Brendon Gurd, Associate Professor, School of Kinesiology and Health Studies at Queen`s University discusses exercise non-responders with Lizette Borreli, *Medical Daily, Vitality* on 17 Jan 2017.

Why Your Gym Workout Plan Yields No Results, Plus How To Fix It: The Science Behind An Exercise 'Nonresponder'

Jan 17, 2017 02:05 PM By Lizette Borreli @lizcelineb

Many of us have been in this situation: we work out tirelessly for two months, look at the scale, and see nothing has changed. We become unhappy with our exercise program because we're not seeing results, and scientists have a new theory why: A recent study published in the journal *PLoS ONE* suggests some of us are "nonresponders," meaning our response to exercise is linked to the type of workout we do.

"[T]here is no one-size-fits-all approach to exercise," **Brendon Gurd,** an associate professor of kinesiology at Queen's University who oversaw the study, told the *New York Times*. However, he does acknowledge every individual has a size that fits them.

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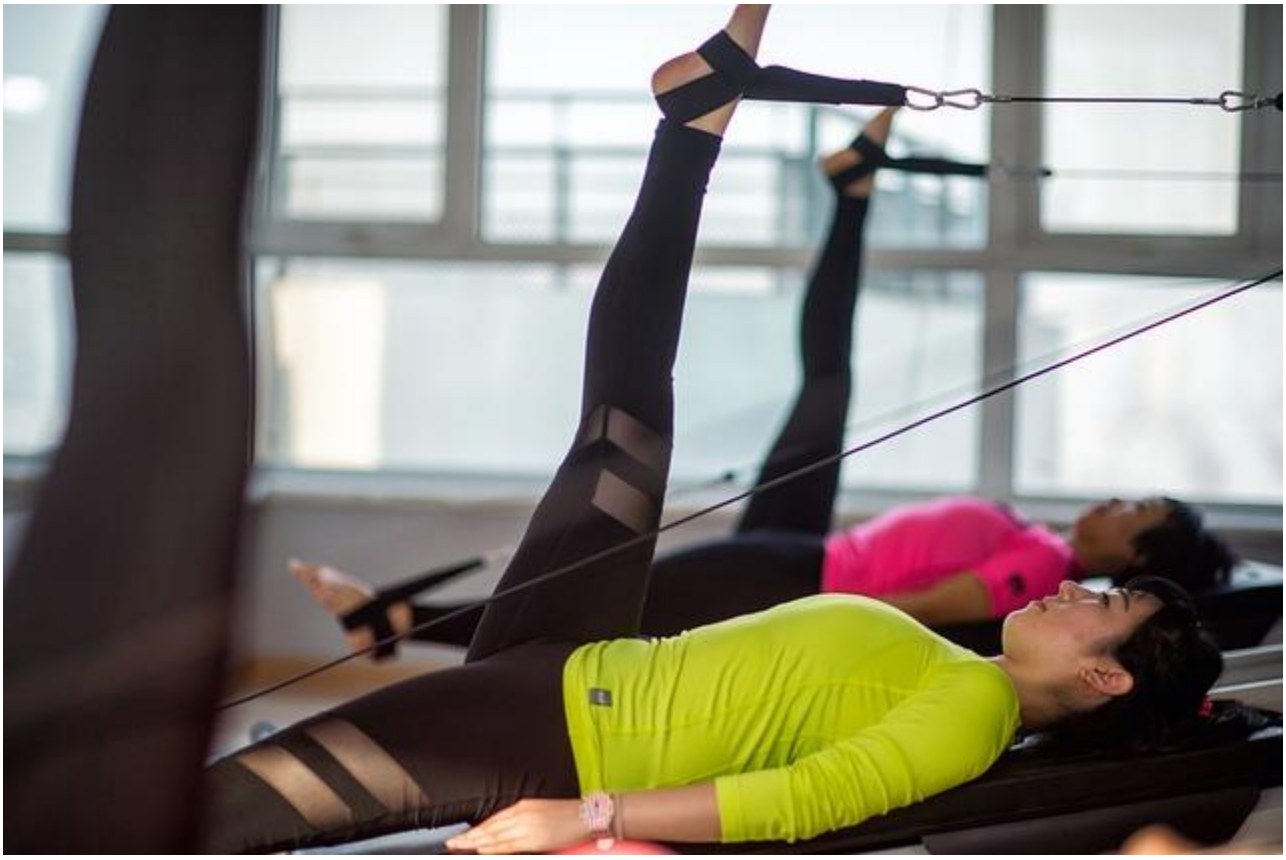
Previous research has found genetics play a significant role in how we respond to exercise. Working out boosts dopamine levels in the brain, which improves mood and long-term memory. It also stimulates pleasurable feelings in the brain, but many people do not get this pleasurable sensation because their genes interfere with the release of dopamine. In other words, it's a combination of genes and personality that help explain why some of us have a natural urge to be active, and some of us do not.

Researchers from Queen's University in Kingston, Ontario and the University of Ottawa sought to observe the adaptive response to both endurance and sprint interval training in a group of 21 healthy men and women as they completed these workouts during two separate training periods, with a gap in between lasting several months. Half of the participants did endurance training in the first period, and then switched to interval training, and the other half did the opposite. All of the participants exercised four times a week through each three-week period.

Endurance training included 30 minutes of cycling on a stationary bike at a moderately strenuous pace, while during the interval training, participants increased their intensity by doing eight 20-second sprints, resting 10 seconds between each. Researchers tested the participants' heart rate; VO2 max, or how much oxygen the lungs can deliver to the muscles; and other physiological parameters related to aerobic fitness before the experiment began and after each training period.

The findings revealed both workouts helped improve the group's overall fitness levels. However, when researchers looked more closely at the individuals, they found responses greatly varied. About a third did not improve their fitness with interval training, and some participants were found to be in worse shape after each type of workout. In other words, the majority of participants had failed to respond as expected after one of the two workouts.



Science explains why you're not getting results from your workout. Photo courtesy of Pixabay, Public Domain

Scientists define these people as "nonresponders." But, most importantly, no one failed to respond to all of these exercises. All of the participants improved their fitness in some way after at least one of the sessions. For example, those who had shown little response to endurance training were more likely to show a vast improvement after the interval sessions, and vice versa.

The question remains: How do we determine which form of exercise is the best fit?

***Read**: Why Working Out In The Morning Is Best For Stress, Not Muscle Size*

Gurd suggests it's all about trial and error. Similar to this study, Gurd advises us to measure our fitness before a new exercise routine. This can be achieved by briskly waking up several flights of stairs, or quickly stepping onto and off a box three or four times. This is followed by a pulse check, which is known as our "baseline number."

Now, we begin to work out, whether it's walking, jogging, or doing interval training or spin class. After a month, the stair or step test should be repeated. Our pulse rate should be slower now, and these workout sessions should also be feeling easier. If this doesn't occur, we may be a nonresponder to our current exercise plan. Switching things up could help get us closer to our fitness goals.

The science of being a nonresponder to our exercise has been reviewed in several studies. A 2016 study found some people barely gained endurance after interval training, while others greatly boost their fitness levels.

These compilations can help us determine what workout is best for our body.

This also introduces the conflict that can arise with prescribed health guidelines — they may not fit everyone. Exercise needs to fit different people’s abilities, and their genes. Nonresponders don't need to work harder, they need to find the right workout for their body.

Source: Bonafiglia JT, Rotundo MP, Whittall JP et al. Inter-Individual Variability in the Adaptive Responses to Endurance and Sprint Interval Training: A Randomized Crossover Study. *PLoS ONE*. 2016.