Are exercise equipment calculations reliable? [1]

Alice,

When working out in the gym, machines, such as treadmills and stationary bikes, show how many calories you are burning. Are these calculations correct, or is it just something to keep the participants happy?

? Just Wondering

Answer

Dear Just Wondering,

Calorie counters on exercise machines can certainly help to provide motivation to be more physically active. However, the reliability of these calculations in figuring out the number of calories you expend during a workout depends on your size, body composition, workout intensity, and level of fitness. As a whole, research indicates that calorie counts on the machine are less accurate, as they have a tendency to overestimate the number of calories burned. Additionally, at higher intensities, they become even less accurate. However, the machine measures can still add value to your routine. Keep reading to find out more!

Generally speaking, the machine gives you an approximate count of calories burned, even when asking for your weight. The reliability of the numbers varies by manufacturer and depends on what formula the machine uses. Exercise machines use various formulas to calculate the approximate number of calories burned. Some are more accurate than others: for example, research indicates that the elliptical overestimates the number of calories burned much more than the treadmill does. However, keep in mind that two people of the same sex who weigh the same but have different fat and muscle distribution will burn a different number of calories. Technique also matters? for example, if you’re leaning on an elliptical machine (putting your weight on your arms), you’re reducing your body weight load and burning fewer calories than the machine says. The same holds true for a treadmill. You’re better off setting the machine at a lower intensity and swinging your arms at your sides (touching the side bars occasionally for balance). People using different forms can burn different numbers of calories, but this won’t be reflected on the machine’s calorie counter. The calorie counts on the machines have been found to be off by 100 calories or more, so basing your progress on the number of calories the machine displays as burned could negatively affect your health.

Some of the variation that a machine can’t monitor are the differences in people’s metabolism. A person who has a high percentage of lean body mass will use more calories than a person
with a greater fat mass because lean tissue is more metabolically active. Also, as an active person adapts to a certain mode of physical activity, the muscles become more efficient and work becomes easier, causing slightly fewer calories to be used. So, you can keep your muscles guessing by cross-training or switching activities.

While studies indicate that the machines are quite inaccurate for measuring calories expended, two major studies found that exercise machines are largely accurate when measuring heart rate and distance traveled. This is great news, since it will help you to measure if you are working out vigorously or moderately. Wearable fitness trackers can also help with these measurements. Basing your health off of the number of minutes of cardio activity rather than on calories displayed by the exercise machines will help you to stay in line with whatever goals you may have.

Rather than focus on counting calories, why not focus on participating in diverse activities at varying intensities? The Centers for Disease Control and Prevention recommends [2] that every week, adults complete 150 minutes of activity at moderate intensity, 75 minutes of activity at vigorous intensity, or an equivalent mix of moderate and vigorous intensity aerobic activity. You can learn more about what these different types of intensities mean by reading What exactly does moderate intensity mean? [3] in the Go Ask Alice! Nutrition & Physical Activity [4] archives. They also recommend that adults also include at least two days of muscle-strengthening activities into their routine that incorporate all of the major muscle groups in addition to the cardiovascular activity. You may also be interested in reading the related questions to learn more about burning calories and being active.

Wishing you happy and healthy workouts, regardless of calories burned!

Alice!

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