been estimated that the 3,500-calorie rule is cited in more than 35,000 educational weight-loss books and texts.



Where Did It Come From?

- It originated from researcher Max Wishnofsky, MD, in 1958, who calculated that 1 lb of fat stores approximately 3,500 kcal of energy.³ It was appealingly simple, and it stuck.
-

Zoe Harcomb:
<http://www.zoeharcombe.com/>



- British researcher, author, blogger
- PhD in Nutrition

How Many Calories in a Pound of Adipose Tissue (“Fat”) ?

- 1 pound = 454 grams
- There are 9 calories (8.5 – 9.5) in a gram of pure fat
- $454 \times 8.5 = 3859$ calories
- $454 \times 9.5 = 4313$ calories
- Adipose tissue contains water & cholesterol & lean tissue; Adipose tissue can be between 60 – 90% “pure” fat
- A pound of fat = 2315 – 4322 calories
- Some estimates go as high as 8000 – 9000 calories per pound of fat.

Does Caloric Reduction Guarantee Fat Loss?

- A group of people reduced their caloric intake by 600 calories per day for one year.
- Expected weight loss:
– $600 \times 365 = 219,000 \div 3500 = 62$ pounds
- Lowest weight loss: .8 pound
- Highest: 17 pounds
- National Institute for Clinical Excellence (NICE), 2006

“The 3,500-cal per pound rule is dead”

Today’s Dietitian, Nov, 2014

- The 3,500-calorie guideline was also refuted in a consensus statement issued jointly by the American Society for Nutrition and the International Life Sciences Institute in 2012.
- “Pennington Formula”
- Weight loss determined by age, weight, gender, body composition:
- An inactive 35 year old, 200 lb man who cut 500 cal/day from diet would lose 23 pounds in a year:
- That’s 7900 calories per pound of fat.

Setting Them up for Failure?

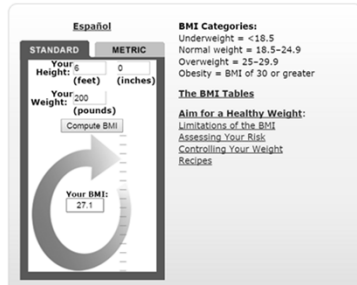
- I have a simple and reasonable request. I would like proof of this formula – that it holds exactly every single time – or I would like it to be banished from all dietary advice worldwide.
 - Any proof needs to source the origin of the formula. Then the proof needs to hold in all cases. There needs to be overwhelming, irrefutable and consistent evidence that each and every time a deficit of 3,500 calories is created, one pound of fat is lost.
- Zoe Harcomb, 06/08/2014

New Methods

- NIH: *Body Weight Planner*
- Pennington Biomedical Research Center in Baton Rouge, Louisiana: *Weight Change Predictor*

Body Weight Planner: An Example

- Meet Ted:
- 38 yr old man
- 6'0
- 200#
- Sedentary
- Eats 3200 calories/day
- BMI = 27; "overweight"



The 'Starting Information' form has two tabs: 'U.S. Units' and 'Metric Units'. Fields include: Weight (200 lbs), Sex (Male), Age (38 yrs), Height (6 ft 0 in), and Physical Activity Level (1.4). There is an 'Estimate Your Level' button next to the activity level field and a 'Next Step' button at the bottom.

The 'Weight Goal' form includes: Goal Weight (175 lbs), 'I want to reach my goal in' (180 days), and an alternative 'I want to reach my goal by' (9/22/2016). Below the form is an image of a kitchen scale. At the bottom are 'Previous Step' and 'Next Step' buttons.





The Results..

- To lose 25 pounds in 6 months he would need to increase activity by 20% per week
- Decrease caloric intake by \pm 1000 calories per day.
- How realistic is this?

The Rule is Dead

- It is *not* enough that we quietly stop using this formula – it is too widely assumed to be true for us to just sweep it under the carpet. We need to issue a public statement saying that it does not hold and should not be used again. We need to tell people that they will *not* lose one pound of fat for every deficit of 3,500 calories that they create. We need to tell people that there is no formula when it comes to weight loss and we have been wrong in giving people the hope that starvation will lead to weight loss.
– Zoe Holcomb. 06/08/14

The Motivational Interview

- ***A technique to allow the clients to make their own decisions & to take responsibility.***
- Less directed, less didactic:
- “Where do **you** think you can find the time to exercise?”
- “What are **you** willing to do to lose fat?”
- “What are **you** willing to sacrifice for weight loss?”
- “How much energy will **you** devote to this?”

Achieving Healthy Weight



- **Understand it’s not easy.**
- **Eat less. Every meal. Starting now.**
- **Drink water.**
- **Cook**
- **Move every day.**

Selected References

- Forbes GB. Body fat content influences the body composition response to nutrition and exercise. *Ann NY Acad Sci.* 904: 359-365. 2000
- Hall, KD., What is the required energy deficit per unit of weight loss? *Int J Obesity.* 2007 Epub ahead of print.
- McArdle WD. Exercise physiology: Energy, Nutrition, and Human performance. 4th ed. Williams & Wilkins. 1996.
- Wishnofsky M. Caloric equivalents of gained or lost weight. *Am J Clin Nutr.* 6: 542-546.

- Thomas DM, Martin CK, Lettieri S, et al. Can a weight loss of one pound a week be achieved with a 3500-kcal deficit? Commentary on a commonly accepted rule. *Int J Obes (Lond).* 2013;37(12):1611-1613.
- Guth E. JAMA patient page: healthy weight loss. *JAMA.* 2014;312(9):974.
- Wishnofsky M. Caloric equivalents of gained or lost weight. *Am J Clin Nutr.* 1958;6(5):542-546.
- Hall KD, Sacks G, Chandramohan D, et al. Quantification of the effect of energy imbalance on bodyweight. *Lancet.* 2011;378(9793):826-837.
- Hall KD, Chow CC. Why is the 3500 kcal per pound weight loss rule wrong? *Int J Obes (Lond).* 2013;37(12):1614.

- Thomas DM, Bouchard C, Church T, et al. Why do individuals not lose more weight from an exercise intervention at a defined dose? An energy balance analysis. *Obes Rev.* 2012;13(10):835-847.
- Chow CC, Hall KD. Short and long-term energy intake patterns and their implications for human body weight regulation. *Physiol Behav.* 2014;134:60-65.
- Hall KD, Heymsfield SB, Kemnitz JW, Klein S, Schoeller DA, Speakman JR. Energy balance and its components: implications for body weight regulation. *Am J Clin Nutr.* 2012;95(4):989-994.
- Personalized dynamic feedback control of body weight: United States patent application US 20130198214 A1. Google Patents. <http://www.google.com/patents/US20130198214>. Accessed September 4, 2014.

How to Get Your CE Certificates

- View the *complete* webinar
- Make sure your printer is "on"
- Log on to our website: www.exerciseetc.com
- Click on "Administration"
- Click on "Webinar on Demand Certificates"
- Complete all required fields & click "submit"
- Your CE certificate will appear on the screen; you may either save or print your certificate; even if you do not have a working printer, make sure to complete this form
- Remember: The WebEx program records when you log on and off; logging off early or fast forwarding to the end of the meeting may result in denial of your CEs.
