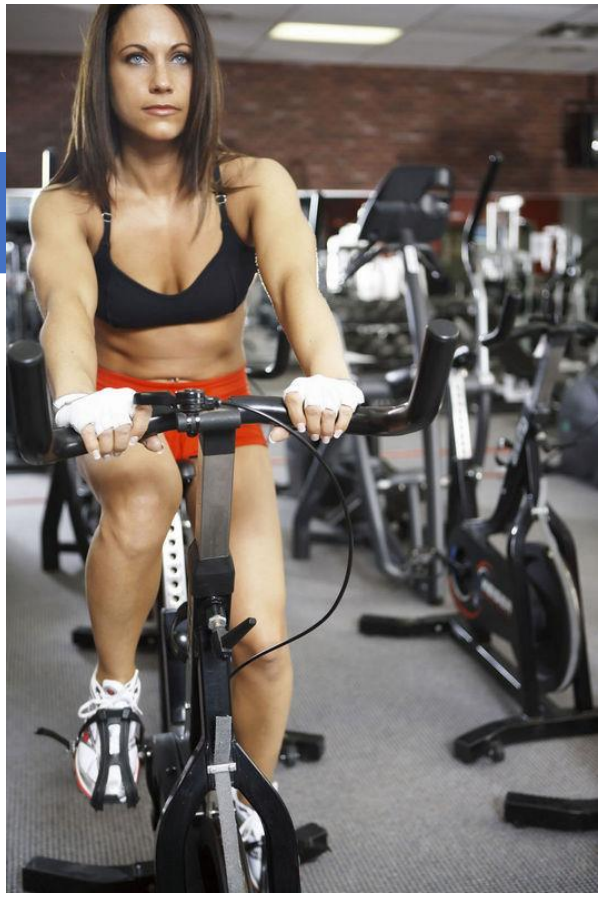

Why Do I Work Out Every Day and Gain Weight?

The Truth About Exercise

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Why and How You Can Work Out Every Day and Gain Weight

Welcome to the Why and How You Can Work Out Every Day and Gain Weight eBook where we attempt to answer this very question, "I don't understand. I work out every day and I'm still gaining weight."

Believe it or not we hear this question quite frequently. On the surface it seems to be quite the paradox. All the conventional wisdom tells us to lose weight all we need to do is watch what we eat (meaning to eat less) and exercise more. Follow this simple formula: use more calories than you take in.

In this eBook you will learn:

- The critical importance of understanding that all calories are not created equal.
- How the body responds to different types of exercise.
- The most efficient and effective type of exercise.

We will begin with the calorie myth and then address the question of exercise.

The Calorie Myth

What should I eat? How many calories per day should I have? Most diet and exercise programs are based on us "counting calories" and assuming all calories are created equal. What if this were not quite true?

This way of thinking goes back to the 1870's and the science of the First Law of Thermodynamics. We learn from Wikipedia, "The first law of thermodynamics states that energy can be transformed, i.e. changed from one form to another, but cannot be created or destroyed. It is usually formulated by stating that the change in the internal energy of a system is equal to the amount of heat supplied to the system, minus the amount of work performed by the system on its surroundings."

Sounds good in theory, but what about the real world – the human body? Does it apply to the human body? If it does then the logical conclusion is what we have so often heard – the calories we consume through eating, we need to burn through activity. Otherwise, these calories will store as fat and we will gain weight. But what if it does not work that way?

Consider the following – we are told that if we eat x less calories per day, we will lose y number of pounds over a certain period. Here are the actual numbers. We are told that to lose one pound we need to burn or cut 3500 calories. If we want to lose a pound a week, we can cut 500 calories per day from our diet. Therefore, it is only logical if we maintain that restricted calorie diet, we will eventually melt away to nothing (if you started at 300 pounds this would take six years!). Since we have never seen anyone disappear, we can conclude that it may not work that way.

Also, during this period there was another scientific breakthrough. Scientists were able to assign specific calorie counts to specific foods using a new breakthrough – the bomb calorimeter. Here

is how it works. In one compartment a substance is burned. This is surrounded by water in another chamber. As it burns it gives off heat. The heat is measured.

The temperature increase in the water is converted into calories. The energy needed to raise one liter of water 1 degree is a kilocalorie (that we have shortened to "calorie" further confusing us). Thus, telling us how many calories that food potentially stores.

This leads us to two key questions. First, does our body work like a bomb calorimeter? And second are all calories the same? Are all calories used for energy and therefore the same independent of the food we eat?

To the first question I think it is safe to conclude that our body is not a bomb calorimeter. End of story. But for argument's sake and to address the second question, let us assume that it does. Does the body treat all calories equally?

While you will read and hear many distinguished authors citing many studies supporting the notion that a calorie is a calorie is a calorie does this really make sense? Let us take a logical approach.

A hardboiled egg has 75 calories. Approximately one slice of bread or a quarter of a bagel has 75 calories. One bite of a chocolate covered donut, or a piece of cake has 75 calories. Who really believes that these 75 calories will have the same impact in your body after you eat them? I do not think so and shortly you will see why.

Let us return to the calorimeter for a minute. Here is what was found. Carbohydrates had 4.2 calories per gram. This was rounded down to the familiar 4.0 that we know of today. Proteins had 5.0 calories per gram. They were rounded down to 4.0 due to some perceived inefficiencies of how they burn. Fats had 9.2 calories per gram which was rounded down to 9.0. This gives us the numbers that we are all familiar with 4 calories per gram of carbohydrate and protein and 9 calories per gram of fat. And the simple conclusion – eat too much fat and you get fat.

Well, to start with, the figures are misleading! Let us look at fats first.

Different fats have different amounts of calories depending upon saturation levels. Further studies have shown that polyunsaturated fats have 9.1 calories per gram, animal fats range from 6.5 to 8.0 calories per gram, while cocoa butter (the most saturated of fats) has 5.5 calories per gram.

Now let us turn our attention to carbohydrates. Your body operates with a very simple equation: carbohydrates = sugar. All carbohydrates (both "simple" and "complex") are ultimately broken down into simple sugars.

To accomplish the conversion to simple sugars your body uses a process called hydrolysis in which water is added to the chemical reaction. This causes total mass to increase which creates more calories! So, simple sugars really have 4.2 calories per gram, yet starches (the more

complex carbohydrates) have 4.44 calories per gram. Also note that soluble fiber has 2.0 calories per gram.

What does this mean? We are getting significantly more calories per gram of carbohydrate than we may think.

Now for the grand finale! This whole theory assumes that all calories we consume are used for energy. This too simply is not true.

As we know protein is used for a variety of body building functions (See The Foundation of Nutrition eBook). In fact, very little protein is used for energy. We could even possibly say that these calories do not count. Think about the Atkins diet. It includes lots of protein, yet people lose weight. In fact, they are told to eat as much as they want and still lose weight.

Next, let us look at fat. Fat too is used for other functions besides energy. So only some of these calories truly count.

And here is the important point – it is only carbohydrates where all the calories count! Many studies have shown that the number of calories is insignificant compared to their composition. People can gain or lose weight on calories ranging from 1000 to 4000 calories per day. It is all about how much fat, protein, and carbohydrate are in the diet!

If you'd like to read more about this topic, I refer you to books written by Barry Groves – "Trick and Treat: how healthy eating is making us ill" and "Natural Health and Weight Loss."

How the Body Responds to Exercise

Now let us explore the other half of the equation: exercise more. This of course leads to a series of questions. What type of exercise is best? How many times a week should I exercise? How long should I exercise?

Some people say "aerobic" is best. Some say weightlifting. Others say yoga, or interval training, and still others say high intensity training. Some tell you to do a different type of exercise every day for an hour. On the other spectrum some will tell you once to twice a week for fifteen to twenty minutes is all you need. You can see there is quite a variance in the answers.

To best understand any issue relating to health and nutrition we always ask one simple question. ***How is the body designed?*** When we discuss with clients what they should eat and what they should avoid we just do not say "eat this and not that." We explain to them how their body works and what the different foods will do in their body. When we understand how our body is designed to work it makes it much easier to determine what it needs and to separate myth from fact. Unfortunately, in the world of health and nutrition there is a lot of myth and hype which is quite different than the facts.

Whole books have been written to address these questions and we have read quite a few of them! The one we believe explains it the best – *Body by Science* by Doug McGuff, M.D., and John Little. With his medical background, Dr. McGuff understands how the body is designed and he uses this to explain the science of exercise.

Here is a summary of the major points of the book. The rest of the eBook will address them in more detail. We do encourage you to read the entire book as it will likely change the way you think about exercise!

1. Who can you trust? Most exercise testimonials and a fair amount of "research" is shall we say – slightly misleading and biased and does not address the true science of exercise.
2. Genetic expression plays a major role in our physical appearance. People can do similar types of exercise but in the end their genes determine how their physical activity is expressed in their body.
3. Being "fit" does not mean you are healthy.
4. High intensity training is his preferred method. It benefits both the aerobic and anaerobic energy pathways. Most "cardio" only works the aerobic pathway. The effectiveness of the exercise is all about hormones and blood glucose levels. High intensity training works the major muscle groups to exhaustion, uses up glucose, and encourages the body to burn fat and build muscle.
5. Fat metabolism and fat loss is also determined by hormone activity which is affected by the type of exercise. Hormones signal the body to burn fat and to store fat. Some exercise will produce the "burn" signal, others the "store" signal.
6. Exercising once to twice per week for 15 to 20 minutes when done according to his methodology is all you need to properly engage your body and manage the body building and fat burning hormones.

The Cardio Myth

Let us begin our exploration of *Body by Science* by Doug McDuff, MD, and John Little. This book offers a clear explanation of the actual science of exercise, how activity relates to hormones, and how this determines what happens in your body. In short, it answers the question we are frequently asked. "Why am I gaining weight when I am working out every day?"

His recommended method of exercise is what he terms high intensity training (or HIT). It benefits both the aerobic and anaerobic energy pathways. Most "cardio" only works the aerobic pathway.

High intensity training is in many ways the opposite of what is now known as "cardio." HIT is designed to be short and sweet. The techniques work the major muscle groups to exhaustion and then you must stop, rest, and then begin the next exercise. Cardio is designed to be lower

intensity so that you can perform the exercise without stopping, usually anywhere from 45 minutes to an hour.

The roots of modern cardio trace back to the mid-1960's when Kenneth Cooper was searching for an exercise that he thought would optimize cardiovascular fitness. This was the time when we first began to see a dramatic increase in heart disease related deaths and the thinking was by exercising our hearts, they would not attack us!

Unfortunately, he began with a false premise. He believed that "aerobic" was the same as "cardiovascular" and wanted to develop an exercise that would isolate the aerobic metabolic system. He created the term "aerobics" to refer to his exercise technique. This low intensity and steady in state method he developed is now referred to as "cardio."

But this is where we must understand how the body works. The body has two pathways for metabolism – aerobic and anaerobic. These processes are conducted in each cell in our body. Both are essential for the total health of the cell and thus the entire organism. Aerobic means "with oxygen" and anaerobic means "without oxygen."

Cooper believed that the aerobic was the most important pathway therefore it should be isolated and trained. There was no actual evidence that one pathway was more important, it was just his belief, and unfortunately for many he was wrong. For many it proved to be dead wrong.

His main error was that the pathways cannot be separated in a live human (remember our body is not a test tube – what happens in the body is different than isolating something in a test tube!). The aerobic pathway is fueled by a substance called pyruvate which is produced by the anaerobic pathway.

Energy comes from glucose going from the blood stream into the cell. It takes a series of twenty chemical reactions to produce pyruvate from glucose. This is an anaerobic process. Pyruvate then goes to the mitochondria of the cell. If you remember your basic biology the mitochondria produce energy via the Krebs cycle in an aerobic process.

So, as you can see, we need an exercise method that will strengthen both systems of metabolism. Modern day "cardio" does not fit the bill as it isolates the aerobic and the science share in the book shows it does not benefit the anaerobic. It is high intensity training that will benefit the complete system.

The effectiveness of any exercise is all about hormones, fat metabolism, and blood glucose levels. High intensity training works the major muscle groups to exhaustion, uses up glucose, and encourages the body to burn fat and build muscle. This is explored further in the section Hormonal Implications of Exercise.

Another irony concerning aerobic specific training is that it produces additional oxidative stress on the body which creates inflammation and excess free radicals in the body. This factor puts

one at increased risk of heart disease – exactly what the "cardio" exercise is supposed to help prevent!

Exercise and Hormones: Fat Burning (Yes) and Fat Storing (oh no!)

Body by Science offers a clear explanation of the actual science of exercise, how activity relates to hormones, and how this determines what happens in your body. In short, it answers the question we are frequently asked. "Why am I gaining weight when I am working out every day?"

Let us begin our exploration of exercise and hormones. The effectiveness of exercise is all about hormones, fat metabolism and blood glucose levels. Hormones signal the body to burn fat and to store fat. High intensity training works the major muscle groups to exhaustion, uses up glucose, and encourages the body to burn fat and build muscle.

First, here's a little background on fat. Fat is not the evil it is made out to be – either the fat we eat or the fat on our body. Fat (and the ability to store fat) is why humans have survived the many droughts, famines, and lean times in our history. Fat is how we store energy for future use. As we like to say, there were no refrigerators in the Garden of Eden. Having food available 24/7 is somewhat new in human history. Our ancestors ate when food was available and stored the excess as fat, allowing us to survive.

There's also a popular myth that our hunter-gatherer ancestors were way more active than we are today, but there is little evidence of that. In fact, it is not very likely. Since they did not have food all the time, they would need to conserve their energy to find food and survive! Modern obesity is not from lack of exercise, but from too much food (and poor-quality food at that – although that is another series of articles!). **For most of human history fat storage was essential to survive. Unfortunately, today it now leads to obesity and chronic disease.**

The key to exercise is how it impacts hormones. To understand this, we need to look at how our body accesses and stores energy. The following explanation is simplified for the purposes of this discussion. It starts with our body breaking down food into useable components. One of these is glucose which goes into the blood stream. From there, glucose enters cells and is used to produce energy. Excess glucose, beyond what the cells are calling for, needs to be stored. The first storage sites are the muscles and liver where it is stored as glycogen. After that it is stored in fat cells.

The main benefit of high intensity training is the depletion of glycogen stores from the muscles. When glycogen is moving out of storage the hormone called hormone sensitive lipase is released. This allows body fat to be mobilized and burned for energy. Eventually the glycogen levels will be restored in the muscles coming from this mobilized fat.

In traditional cardio the glycogen is not released to the same extent. The muscles retain some glycogen, glucose remains in the blood stream and insulin is required to move the glucose out of

the blood stream. Since the body does not sense a need to build glycogen stores the glucose is stored as fat. This may also have the effect of keeping insulin elevated which ultimately can lead to insulin resistance. Also, when insulin is high, hormone sensitive lipase is inhibited, impacting fat digestion.

Another hormone that gets into the act is called leptin. Leptin is our satiety hormone – it tells us we are full. The more fat we have, the more leptin is produced so that our appetitive will decrease, and our body fat level will stabilize. A modern-day problem has become leptin resistance. Like insulin resistance our body is not able to respond to all the excess leptin being produced so we are not properly getting the signal that we are full and should stop eating.

The bottom line is that HIT will lower insulin, leptin, and cortisol levels while increasing growth hormone while traditional cardio or "aerobics" will have the opposite hormonal effect.

A few other points of interest:

One of the big truth stretchers (okay maybe a lie) of the fitness industry is the measuring of "calories burned" on machines. We have what is called our basal metabolic rate. Just by living we burn calories. The BMR is how many calories you burn just by being alive at that moment. The calories burned being recorded by the machines are inclusive of those calories. The "calories burned" is highly misleading as if you stood on the machine and did nothing, you would still be burning calories!

Another basic truth is that no exercise per se burns a lot of body fat. As explained earlier, we survived by being very efficient with our fat. It is what kept us alive. So, if we were burning lots of fat by hunting and gathering or any other activity, it would jeopardize our ultimate survival.

In conclusion, our body developed ways to survive food scarcity so we could endure as a species. It was not designed for food abundance. Our modern diet which is high in carbohydrates keeps our blood glucose levels elevated, which keeps our insulin levels high, which keeps our glycogen stores high, so we are not able to burn fat.

And one last key factor is hydration. Most people do not drink enough water. Being properly hydrated improves our liver function which will support fat metabolism and improves cell structure, so hormone receptors work properly. And, drought precedes famine. If we are not properly hydrated, we are sending an evolutionary signal to our body to hold on to fat as it prepares for the upcoming famine.

It is In Your Genes: Ten Factors That Influence Exercise Outcomes

Now let us explore the role of our genes in our exercise outcomes. Genetic expression plays a major role in our physical appearance. People can do similar types of exercise but in the end their genes determine how their physical activity is expressed in their body.

One of our favorite parts in *Body by Science* is the discussion of genetic expression. Quite simply there are certain things that are meant to be, and they are not going to change. They show a picture of a forest of the same type of tree, yet one is significantly taller than the others. If you only saw it, you would assume it was the norm, but in fact it is the exception.

These same basic principles apply to the human body. Some people are the way they are simply because of genetics. Two people could do the exact same workout but based on their genes one can emerge as a championship body builder and the other will not.

Here's a look at ten genetic factors that come into play.

1. Somatotype – a fancy word for body types. There are three main body types for humans. Endomorphy is the tendency towards soft and round body contours. Mesmorphy is the tendency towards being more muscular. Ectomorphy is the tendency towards being skinnier. What you are is what you must work with. The ectomorph will have a hard time becoming an Olympic weightlifter!
2. Muscle length determines how long a muscle can become, which will ultimately determine how large it can be.
3. Muscle fiber density determines the mass potential for the muscle. If it can have more fibers, it can become larger.
4. Skeletal formation – this will also impact how large a muscle can become based on how and where it attaches to the bones.
5. Neuromuscular efficiency – how wells nerves and muscles communicate will impact how well the muscles can develop.
6. Myostatin – this is a protein produced due to gene GDF-8 (growth and differentiation factor 8). This protein stops the muscles from becoming too large. So, a particular expression of this gene will allow muscles to grow larger than they might ordinarily be.
7. Interleukin-15 – this gene has various combinations which has associations to how one's muscle size will respond to exercise.
8. Alpha-Actinin-3 – this is a protein component of fast-twitch muscle. Eighteen percent of the population lacks it while all champion athletes have been found to have it.
9. Myosin Light Chain Kinase – this is an enzyme that supports how your muscles build. Some people experience more muscle damage with exertion so should have a longer recovery time meaning they should train less frequently to maximize results.
10. Angiotensin Converting Enzyme – an enzyme that determines vascular tone. This influences exercise endurance.

So, there you have it. What does it all mean? Set realistic expectations and goals around your exercise program. Accept who you are and the exercise you can perform. Some areas are out of your control and pushing beyond your body's genetic design is not going to get you anywhere.

Disclaimer

This eBook is designed to educate people about diet, a lifestyle approach to health and well-being, natural remedies, options, and dietary supplements. None of this should be construed as a substitute for medical attention. Rather, individuals with specific medical concerns or symptoms should seek advice from a physician.

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