THE SURPRISING PROBLEM WITH CALORIE COUNTING

PART 2: 'CALORIES OUT'

Most people who count calories for weight management assume it's an exact science. Here, 4 reasons why tracking the calories you burn can be problematic.

1 CALORIE BURN ESTIMATES ARE IMPRECISE.

The calorie expenditure figures you see in lifestyle publications, online calculators, and fitness trackers are based on laboratory averages with large margins of error.

DIRECT CALORIMETRY

MARGIN OF ERROR: ±3.3%

Scientists use a hermetically sealed isolation chamber to measure energy burned. It's the most expensive method, so it's rarely used.

DOUBLY LABELLED WATER METHOD

MARGIN OF ERROR: ±10.2%

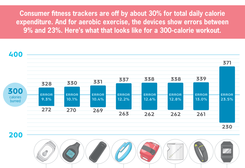
Study subjects drink water containing medical isotopes, which scientists measure in body fluids over time to estimate average daily metabolic rate.

INDIRECT CALORIMETRY

MARGIN OF ERROR: ±45%

Gas exchange measurements are taken to estimate energy expenditure. This is the method behind 99% of the calorie burn estimates you see.

Consumer fitness trackers are off by about 30% for total daily calorie expenditure. And for aerobic exercise, the devices show errors between 9% and 23%. Here's what that looks like for a 300-calorie workout.



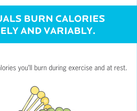
ERROR: AT LEAST 10%*

2 INDIVIDUALS BURN CALORIES UNIQUELY AND VARIABLY.

Many factors affect the true number of calories you'll burn during exercise and at rest.

GENES

A single variation in the FTO gene can cause you to **burn 160 fewer calories per day**.

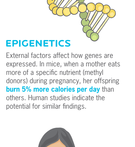


EPIGENETICS

External factors affect how genes are expressed. In mice, when a mother eats more of a specific nutrient (methyl donors) during pregnancy, her offspring **burn 5% more calories per day** than others. Human studies indicate the potential for similar findings.

BROWN FAT

In cold environments, people with brown fat tissue containing more mitochondria **burn up to 400 calories more per day** than people without it. Diet is also a factor: In one study, people who ate capsaicin burned 120 more calories per day via brown fat activation.

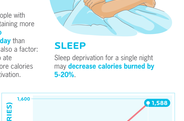


SLEEP

Sleep deprivation for a single night may **decrease calories burned by 5-20%**.

HORMONES

Women's menstrual cycle affects their resting metabolic rate.



Overall, it's not unusual for an individual's metabolic rate to vary by 100 calories from day to day.

ERROR: UP TO 20%

3 WHAT AND HOW MUCH YOU EAT INFLUENCES HOW MANY CALORIES YOU'LL BURN.

For example, in response to overeating, metabolism increases. However, some people's metabolism will adapt more than others'.

Without adaptive metabolism, each person would have gained 16 pounds.

Importantly, you'll burn more energy digesting some macronutrients than others.

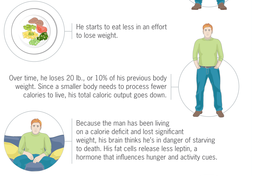
PERCENTAGE OF A MACRONUTRIENT'S CALORIES YOU'LL BURN VIA DIGESTION

ERROR: UP TO 20%

4 YOUR WEIGHT HISTORY INFLUENCES HOW MANY CALORIES YOU'LL BURN.

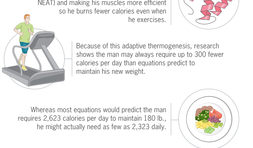
If you've ever been overweight / obese, your metabolic rate may be lower than equations predict due to something called adaptive thermogenesis.

Consider a 40-year-old man who weighs 200 pounds. Equations predict he'll require 2,759 calories / day to maintain his weight.



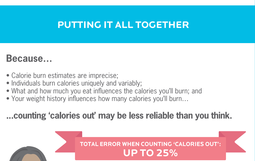
He starts to eat less in an effort to lose weight.

Over time, he loses 20 lb., or 10% of his previous body weight. Since a smaller body needs to process fewer calories to live, his total caloric output goes down.



Because the man has been living on a calorie deficit and lost significant weight, his brain thinks he's in danger of starving to death. His fat cells release less leptin, a hormone that influences hunger and activity cues.

This sends the body into calorie conservation mode, causing the man to subconsciously move less (via a drop in non-exercise activity thermogenesis, or NEAT) and making his muscles more efficient so he burns fewer calories even when he exercises.



Because of this adaptive thermogenesis, research shows the man may always require up to 300 fewer calories per day than equations predict to maintain his new weight.

Whereas most equations would predict the man requires 2,623 calories per day to maintain 180 lb., he might actually need as few as 2,323 daily.

ERROR: UP TO 10%

PUTTING IT ALL TOGETHER

Because...

- Calorie burn estimates are imprecise;
- Individuals burn calories uniquely and variably;
- What and how much you eat influences the calories you'll burn; and
- Your weight history influences how many calories you'll burn...

...counting 'calories out' may be less reliable than you think.

TOTAL ERROR WHEN COUNTING 'CALORIES OUT':
UP TO 25%

WHERE DO WE GO FROM HERE?

Tracking calorie intake and calorie output is imprecise and variable. Until science comes up with a better way, we like to keep things simple:

Commit to a daily movement practice and ballpark food portions using a hand measurement system.

For more:
www.precisionnutrition.com/calorie-control-guide

*For comprehensive research notes and references, visit
www.precisionnutrition.com/problem-with-calorie-counting-calories-out

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