

Nutrition Myths and Realities



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Common Nutrition Problems

- Poor knowledge of foods and inadequate cooking skills
- Poor or outdated knowledge of nutrition
- Lack of access to dietitians /nutrition professionals or other credible resources
- Inadequate finances
- Busy lifestyle leading to inadequate time to obtain appropriate foods
- Poor 'making weight' strategies
- Poor *nutritional* role models
- While the RDAs are listed in 24-hour units, we must ask 'how much and when.'
- Poor availability of good foods
- Indiscriminate use of large amounts of supplements
- Workplace limitations to doing it right.
- Cultural norms that result in excess time between eating opportunities (i.e. thinking that 3 meals/day is ideal, when it is not.)
- Worrying more about 'weight' than finding appropriate strategies to burn more body fat.
- Thinking of hydration as something to recover from (i.e., drinking when 'thirsty') rather than finding ways to stay hydrated and *avoid* thirst.

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Eating Problems in Non-Dance Performing Artists

- Studies of musicians, and actors (theatre) have found:
 - High proportion follow specific diets
 - Parental connection between parents who are performing artists and children with anorexia nervosa
 - High proportion with 'overweight' BMI
 - Higher than general population prevalence of purging behaviors (vomiting, laxatives, diet pills)
 - Expressed concerns with eating restraint, body shape, and body weight.

Source: Kapsetaki et al. Eating disorders in non-dance performing artists. [Medical Problems in the Performing Arts](#) 2017; 32(4): 227-234

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MISPERCEPTION #1 - *Weight* is a good indicator of health and well-being

Reality: *Weight* is the wrong measure for virtually everything that it is commonly used for. It's all about fat mass vs. fat-free (i.e., lean) mass.



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Weight is the Wrong Metric

The critical issue: **What** constitutes weight.



5 lbs of muscle
5 lbs of fat

Imagine someone who:

- Lost 5 pounds of fat
- Gained 5 pounds of muscle

They would...

- Have the same 'weight'
- But they would be much smaller!

There is a difference between THINNESS and LEANNESS

Important to have nutritional strategies that...:

1. Stop doing things that lower metabolic mass
2. Stop doing things that increase fat mass.

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Wrong to use weight-related terms 'Obesity' and 'Overweight' interchangeably



- Obesity means having **too much body fat**.
- Overweight means **weighing more than the standard weight:height ratio or BMI**

Weight may come from...

- **Lean Mass** (more=good)
- **Bone Mass** (more=good)
- **Fat Mass** (more=**bad**)
- **Body Water** (more=generally good)



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MISPERCEPTION #2-The energy cost of exercise is always the same

Reality: Humans are always finding ways to become more energy efficient. Exercise more and we eventually find a way to burn less energy to do this exercise. **Energy (kcal) is precious.**



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Chronic training improves mitochondrial content and function, improves oxygen delivery, and greater exercise efficiency (i.e., lower energy utilization doing the same work).

→ We find a way to use less energy doing the same activity.

→ Calculating energy utilization via standard means (i.e., mass x distance; heart rate; etc.) can be misleading.

Sources:

- Bangsbo J. Physiological factors associated with efficiency in high intensity exercise. Journal of Sports Medicine 1996; 22:299 doi:10.2165/00007256-199622050-00003
- Morgan W, Martin PW, Krahenbuhl GS. Factors affecting running economy. Sports Medicine 1989; 7: 310–30
- Banks L, Thompson S, and Lewis EJJ. Efficiency of energy transfer during exercise: What are the limiting factors? Journal of Physiology 2015; 593: 2113-2114
- Broskey NT, Boss A, Fares E-J, Greggio C, Gremion G, Schlüter L, Hans D, Kreis R, Boesch C, and Amati F. Exercise efficiency relates with mitochondrial content and function in older adults. Physiological Reports 2015 Vol. 3 (e12418)
- DOI: 10.14814/phy2.12418

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MISPERCEPTION #3 – Only eating too much will make you fat.

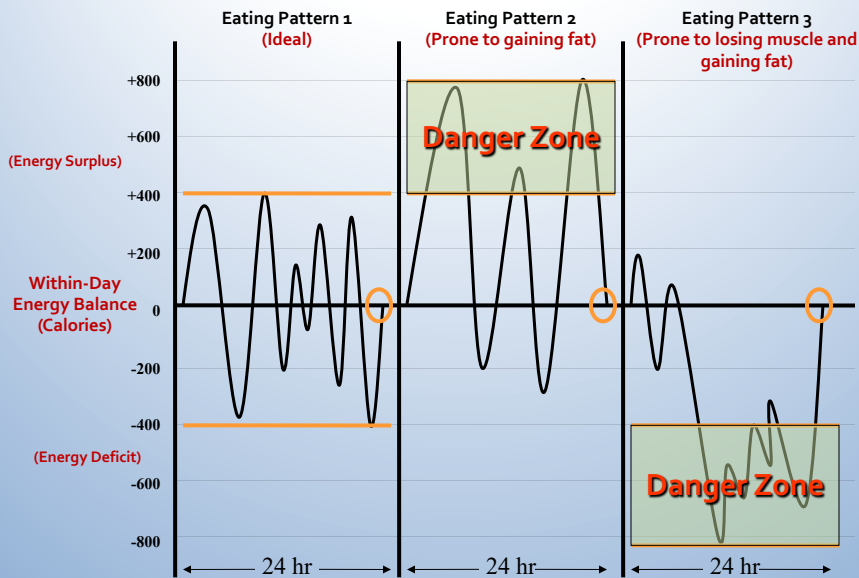
Reality: Humans are amazingly effective fat manufacturing machines. Eat too much food, you make fat. Eat too little food, you lose lean mass and make fat.



Genetically speaking, 'survival' is key

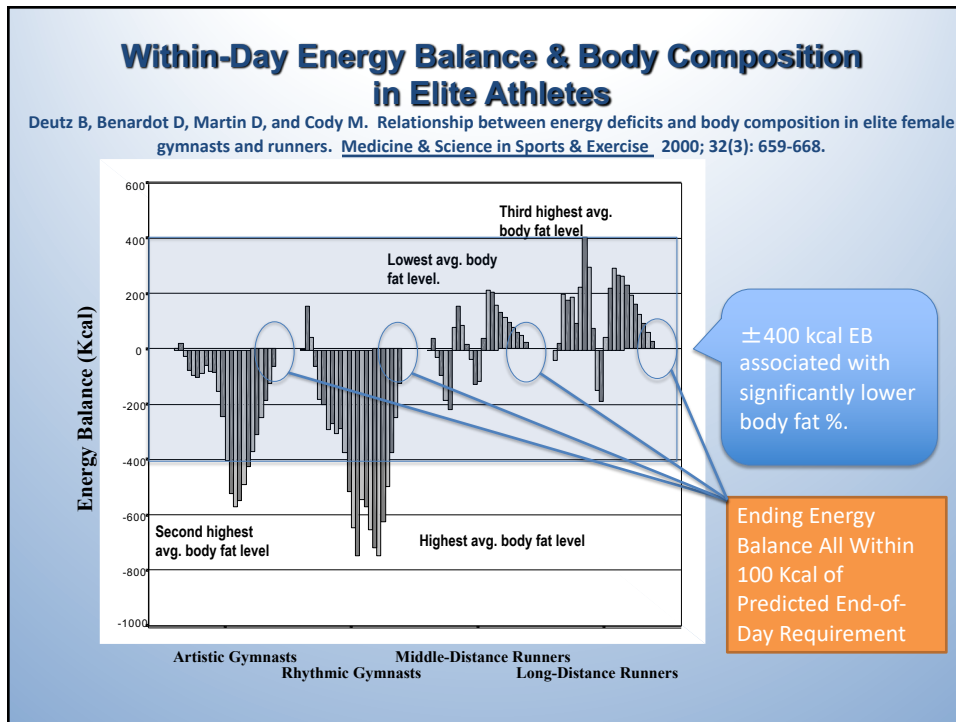
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Eating Patterns and Within-Day Energy Balance

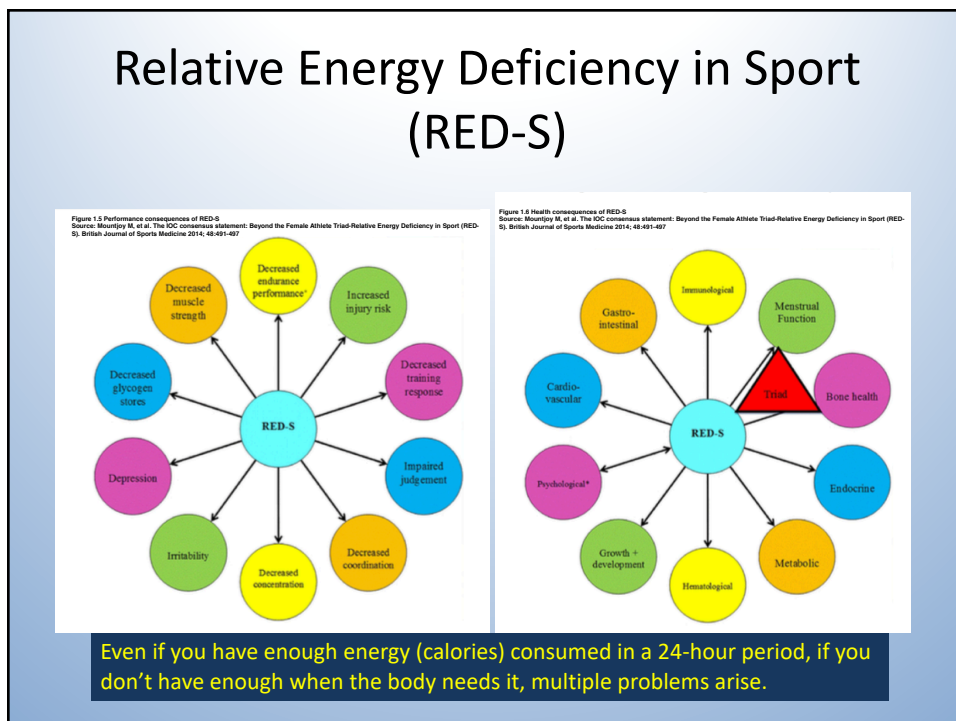


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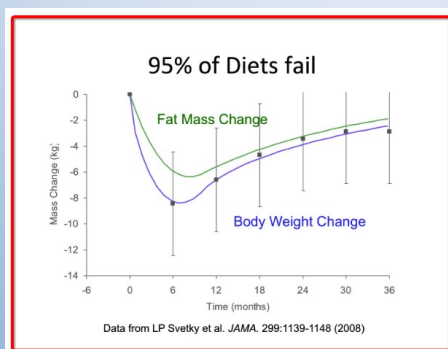


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MISPERCEPTION #4 – Low calorie diets are an effective weight loss strategy

Reality: Low calorie diets are doomed to fail.

Adaptive thermogenesis leads to same weight on lower energy intake, but the resultant weight has higher fat mass that makes you look bigger, and increases cardiometabolic risks.



Studies that advertise the benefits of weight loss strategies rarely assess the outcomes for more than 2 months, failing to assess the long-term effects.

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Breakfast Skipping Results In Poor Within-Day Energy Balance and Higher Mass

- Subjects who skipped breakfast as adults had significantly higher WC and BMI.
- Subjects who skipped breakfast as **children** and as adults had even higher WC and BMI, and more cardiometabolic risk factors.
 - Smith et al., *American Journal of Clinical Nutrition*. 2010.
 - Isacco et al., *Child Care Health and Development*. 2010.

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MISPERCEPTION #5 – Supplements are an effective means of improving nutritional status.

Reality: Very high doses of nutrients (think ‘supplements’) lead to lower tissue sensitivity and greater risk of toxicity. **More than enough is not better than enough.**



Equivalent?



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**Dietary Supplements and Mortality Rate in Older Women
(Mean Age = 62 yrs.)**

Nutrient Supplement	Absolute Risk Change
Multivitamins	2.4% Increased Risk
Vitamin B6	4.1% Increased Risk
Folic Acid	5.9% Increased Risk
Iron	3.9% Increased Risk
Magnesium	3.6% Increased Risk
Zinc	3.0% Increased Risk
Copper	18.0% Increased Risk
Calcium	3.8% Decreased Risk

Source: Mursu J, Robien K, Harnack LJ, Park K, and Jacobs DR. Dietary supplements and mortality rate in older women: The Iowa Women’s Health Study. *Archives of Internal Medicine* 2011; 171(18): 1625-1633.

Summary: In older women (N=38,772), several commonly used dietary vitamin and mineral supplements were found to be associated with increased total mortality risk. Calcium is associated with decreased risk. It was noted that in 1986, 66% of women studied took supplements; and in 2004 that increased to 85% of women.

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MISPERCEPTION #6 – Focusing on ‘perfect foods’ assures good nutritional status

Reality: People who continuously eat the same few foods because they believe these foods are ‘healthy’ are at risk of malnutrition. **There is no perfect food.**



Sources:

- Guyonnet S, and Rolland Y. Screening for malnutrition in older people. *Clinics in Geriatric Medicine* 2015; 31(3): 429-437
- Murray E, and Manary M. Possible role of the microbiome in the development of acute malnutrition and implications for food-based strategies to prevent and treat acute malnutrition. *Food and Nutrition Bulletin* 2015; 36(1): 572-575

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Color Wheel of Foods & Phytochemicals		
Source: Dr. David Heber, UCLA Center for Human Nutrition		
Color Group	Phytochemicals	Fruits and Vegetables
Red	Lycopene Phytoene Phytofluene Vitamin E	Tomatoes Tomato Sauce Vegetable Juice Tomato Soup Watermelon
Green	Glucosinolates Isothiocyanates Indole-3 Carbinol Folic Acid	Broccoli Brussel Sprouts Bok Choy Cauliflower Cabbage
Green/Yellow	Lutein Zeaxanthin	Spinach Avocado Kale Green Beans Green Peppers Kiwi Collard Greens Mustard Greens

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Orange	Alpha & Beta Carotene Beta-Cryptoxanthin	Carrots Pumpkins Butternut Squash
Orange/Yellow		Orange Juice Pineapples Mangoes
Red-Purple		Red Wine Blueberries Raspberries Blackberries
White/Green	Allyl Sulfides	Garlic, Onion Chives

In this example, there is NO single food that can supply all of the phytonutrients associated with good health.

Only *variety* of intake works:

1. Better assurance of exposing tissues to all nutrients
2. Better assurance of avoiding excess tissue exposure to any nutrient/food substance.

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MISPERCEPTION #7: Only high sugar intake will make you fat.

Reality: There are *many* ways to increase insulin and make more fat besides eating refined carbohydrates (i.e., sugar), including letting yourself get low blood sugar (i.e., waiting more than 3 hours to eat something) and/or eating large meals.



Better to have 3 of these



Than one of these

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MISPERCEPTION #8 – Diets help you lose body fat.

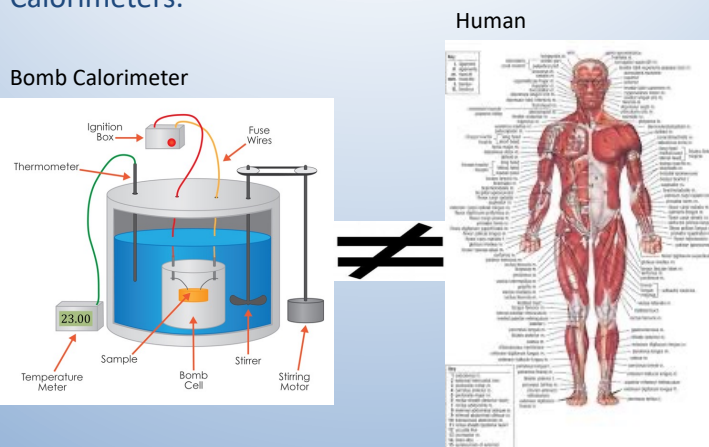
Reality: The body's reaction to an inadequate energy intake is to lower the tissue that *needs* energy: Mainly Lean Mass (...not fat mass).

- The fraction of weight loss as fat-free mass increases
- Feedback signals from depletion of both fat and FFM through effects on energy intake and adaptive thermogenesis
- A faster rate of fat recovery relative to FFM recovery is a feature of body composition autoregulation
 - High rates of dieting and weight loss recidivism raise concerns..
 - Increased risk for eating disorders
 - Low bone density

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MISPERCEPTION #9 – 3,500 Calories equal 1 pound of body tissue.

Reality: In humans, 3,500 Calories does NOT = 1 pound. Never has, and never will. Humans are not Bomb Calorimeters.



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MISPERCEPTION #10 – If you eat (calories IN) the same calories you expend (calories OUT) over a day, weight stays the same.

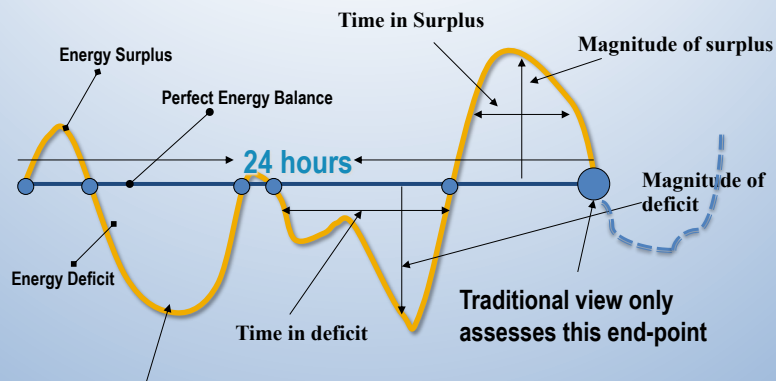
Reality: The commonly stated “Calories-IN, Calories-OUT” paradigm does not work as commonly applied in 24-hour units. Humans have an endocrine system that reacts in ‘real time’.



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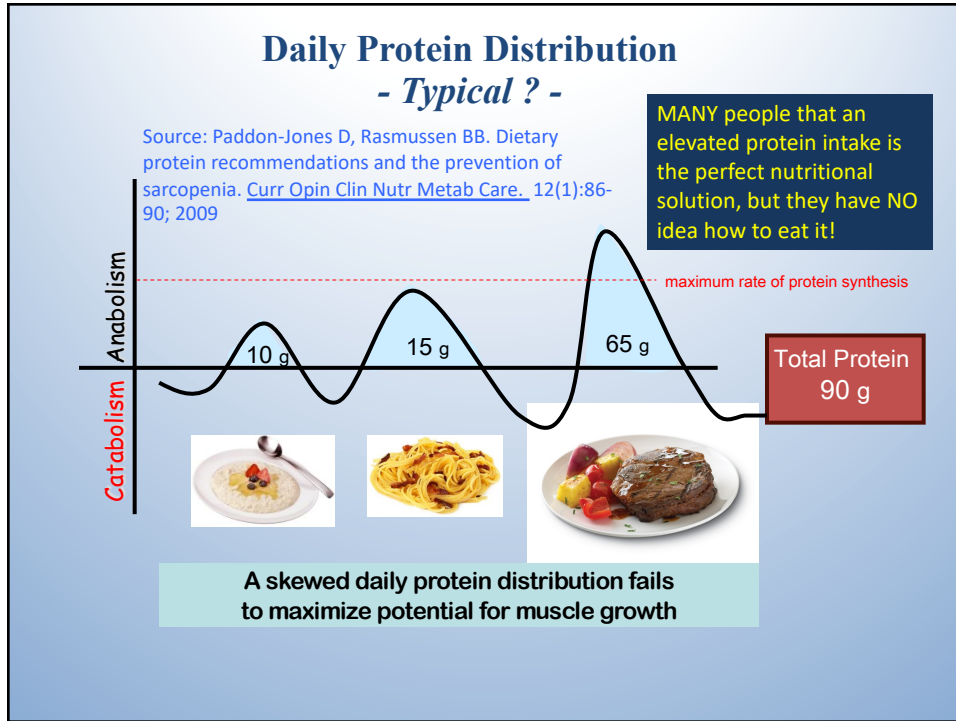
Microeconomic View of Energy Balance

New Energy Balance View

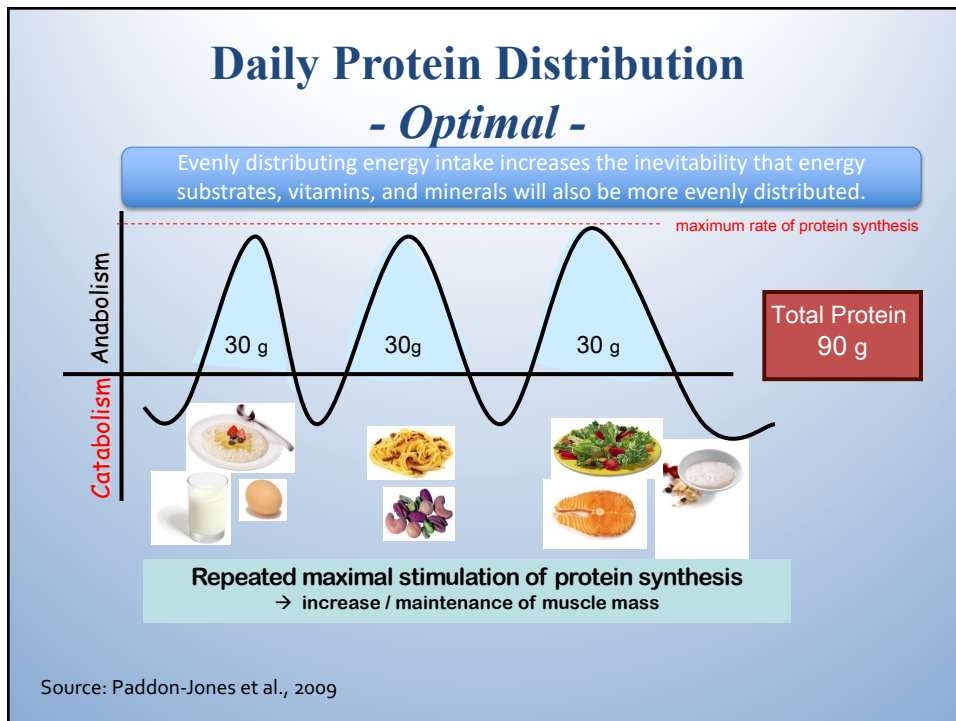


Deviations in within-day energy surpluses and deficits are as important factors in outcome variables (body fat, performance, concentration ability, etc.) as the 24-hour energy balance end-point.

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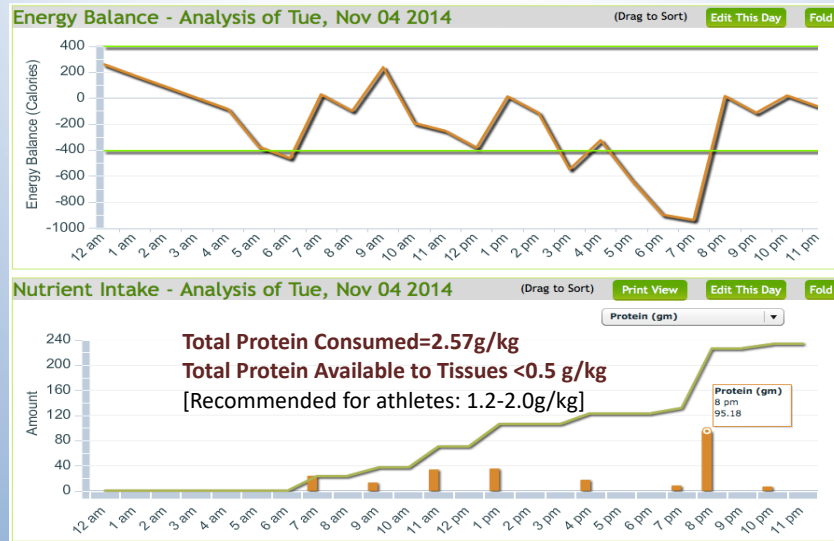


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Example: Protein Matched with Hourly Energy Balance.



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Is Energy Expenditure Elevated in Non-Dance Performing Artists?

- Playing a wind instrument while sitting results in a MET value of 1.69 to 1.80, with higher values associated with poor posture.
 - MET while at rest = 1.0
 - MET doing normal daily activity = 1.5



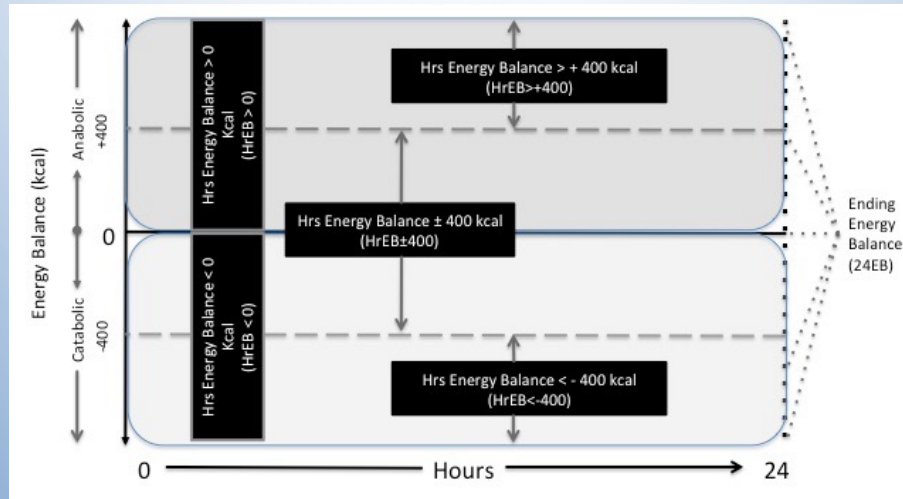
How should this affect eating patterns?

Source: Baadjou et al. Energy expenditure in brass and woodwind instrumentalists. *Medical Problems in the Performing Arts* 2011; 26(4): 218-222.

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A New Model For Energy Balance Assessment

Benardot D. Energy thermodynamics revisited: Energy intake strategies for optimizing athlete body composition and performance. *Revista de Ciencias del Ejercicio y la Salud (Journal of Exercise Science & Health)*. 2013; 11(2): 1-13 (EISSN 1659-4436).



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MISPERCEPTION #11-Drinking when you get 'thirsty' is perfect.

Reality: Thirst is an 'emergency' sensation, with the brain telling you that you've made a BIG mistake, because you're already lost ~1.5 liters of body water before the thirst sensation kicks in.

- **Goal:** Maintain 'normalcy' rather than recover from abnormalcy.
 - Drink plenty of **WATER** when you eat food.
 - Figure out how to SIP on a beverage (small amount of sugar (no more than a 6% solution) to maintain blood sugar, and a small amount of salt (~ 100mg/cup) to **AVOID** thirst.
 - You've got to have it with you for this to happen!

Note: Orange Juice is about a 12% sugar solution.

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THANK YOU

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