



Time Restricted Eating

THE EASIEST, MOST EFFECTIVE AND MOST SUSTAINABLE
WEIGHT LOSS APPROACH

My 16 Week, 40 pound journey



Lou Costello on Diets



“A diet is where you can eat all you want of everything you don’t like.”

(but TRE is another way – a better way)

Keep an open mind

- ▶ The weight loss and eating protocol I am going to present here is not mainstream: But mainstream advice has not worked: 71% overweight.
- ▶ TRE is rapidly gaining acceptance for a number of reasons:
 - It works really well!
 - All of the puzzle pieces fit to create a picture that makes perfect sense
 - It is being validated by more and more scientific studies all the time
 - It is easier to stick to and maintain afterwards than anything else I know of
- ▶ Some of this will contradict what you have always heard but keep an open mind.
- ▶ Unless you were born yesterday, there have been things in your life you believed for years if not decades and found out later were false.
- ▶ Conventional (mainstream) diet advice fell into that category for me. I believed it, but now think its wrong. And I couldn't be more thrilled!!
- ▶ You may also initially think you will hate doing this but again, keep an open mind that the opposite may be true. I think you will LOVE it.

Disclaimer

- ▶ I am not a medical doctor or registered dietician.
- ▶ I am presenting **my understanding** of the work of two medical doctors: Dr. Joseph Kraft and Dr. Jason Fung but I do not speak for them.
- ▶ It is also based on my understanding of the available studies.
- ▶ Please consult your doctor prior to starting any weight loss program if you have any health issues or questions.



Dr. Joseph Kraft



Dr. Jason Fung

Introduction

- ▶ This presentation describes a technique called Time Restricted Eating.
- ▶ TRE limits the time you can eat each day to an eating window of 4 to 8 hours. I personally like to average around 7.
- ▶ The time you can eat is called the “eating window”.
- ▶ The time you can’t eat is called the “fasting window”.
- ▶ The purpose is give your body a long break from insulin every day.
- ▶ Under TRE, insulin will be at base level for 8 to 14 hours **every** day.
- ▶ That deep “insulin break” has **enormous benefits** for both weight loss and health in general as this presentation will show.

Health Risks of Obesity

- ▶ People who have obesity have an increased risk of:
 - Coronary Heart Disease
 - Stroke
 - High Blood Pressure
 - Diabetes (type 2)
 - Cancer (many types: endometrial, breast, colon, kidney, gallbladder, liver)
 - Gallstones and other gallbladder disease
 - Osteoarthritis
 - Gout
 - Sleep Apnea
 - Some forms of body pain and difficulty with physical functioning
 - Some forms of mental illness such as depression and anxiety
 - **All causes of death** (The CDC threw in this catch all)

Health Benefits of TRE

- ▶ If you are obese or overweight, TRE will decrease your risk for all of the things listed on the previous page by helping you lose weight.
- ▶ **In addition**, studies are showing that TRE has the following benefits:
 - Increased metabolism
 - Decreased appetite
 - Prevention and even reversal of type-2 diabetes
 - Increased mental clarity and focus
 - Decreased risk of Alzheimer's disease and other forms of dementia
 - Decreased risk of Parkinson's disease and Huntington's disease
 - Increased longevity. Slows down aging. Anti-aging in some cases
 - Decreased risk of cancer, high blood pressure and heart disease beyond the benefit of weight loss alone *

* Shown by studies where one group did TRE and the other group did not and neither group gained or lost weight.

Intermittent Fasting

- ▶ “Intermittent Fasting” is the general term for eating protocols that have an eating window and a fasting window.
- ▶ There are many forms of Intermittent Fasting.
 1. Alternate Day Fasting (fast every other day)
 2. 5:2 (5 days of normal eating, 2 days of fasting each week)
 3. 16:8 (16 hour fasting window, 8 hour eating window each day, *Leangains*)
 4. 18:6 (18 hours fasting window, 6 hours eating window each day)
 5. **17-AVG Shoot for 18:6, do at least 16:8, end up averaging 17:7**
 6. 20:4 (20 hours of fasting, 4 hours eating window each day, *Warrior diet*)
 7. OMAD (one meal a day – usually provides 22-23 hours fasting each day)
- ▶ My recommendation is to do at least 16:8 TRE but stretch to 18:6 when possible, averaging about 17 hours of fasting window per day. I call this “17-AVG” to give it a name.

Time Restricted Eating vs. Intermittent Fasting

- ▶ I actually don't like including TRE under the term "Intermittent Fasting" because the word "fasting" has negative connotations that instantly scares people off. Also, it's not really accurate.
- ▶ **If you are eating every day you are not "fasting"!**
- ▶ There are many times throughout the day when we are not eating food. Such as when we are doing our jobs or doing a million other things. Are we "fasting" during those times?
- ▶ Am I "fasting" right now because I don't have food in my mouth? That's silly. Unless we go 24 hours or more without food, we are not fasting.
- ▶ Under TRE, we eat every day but there is just a **continuous** window of time each day where we don't.

TRF – Time Restricted Feeding

- ▶ Some people refer to TRE as TRF: Time Restricted Feeding.
- ▶ I don't really like this term either.
- ▶ The term TRF comes from the literature of studies performed on animals like mice and rats.
- ▶ Animals 'feed' and have 'feeding times'. That is why it made sense to call the protocol being studied 'time restricted feeding'.
- ▶ But come on, human beings don't 'feed'. We eat.
- ▶ Using the term 'time restricted feeding' to refer to an eating protocol for people sounds silly.
- ▶ Therefore, I really think TRE is the more appropriate term for people.

Minimal Technical Jargon

- ▶ Your body runs equally well using carbs or fat for energy.
- ▶ Carbs comes in many forms like glucose, fructose, and glycogen that your body can use for energy and can convert one to another as needed.
- ▶ This presentation will refer to all of those as “carbs”.
- ▶ Fat comes in many forms like triglycerides, ketones, and fatty acids that your body can use for energy and can convert one to another as needed.
- ▶ This presentation will refer to all of those as “fat”.
- ▶ Using technical terms would just complicate the discussion unnecessarily with little added benefit.

What happens when you eat?

- ▶ Your body digests the food into its macro nutrients or “macros”.
- ▶ Macros are carbs, protein and fat.
- ▶ Those macros are deposited into the blood over the course of a few hours.
- ▶ Your body can use these directly from your blood but the excess needs to be stored.
- ▶ Your body raises insulin to “store” all of the nutrients.
- ▶ Insulin is the storage hormone. When insulin is up, you are storing.
- ▶ When the nutrients are stored, the insulin **should** go back to base.

What does storing food mean?

- ▶ Fat and carbs can be used for immediate energy. Excess beyond that must be stored.
- ▶ Carbs are stored in your liver and muscles until those “tanks” are full.
- ▶ Your body can store a little over 1 lb. in carbs.
- ▶ By comparison, even fit people can have 30 lbs. of fat stores and there is unfortunately no limit to how much more fat can be stored.
- ▶ When your liver and muscle carb tanks are full, your body converts the rest of the carbs into fat.
- ▶ Same with protein. There is no way to store protein. Your body uses what it has an immediate need for and converts the rest to carbs which can be either used, stored as carbs or stored as fat.
- ▶ Fat (that is not used immediately) is stored as fat in fat cells.

More detail on Carb Storage

- ▶ The liver storage tank can store about 100 grams of carbs which is only about 400 calories. It can last 12-14 hours of normal activity.
- ▶ The muscles also have carb storage tanks. Each muscle has its own tank. Carbs cannot be sent from one muscle to anywhere else they may be needed so carbs that fill a given muscle tank can only be used by that muscle.
- ▶ For example, if you are on a long walk and you have used all of your liver carb tank and the carbs in your leg muscles, your body *MUST* switch over to burning fat to continue walking. It doesn't matter that the carb tanks in your arms are still filled.
- ▶ In total, your muscles can store about 400 grams of carbs (1600 calories).
- ▶ When you eat new carbs, they are used to fill your liver and muscle tanks as much as is needed to fill them back up. After that, excess carbs are converted to fat and stored as fat.

How insulin controls the storing and releasing of energy.

- ▶ The cells of your body are **either** storing or releasing energy.
- ▶ They can only do one or the other and which one they are doing is controlled by insulin.
- ▶ When insulin is up, your cells are in store mode. They are taking in the carbs, fat and protein that is (or should be) in your blood.
- ▶ When insulin is down, your cells are in release mode. They are releasing carbs and fat to be used as energy.
- ▶ Carbs are used first for energy when they are available. Fat starts to be released as your carb levels get low (your body does not let it drop to 0).
- ▶ When carb stores get very low, your body runs entirely on fat. **Your body can run just fine on fat alone!**

The Traditional “Diet” Advice

- ▶ Calories In, Calories Out. Eat Less, Move More.
- ▶ You figure out your BMR and TDEE. (calculators are online)
 - Your BMR is how many calories you burn per day at rest
 - Your TDEE is how many calories you burn per day in total.
- ▶ You choose a daily calorie budget to put yourself in a calorie deficit
- ▶ You spread those calories over 5 or 6 small meals throughout the day
- ▶ You start an exercise program. ← (This is actually good advice)
- ▶ You stick to it and lose weight. It works, kind of, for a while.
- ▶ But your metabolism slows to compensate for the reduction in calories.
- ▶ You tend to plateau and you tend to gain the weight back easily.

Why do conventional diets fail?

- ▶ Dr. Fung was very dismayed by the results of The Women's Health Initiative study. This was a **massive study** of 50,000 women who reduced their daily caloric intake by 350 calories over 7 years and increased exercise. The standard "Eat less, move more" advice.
- ▶ They should have lost a lot of weight over that time but the result was that they lost an average 0.25 pounds! Not even a single pound...
- ▶ The problem was that standard caloric restriction uses meals that are too small to satisfy the body's current energy needs. After every small meal, your body runs out of fuel before the insulin has fallen far enough to provide access to your stores. This is an energy crisis.
- ▶ Your body has the ability to and is forced to adjust metabolism downward to account for the energy deficit the diet is creating.
- ▶ You will not have as much energy and you will lose metabolically active muscle and your new TDEE will become the lower calories.
- ▶ This causes not only the famous weigh loss "plateau" but makes weight regain much much easier. Almost inevitable according to stats.

How does TRE avoid those problems?

- ▶ As we'll see, TRE avoids the problems that conventional diets have in several ways.
- ▶ By using regular sized meals during the eating window, your body is not constantly getting into the situation where it runs out of fuel before insulin falls.
- ▶ Therefore after meals, your body will have all of the calories it is used to having and so feels no need to reduce metabolism downward to adjust.
- ▶ On the flip side, during the fasting window, your body also has full access to your energy stores (carbs and fat) because insulin is low for most of that time.
- ▶ So during the fasting window as well, your body has access to all of the energy it needs and again feels no need to adjust metabolism downward.
- ▶ Under TRE you burn more energy because you have more energy.
- ▶ There is also further extra calories burned due to energy conversions*.

*Explained
Later

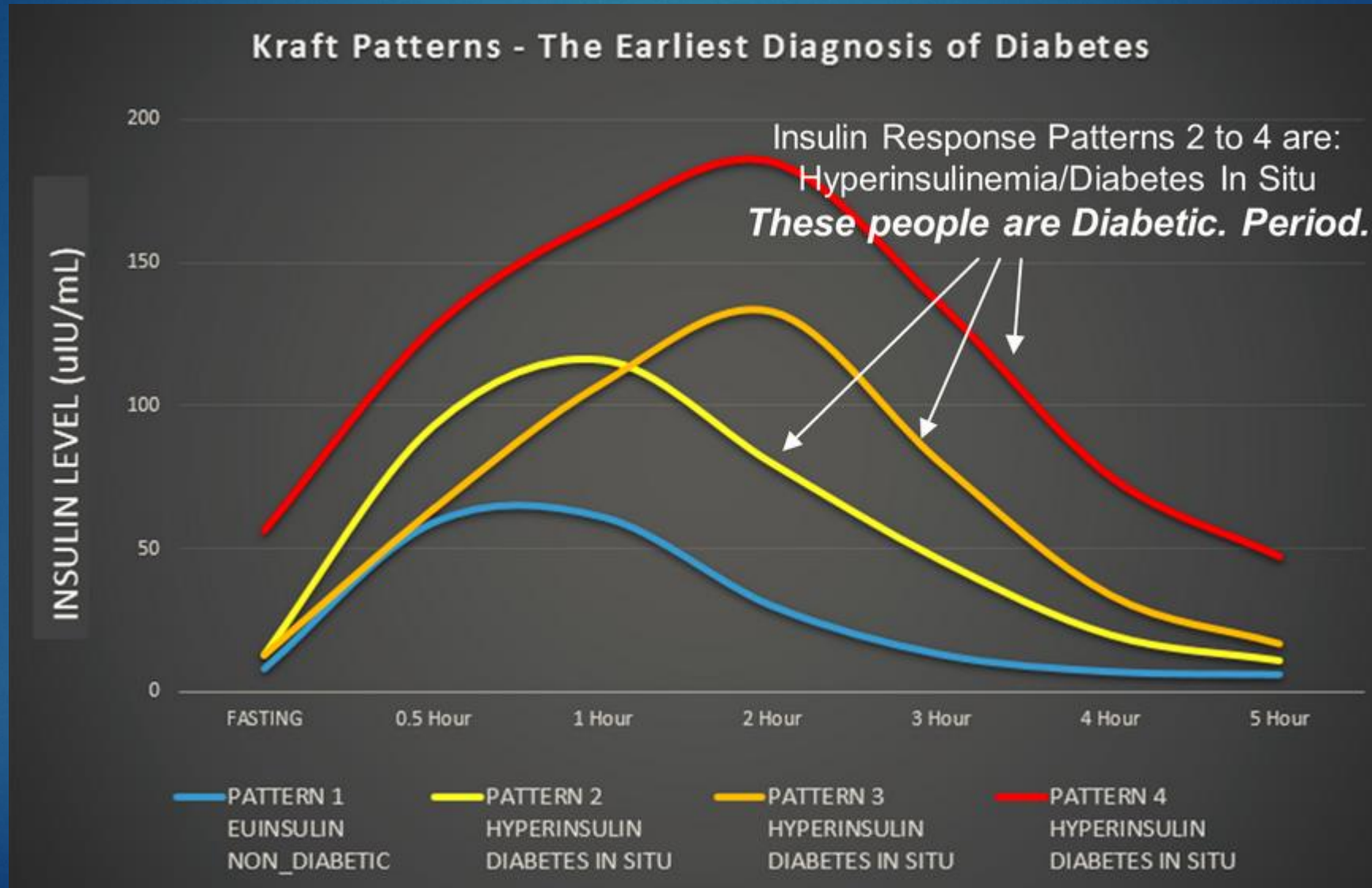
The Fundamental Problem

- ▶ **When insulin is up, you cannot burn fat.** (your body can't access it)
- ▶ Only after insulin is down and after carb stores get low, will you start to use fat stores for energy.
- ▶ The **fundamental problem** with the standard way American's eat is that insulin is rarely ever low.
- ▶ Insulin is fast to rise and slow to fall. It can take several hours to fall after a meal.
- ▶ So with breakfast, lunch, dinner, several snacks in between and snacking before bed, insulin can be up all day long.
- ▶ Your body gets a tiny break from insulin briefly in the dead of night.
- ▶ This is a problem for 2 reasons:
 1. Fat cannot be burned when insulin is up.
 2. Insulin being high all the time causes insulin resistance.

Insulin Resistance

- ▶ Consequently, we end up marinating our cells in insulin all day long.
- ▶ This causes **several** problems:
 - Our cells are in “store” mode most of the time, so can’t burn fat.
 - Over exposure to insulin leads to insulin resistance over time.
 - Just like your body gets resistant to any drug – the receptors wear out.
- ▶ If you are overweight, you are very probably insulin resistant.
- ▶ Dr. Joseph Kraft found that almost all overweight people fall into one of the “hyperinsulinemia” insulin patterns (patterns 2-4).
- ▶ Most of those people had **normal** blood glucose levels! Which means doctors won’t detect the problem until it is very advanced.
- ▶ The longer you have been overweight, the more insulin resistant you probably are.

Dr. Kraft's Insulin Resistance Patterns



Insulin Resistance - Progression

- ▶ As you become insulin resistant, your body has to make more and more insulin to store the nutrients from your meals.
- ▶ This means it takes longer and longer to return to low insulin after a meal which increases how much time you are spending in a state of high insulin. And the highs are several times higher than normal.
- ▶ All of that makes you even more insulin resistant – a vicious cycle.
- ▶ Eventually no amount of insulin can store the nutrients so you get diagnosed with type 2 diabetes due to high blood glucose (hyperglycemia).
- ▶ Dr. Jason Fung and Dr. Joseph Kraft recognize the hyperinsulinemia as the real problem. Type 2 diabetes is an advanced stage of hyperinsulinemia – it is not a separate thing.

What is Type 2 Diabetes according to Dr. Kraft and Dr. Fung

- ▶ Type 1 diabetes is the inability to produce enough insulin to store the food. Glucose thus builds up in the blood (hyperglycemia).
- ▶ Type 2 diabetes is only called diabetes at all because it happens to share the same symptom (hyperglycemia) as Type 1. But the cause is totally different.
- ▶ Hyperglycemia is **a problem** but it's not **the problem**. The problem is hyperinsulinemia caused by years of “insulin overload”.
- ▶ Years of keeping your insulin elevated with a diet high in sugar and other refined carbohydrates, coupled with frequent snacking that never lets it fall.
- ▶ The longer this continues, the more insulin resistant you get, leading to even higher levels of insulin to do the same job (the vicious cycle).
- ▶ Eventually, you're so insulin resistant, you exhibit hyperglycemia on a blood test. The insulin receptors are fried from constant over exposure. Your pancreas may also be giving out due to being constantly overworked.
- ▶ But the problem was hyperinsulinemia all along. If we looked at insulin response instead of blood glucose, it would have been detected much sooner.

How Type 2 Diabetes is treated

- ▶ Type 2 diabetics are often given insulin to address the hyperglycemia, i.e. to address the symptom of high blood sugar.
- ▶ That insulin will bring down the blood glucose levels as follows:



Picture credit: Dr. Fung

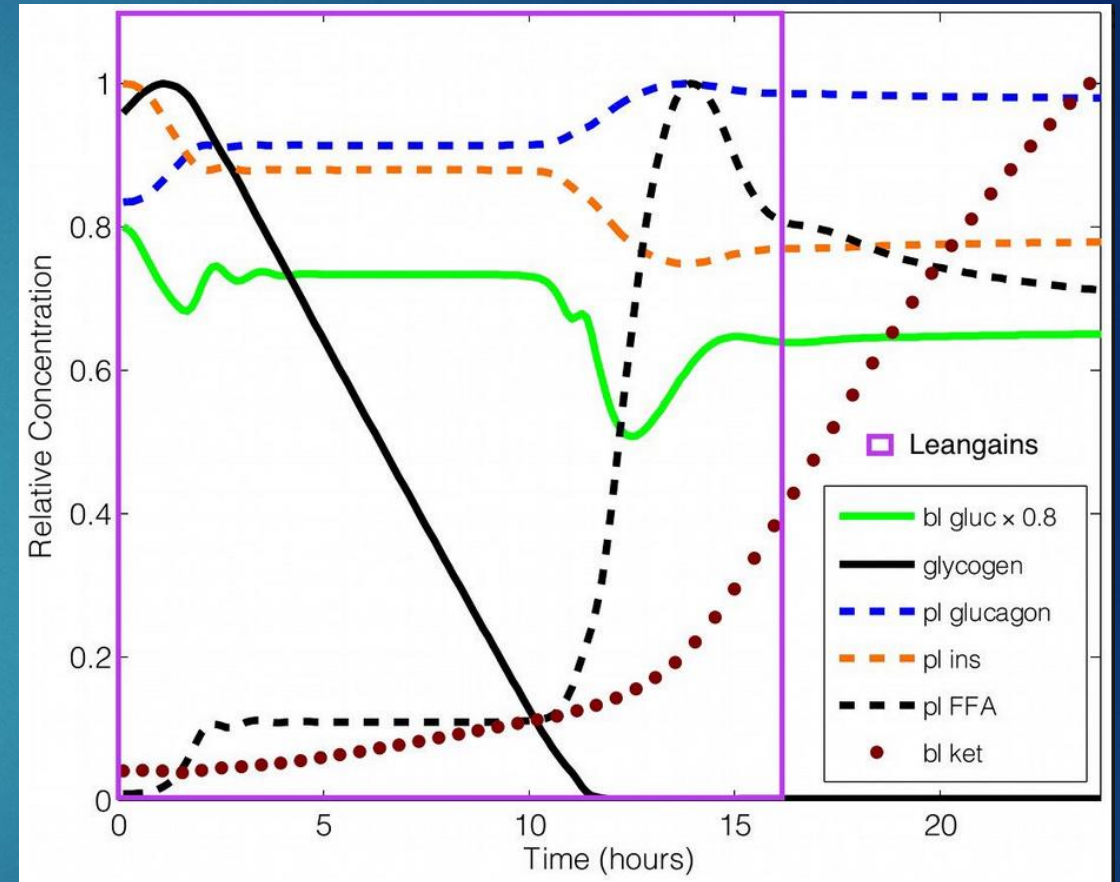
- ▶ This treats the hyperglycemia but leads to numerous chronic health problems including weight gain.
 - ▶ Dr. Fung says this is like treating an alcoholic (or any addict) with more alcohol (or drugs) in order to “cure” the shakes.
- ▶ The symptom rather than the cause is what gets treated and the treatment is more of the same poison that is causing the problem!
 - ▶ It's no surprise then that the diabetes gets chronically worse over time.

The Solution – TRE gives you a deep daily insulin break

- ▶ The problem was caused by insulin being too high for too long.
- ▶ The solution is to get insulin to baseline and keep it there for long periods of time every day.
- ▶ This will happen in the fasting window of TRE. Insulin will be at baseline for many hours every single day!
- ▶ This deep break from insulin allows your cell receptors to heal and to gradually become less insulin resistant every day.
- ▶ Eventually your insulin resistance will be entirely reversed and your body will have the normal insulin response (Dr. Kraft Pattern 1).
- ▶ TRE also ensures that you will burn fat every single day leading you to become “Fat Adapted” which is discussed in depth upcoming.

The key to how TRE works.

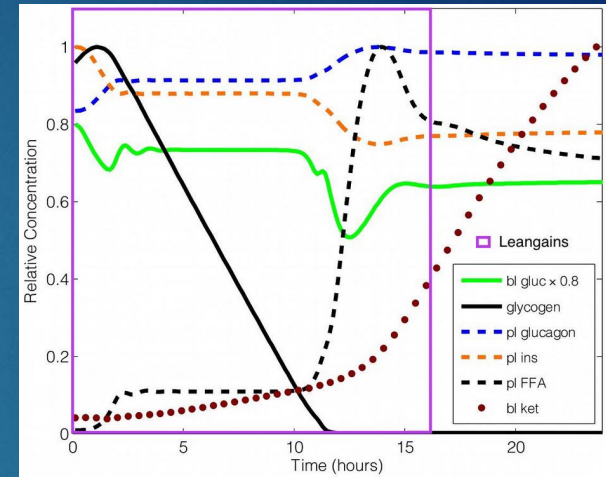
- ▶ Notice insulin, the 'store energy' hormone, drops for about 3 hours after eating and then levels off. But this is not baseline!
- ▶ Notice after about 10 hours of fasting, insulin starts dropping again to a new lower base. It reaches this new low after about 12-13 hours and holds there.
- ▶ Glucagon, the 'release energy' hormone always moves opposite to insulin. It also hits its 'high gear' around 12 hours.
- ▶ Free fatty acids and ketone bodies are also ramping up after 12 hours as glycogen is depleted. They cross at about 20 hours.
- ▶ This shows why **it is essential to go at least 16 hours**. So that you get several hours a day in this 'high gear'. Every hour you can push beyond 16 provides another hour of insulin break, another hour of deeper ketosis where your body is powered by fat alone.



High Gear! TRE's Secret Weapon

▶ This picture from the previous page is so great at showing why TRE is so beneficial that I want to go into much more detail about it. I found it on the internet but it is not clear who to credit for creating it. If anyone knows, let me know and I will add a credit. Most people know that after a meal, insulin (the energy store hormone) rises and then falls within a few hours. Glucagon (the energy release hormone) moves opposite to insulin. They stabilize after 3-4 hours and hold steady. Blood glucose does as well. For a while.

▶ But this graph shows that there is a **High gear** that starts kicking in around 12 hours. After that time, glycogen in the liver runs out and therefore blood glucose which was being made from that glycogen starts to nosedive. One of the forms of fat, FFA (free fatty acids) ramps up to compensate. Ketone bodies, another form of fat starts ramping up at that point too but you can see it rises more slowly. Around 11-12 hours, as your body transitions to burning fat, its demand for glucose falls off, allowing glucose levels to recover and level off at their new low.



▶ By the time you get to about 14 hours glucose has stabilized at its high gear level and your body is running entirely on fat. Also at this point, ketones have built up to the point that FFA can start to fall as you are getting more and more fuel from ketones. At about 20 hours the lines cross and you are running more on ketones than FFA. FFA continues to fall while ketones continue to rise. You are transitioning into "ketosis".

▶ And very importantly, look at the insulin and glucagon. They start transitioning to their high gear around 11 hours and insulin finds its new stable low around 12-13 hours. To me, this shows why it's critical to go at least 16 hours. So that **you spend some time each day in this high gear for both burning fat and for reversing insulin resistance**. I try shoot for 18 hours whenever I can so I can spend 5 hours in high gear per day. And, it is easy to see that eating the "normal" way we are socially programmed to eat, we will almost never get into high gear since it takes 14 hours. Even if we don't snack at night, we still probably just miss getting in it every day and we certainly don't spend any real time there if we happen to occasionally get through the door...

▶ **This High Gear is what TRE has that every other diet and maintenance program out there lacks!!**

Dr. Jason Fung's Number 1 Tip

- ▶ In the 1960s and 1970s there was almost no obesity even though we had mostly the same junk food, exercised less and were far less conscious of how many calories were in food than we are today.
- ▶ On the right is an excerpt from one of Dr. Fung's blogs that makes the case.
- ▶ So what he asks is the difference between then and now? **"They were not eating all the time."**
- ▶ **"Don't eat all the time."**
- ▶ Somewhere along the way, we started snacking between meals, and eating early as well as late at night.
- ▶ Consequently our insulin was always high and our bodies were far more in "store energy" mode than "release energy" mode.

What was the diet of the 1970s? They were eating white bread and jam. They were eating ice cream. They were eating Oreo cookies. They were *not* eating whole wheat pasta. They were *not* eating quinoa. They were *not* eating kale. They were *not* counting calories. They were *not* counting net carbs. They were *not* even really exercising much. These people were doing everything 'wrong' yet, seemingly effortlessly, there was no obesity. Why?

What about the diet of the Chinese in the 1980s? They were eating tons of white rice. On average, over 300 grams per day, compared to a low carb diet of less than 50 grams and all highly refined. Yet they had virtually no obesity. Why?

What about the diet of the Okinawan? Over 80% carbohydrates, and mostly sweet potato, which has some sugar in it. What about the Irish in the 1970s, with their beloved beer and potatoes? They didn't think twice about what they were eating, but until recently there was almost no obesity. Why?

The Myth of “Skipping Meals”

- ▶ There is an idea that human beings are supposed to have a certain number of meals each day at certain times and that anything less is “skipping meals”.
- ▶ This is nonsense and in fact bears very little resemblance to how people ate throughout most of human history.
- ▶ We evolved not always eating every day and we certainly didn’t have the luxury of getting a consistent 3 square meals a day.
- ▶ 3 square meals a day over time became 5 to 6 meals with snacks.
- ▶ Frequent eating is counter to how we evolved and is not good for US.
- ▶ Finally the idea that “breakfast is the most important meal of the day” was invented by cereal marketing departments. (Look it up.)

Sugar Crash

- ▶ We've all heard the term "Sugar Crash". What is it?
- ▶ Highly processed carbs especially sugar spike insulin unnaturally high because these are not the "foods" we really evolved to handle well.
- ▶ Remember, insulin is quick to rise and slow to fall.
- ▶ Your body can't excrete EXACTLY the right amount of insulin. If it spikes unnaturally high in response to sugar, then it will still not be "down" by the time all of the food is "stored".
- ▶ This sets up the situation where there is not much food left in the blood (low blood sugar) but the insulin still present is **preventing** your stored carbs and stored fat from being accessible!
- ▶ You have tons of energy **locked up** but you can't yet get to it.
- ▶ The predicable result is an energy crash. Fatigue, lightheadedness and cravings for more carbs to try to get new energy.
- ▶ Insulin resistance can give you the crash without the sugar because the insulin spikes higher than normal because of insulin resistance.

TRE Reverses Insulin Resistance

- ▶ The first benefit of TRE is that it reverses the insulin resistance that builds up over time in anyone who has been eating the standard American way – frequent eating and high carb.
- ▶ Dr. Kraft and Dr. Fung have found that simply giving your insulin receptors a long daily break from the high insulin assault will reverse and over time totally cure insulin resistance.
- ▶ The daily long break allows the insulin receptors to heal and regenerate. This can take many months but it is very worth it.
- ▶ Becoming insulin sensitive (the opposite of insulin resistance) is one step toward becoming “fat adapted”.
- ▶ When you are insulin sensitive, your body can store your meal quickly and get your insulin back down quickly because it works faster and doesn't need to spike as high to begin with.
- ▶ Then you transition back to using stored energy without the fatigue.

Sugar Adapted – The Modern Norm

- ▶ If we've been on a high carb and/or high sugar diet for a long time, we become "sugar burners". We have plenty of sugar burning enzymes.
- ▶ But due to atrophy, we have a lack of fat burning enzymes and mitochondria.
- ▶ Our stomach becomes like a gas tank. We start running out of energy when the food we've just eaten is digested.
- ▶ We rely on meals for energy and will experience fatigue, hunger, cravings and possibly lightheadedness until we get our next hit of food (carbs).
- ▶ This in turn causes snacking on high carb foods between meals.

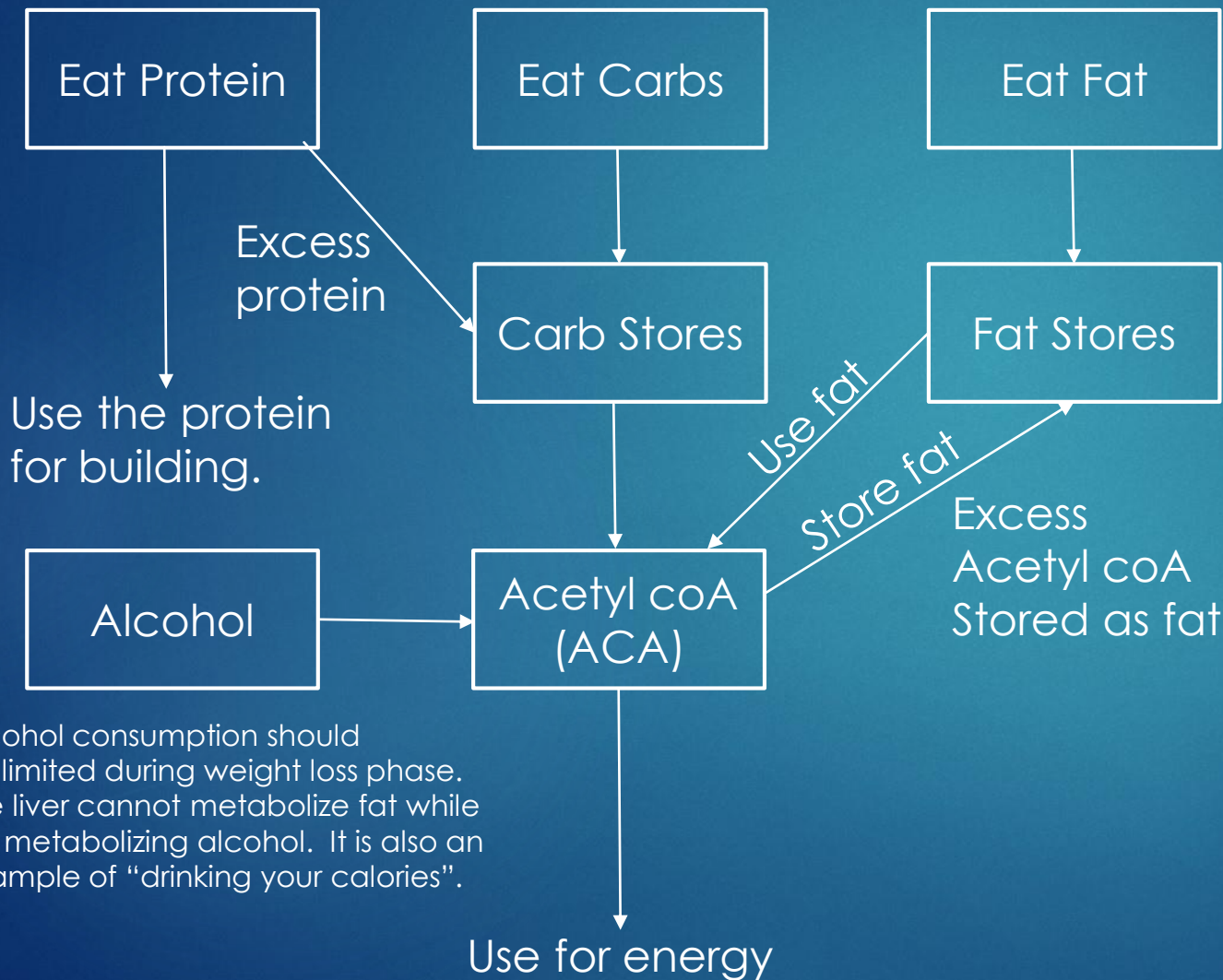
Fat Adapted – THE GOAL

- ▶ One of the results of the TRE protocol is becoming “fat adapted”.
- ▶ Being fat adapted means your body can access and burn its fat for energy very easily.
- ▶ Part of becoming fat adapted is becoming “insulin sensitive” by reversing your insulin resistance providing access to your stores.
- ▶ But part of it is also that your fat burning pathways need to be rebuilt.
- ▶ By using those pathways extensively, TRE builds up a big supply of fat burning enzymes and mitochondria.
- ▶ Eliminating sugar while becoming fat adapted will speed the process.
- ▶ Now, when you finish a meal, your insulin will not rise as much as it used to. Insulin will be down before you are out of energy.
- ▶ After your food is “put away”, you transition smoothly to burning your own stores, carbs first. When you run out of carbs, you have the enzymes to smoothly transition to fat without dipping in energy.

How do you know when you are Fat Adapted

- ▶ You can fast for 16 or more hours without getting hungry.
- ▶ You don't get hungry between meals.
- ▶ You don't get fatigue and/or low blood sugar between meals.
- ▶ You have plenty of energy while fasted.
- ▶ You have great workouts fasted. You don't need to "carb load".
- ▶ You don't have carb or sugar cravings.
- ▶ You start to lose fat because you can transition quickly to the low insulin state enabling fat burning.
- ▶ This quick transition is also what eliminates the period of fatigue.
- ▶ Fat Adapted is what we are "supposed to" be. It is the normal state for human beings that has been messed up by frequent eating combined with a high carbs.

Simplified Metabolic Diagram



Alcohol consumption should be limited during weight loss phase. The liver cannot metabolize fat while it is metabolizing alcohol. It is also an example of "drinking your calories".

- ▶ Acetyl coA is the substance that the body can directly use as energy.
- ▶ Carbs are converted into ACA.
- ▶ Excess protein is converted to carbs (glycogenesis), then to ACA if not burned as carbs.
- ▶ Excess ACA is converted to fat. (lipogenesis)
- ▶ Fat is converted to ACA before it can be used as energy.

How TRE burns more calories

Law of Physics: Energy is used any time energy is converted from one form to another

- ▶ Let's say you are in maintenance mode where you neither losing nor gaining weight eating 5 or 6 small meals. You are eating C calories.
- ▶ You eat 5 small meals a day in such a way that each time you are about to run out of digested food, you eat your next meal.
- ▶ Now suppose you get that same amount of calories (C) in 2 or 3 bigger meals.
- ▶ Each meal is more calories than you can either use directly or store as carbs so some of the calories must be converted to fat. (Lipogenesis)
- ▶ Lipogenesis uses energy – it has been called “extremely inefficient”.
- ▶ Then, when you are in your fasted state and need fat for energy, the fat has to be converted back to Acetyl coA. This is a second “conversion” that uses energy.
- ▶ So those C calories are now C minus the energy used by two inefficient conversions. **Which puts you in a deficit.** It's as if you ate less calories!

TRE increases Norepinephrine

- ▶ Another way TRE increases metabolism is by increasing the hormone called Norepinephrine also known as Adrenalin.
- ▶ Contrary to popular myth, fasting does not cause your body to reduce metabolism. In fact, just the opposite.
- ▶ If during human evolution, temporarily losing access to food decreased our metabolism (i.e. weakening us and making us less energetic), the human species probably would not have survived.
- ▶ Fortunately, evolution selected for the correct response. When our bodies detected that we lost access to food, our norepinephrine increased, boosting our metabolism so that we could put more effort into regaining a food source with strength and vigor.

Digestion

- ▶ Our digestive systems were never intended to be “in use” for 20 hours a day.
- ▶ It takes 4-8 hours to digest depending on what you ate and how much.
- ▶ So, if we eat first thing in the morning and snack after dinner, then our digestive system only gets a few hours break each night (if that).
- ▶ But staying within an eating window of 6-8 hours gives our digestive system a massive 10 hour or more break each day!
- ▶ Many people have reported that their digestive issues have greatly improved if not completely disappeared doing TRE.
- ▶ Why? Your body has tremendous capacity to heal and repair itself but **you can't repair a highway while traffic is on it.**
- ▶ TRE gives your digestive highway a big break from traffic each day so your body can perform necessary maintenance of the system.

Convenience

- ▶ One of the biggest benefits of TRE is how convenient it is, especially as compared to the standard 5-6 small meal per day low calorie diet.
- ▶ Those many small meal plans have you constantly thinking about food so you can get all of your meals in throughout the day.
- ▶ In order for them to be the right foods in the right small amounts, you have to typically do a bunch of food prep and planning.
- ▶ Your day revolves around getting your meals and snacks in at the right times so as not to “skip a meal” causing hunger etc.
- ▶ With TRE, you don’t have to think about breakfast. You don’t really have to think about food until noon or later at which point you simply have a healthy but normal lunch (i.e. much more flexible options).
- ▶ If you are in meetings or stuck in a place that has no good food options, no worries. Simply extend your fasting window which you will be able to do with no hunger and eat better options later when it is convenient.
- ▶ You don’t stress snacks and snack times. Really nothing could be easier.

Myth: TRE will lead to Muscle Loss

- ▶ Another myth is that “skipping meals” causes you to lose muscle.
- ▶ This doesn't make sense from an evolutionary point of view as early humans often struggled to find food. Why would the body prefer to eat muscle that it needs to hunt or otherwise acquire food?
- ▶ In fact, the entire purpose of fat storage is to give you the ability to ride out periods of famine.
- ▶ Why would our bodies evolve to consume needed muscle when there is fat available whose only purpose is to provide energy?
- ▶ The truth is that “skipping meals” does not cause muscle loss, especially not daily TRE where you are eating every day.
- ▶ A low calorie standard diet can easily lead to muscle loss for reasons already explained (you don't have access to your fat under insulin).
- ▶ You **do** need to eat protein every day. If you lose muscle, it is because you are not eating enough protein (how much to eat is on a later page) or you are not strength training, not because of TRE.

Human Growth Hormone (HGH)

- ▶ TRE preserves muscle in two main ways that standard diets do not.
- ▶ By keeping insulin so low, your body has full access to its fat for energy which it prefers to use.
- ▶ It only breaks down muscle if it is forced to by losing its access to fat which happens under “calorie restriction” plus frequent eating.
- ▶ The second reason is HGH is kept high. HGH rises during sleep because sleep is our body’s rebuilding time.
- ▶ The amazing thing is that when we wake, HGH does not fall **until we eat**. It falls *in response* to insulin rising.
- ▶ In fact, studies show that HGH continues to rise slowly the longer we fast which makes sense from evolutionary standpoint.
- ▶ High HGH during our fasting window preserves and builds muscle.
- ▶ HGH also is an appetite suppressant.

Does TRE cause muscle loss?

► Lets ask these guys...



The Truth About Intermittent Fasting - Why It Does Not Cause Muscle Loss Or Metabolic Slowdown

SixPackAbs.com ✓ 115K views · 9 months ago

Fast For The Most Effective, Scientific Fat Loss: <http://go.sixpackabs.com/scien4428> What's going on, SixPackAbs.com viewers?

► Remember, the 16:8 “Leangains” TRE protocol **originated** in the body building world.

Protein Supplementation

- ▶ In order not to lose muscle and hopefully gain muscle, should to have about $\frac{1}{2}$ g of protein per pound of body weight per day.
(Google the myth of 1 g/lb optimal protein intake for body builders)
- ▶ It is possible to get enough protein entirely through your food but if you find you are not getting enough or want to pack on muscle, a protein shake is great as one of your snacks or with a meal.
- ▶ Different proteins have different absorption rates: Whey is a common quick absorbing protein and Casein is a common slow absorbing protein. (egg based protein is in the middle)
- ▶ Therefore, I recommend that you get a blend of at least Whey and Casein so that you can get a nice time released effect throughout the day, rather than just immediately after consuming.
- ▶ Protein powders have gotten so good these days that you can easily find a good tasting blend that has at least 30g of protein per serving for 150 calories or less with very little carbs and fat.

Do you need to count calories on TRE?

- ▶ You will see debates on the internet: Some people say TRE is so amazing, you don't even need to count calories!
- ▶ Other people say, yes of course you do but it still has a lot of benefits.
- ▶ Who is right? They both are...
- ▶ Many people actually do have good success switching to the TRE protocol without giving calories a second thought. The combination of the smaller eating window, increased metabolism plus all of the other benefits talked about here are enough to facilitate consistent weight loss.
- ▶ However other people will still naturally eat too many calories usually because they are choosing the wrong kinds of foods.
- ▶ I always read labels because its very easy to way underestimate otherwise. I also keep my TDEE in mind when making choices.

Combining TRE and Low Carb

- ▶ One of the benefits of TRE over other protocols is that you don't have to totally eliminate carbs – especially during maintenance.
- ▶ TRE reduces insulin in a totally different way.
- ▶ Many people lose weight on TRE without going low carb.
- ▶ However, many people find that combining TRE with eating low carb during the weight loss phase is a 1, 2 knockout punch.
- ▶ This will allow you to have the longest base insulin window possible.
- ▶ During the weight loss phase you definitely want to eliminate sugar and “junk food” as much as possible.
- ▶ But it is also beneficial to eliminate or reduce simple carbohydrates, especially highly processed foods.
- ▶ Enjoy good carbs like fruits and vegetables and don't worry about counting carb grams like you would have to on a keto diet.

Carbs and Net Carbs

- ▶ Ok, with TRE I said you don't have to count carb grams like on a low carb or keto diet.
- ▶ But if you are combining TRE with LC, it is a good idea to have an idea of how many carbs grams you are consuming to mitigate how high you are spiking your insulin in your eating window.
- ▶ When calculating carbs, you should look at "Net Carbs" instead of the grams of "carbohydrates" listed on the nutrition label.
- ▶ The reason is the government rules for nutrition labelling says that anything that is not a fat or protein **MUST** count as a carb.
- ▶ But this is stupid because you obviously should at least subtract the fiber grams because they are undigestable (pass right through).
- ▶ $\text{Net Carbs} = \text{Carbohydrates} - \text{fiber} - \text{half of the "sugar alcohols"}$.
- ▶ Sugar alcohols are neither sugar nor alcohol. They are only partially digested and are very low on the glycemic index (don't spike insulin).
- ▶ Atkins says you can subtract all of them, but most say subtract half.

Hunger – An Amazing Surprise

- ▶ This is the biggest worry people have when first hearing about TRE. “If I skip breakfast, I will be starving all morning!”. (but it’s not true)
- ▶ Hunger IS NOT triggered by a lack of food. It is triggered on a schedule of when you are used to having meals.
- ▶ Your body (after a week or two) will adjust to whatever eating schedule you do.
- ▶ Hunger also comes in waves. If you are hungry, you don’t just keep getting hungrier and hungrier. It passes on its own without food.
- ▶ The amazing surprise of TRE and IF is that once you are fat adapted, hunger spookily disappears almost altogether. I’ve gone 40 hours without getting hungry.
- ▶ HGH staying up during the fasting window is partly responsible for this because it is an appetite suppressant.
- ▶ Dr. Fung says its also because your body has access to all the energy it needs via the low insulin access to your fat stores.

Energy and Fatigue

- ▶ Another big worry people have is that they will lack energy and become fatigued because they are “skipping meals” that should be their “fuel”.
- ▶ But we’ve seen it doesn’t work that way. When you are fat adapted and insulin sensitive, your stomach is not a gas tank.
- ▶ In fact, it is frequent eating that causes fatigue and lack of energy. Because digestion saps energy and insulin can often take more time to fall than the food takes to be put away. This leads to your body needing energy but not being able to access it because the insulin still has you in “store mode”.
- ▶ You will have **far more** energy and less fatigue doing TRE than you do on a more frequent eating schedule.
- ▶ You will also have increased focus and cognitive function.
- ▶ All of this also makes sense from an evolutionary standpoint. If being unable to acquire food for a little while gave us less energy and focus, we wouldn’t have made it as a species.

Opposite of Conventional Wisdom

- ▶ We are told that we need to eat frequently so that we don't get hungry but people get much hungrier following the frequent eating protocol.
- ▶ In fact after doing TRE for a while, you almost lose the ability to get hungry even if it has been 20 or more hours since your last meal.
- ▶ We are also told that we need to eat frequently to keep our energy up. But again it is the opposite.
- ▶ Frequent eating leads to fatigue due to consistent high insulin blocking your access to stored energy.
- ▶ While your insulin is at baseline, you have full access to vast quantities of energy and so you remain energetic and your metabolism remains high.

“But I won’t *like* doing this...”

- ▶ I thought the same thing but after you do it for a while you just get used to it. I don’t miss breakfast and am grateful for the extra time.
- ▶ I admit, you might *like* the way you have been eating more than you will like TRE. But if you are reading this, you are probably overweight which means eating that way leads to insulin resistance and weight gain. You like the food and the schedule, but you don’t like being overweight and unhealthy.
- ▶ So, if you want to be fit and healthy, which option for getting there will you like the most?
- ▶ The available options are conventional diets, keto diets and TRE. Out of those, I think you will like TRE by far the best. And out of those options, TRE also has the benefit of working the best.

Autophagy

<http://thechalkboardmag.com/what-is-autophagy-intermittent-fasting-process>

- ▶ Autophagy literally means “eating self” in Greek.
- ▶ “It is the mechanism by which cells cannibalize some of their own parts in a continual cleanup process.”
- ▶ It is a very important process whereby your body rids itself of “bad stuff” that has accumulated such as cells that are no longer functioning properly and are beyond repair.
- ▶ Studies show that the frequent eating protocol that is common limits or even prevents autophagy because it is another process that is blocked by insulin. When insulin is high, your body is in “store” mode.
- ▶ It can’t tear itself down (even bad stuff) and store at the same time.
- ▶ The result is the bad stuff accumulates causing health problems and diseases. Cells never get a chance to repair themselves or be replaced by better versions by clearing out the junk.
- ▶ By unleashing autophagy, you will feel better. Things in your body will start to work better and you will literally age better.

Fasting is Detox

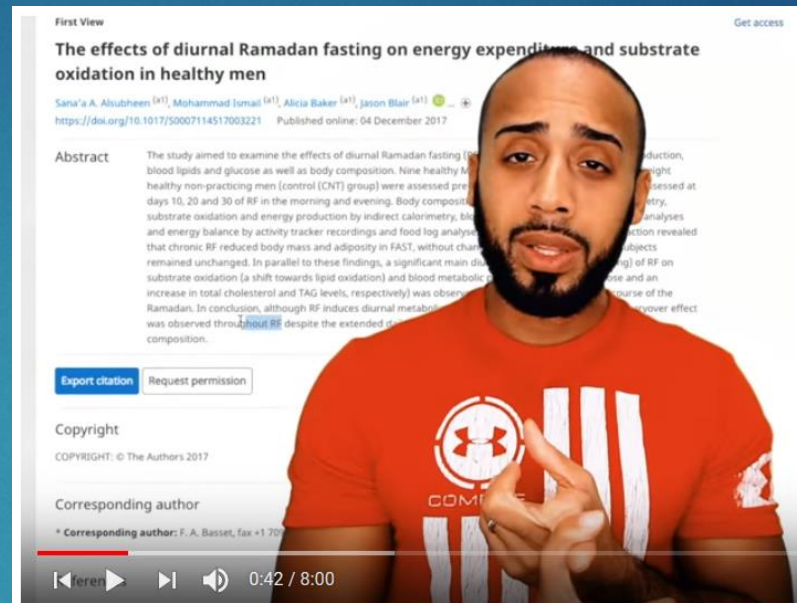
- ▶ More information is coming out regarding why obesity and sedentary lifestyles lead to so many diseases.
- ▶ Fat cells store more than fat. They soak up and absorb lots of toxins and hormones including estrogen along with the fat.
- ▶ These toxins do not age well and the longer they remain locked up in fat cells, the more chance they have of causing problems.
- ▶ Burning fat, cleanses the fat cells of these toxins because they are expelled from the body as the fat is released.
- ▶ Importantly, this happens even during the maintenance phase of TRE when you are no longer losing weight. The reason is that even when you stay at constant weight, under TRE you will go through alternating time periods of burning fat and storing fat. This prevents the toxins in your cells from aging long enough to cause problems.
- ▶ Exercise is a great complement to fasting for flushing the contents of your carb and fat cells. Always be depleting and restoring your cell contents rather than letting them sit for ages spoiling.

Edward V. breaks down the studies!



New study shows why fasting is an anti-aging beast!!! I break down a... Read more
Fledge Fitness · 6 hours ago

239 likes, 23 comments



First View
The effects of diurnal Ramadan fasting on energy expenditure and substrate oxidation in healthy men
Sana'a A. Alsubhean, Muhammad Jumaal, Alicia Baker, Jason Blair
https://doi.org/10.1017/S0007114517003221 Published online: 04 December 2017

Abstract: The study aimed to examine the effects of diurnal Ramadan fasting (RF) on energy expenditure, substrate oxidation and energy production by indirect calorimetry, body composition, blood lipids and glucose as well as body composition. Nine healthy men (control (CNT) group) were assessed pre-RF and on days 10, 20 and 30 of RF in the morning and evening. Body composition, substrate oxidation and energy production by indirect calorimetry, blood lipids and glucose as well as body composition were measured. RF reduced body mass and adiposity in FAST, without changes in lean mass. RF did not affect energy balance by activity tracker recordings and food log analysis. RF did not affect substrate oxidation (a shift towards lipid oxidation) and blood metabolic markers (triglycerides, total cholesterol and TAG levels, respectively) was observed during the Ramadan. In conclusion, although RF induces diurnal metabolic changes, it does not affect body composition despite the extended duration of the fast.

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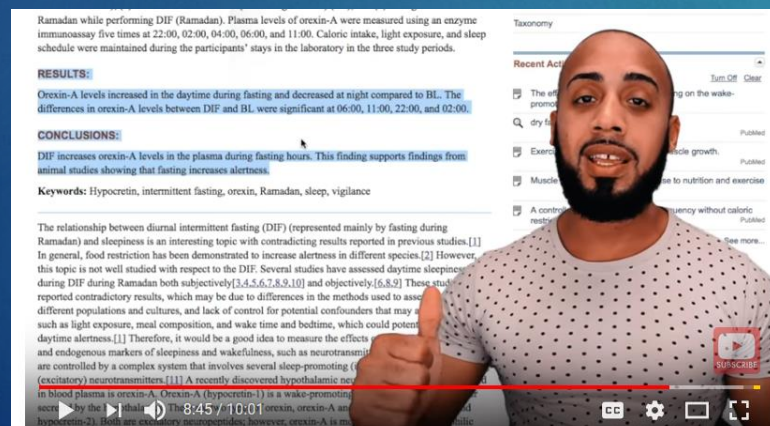
From the Fledge Fitness Youtube Channel



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New study further proves intermittent fasting is a fat burning machine



Ramadan while performing DIF (Ramadan). Plasma levels of orexin-A were measured using an enzyme immunoassay five times at 22:00, 02:00, 04:00, 06:00, and 11:00. Caloric intake, light exposure, and sleep schedule were maintained during the participants' stays in the laboratory in the three study periods.

RESULTS: Orexin-A levels increased in the daytime during fasting and decreased at night compared to BL. The differences in orexin-A levels between DIF and BL were significant at 06:00, 11:00, 22:00, and 02:00.

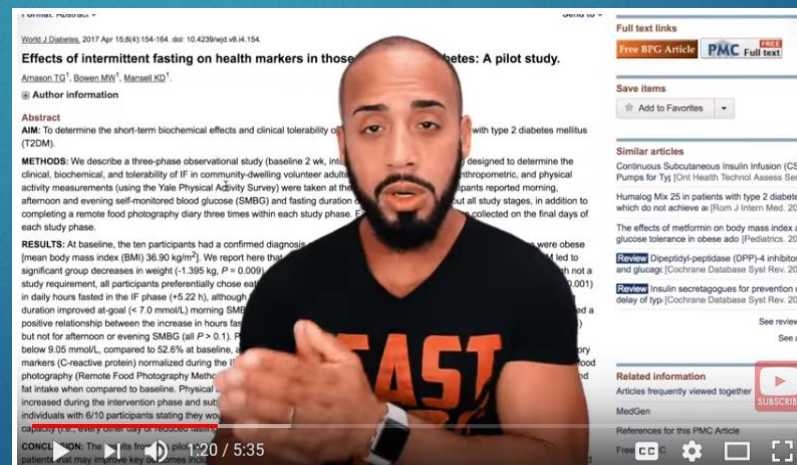
CONCLUSIONS: DIF increases orexin-A levels in the plasma during fasting hours. This finding supports findings from animal studies showing that fasting increases alertness.

Keywords: Hypocretin, intermittent fasting, orexin, Ramadan, sleep, vigilance

The relationship between diurnal intermittent fasting (DIF) (represented mainly by fasting during Ramadan) and sleepiness is an interesting topic with contradicting results reported in previous studies. In general, food restriction has been demonstrated to increase alertness in different species. However, this topic is not well studied with respect to the DIF. Several studies have assessed daytime sleepiness during DIF during Ramadan both subjectively [3,4,5,6,7,8,9,10] and objectively [6,8,9]. These studies reported contradictory results, which may be due to differences in the methods used to assess sleepiness in different populations and lack of control for potential confounders that may affect sleepiness such as light exposure, meal composition, and wake time and bedtime, which could potentially affect daytime alertness. Therefore, it would be a good idea to measure the effects of DIF on endogenous markers of sleepiness and wakefulness, such as neurotensin, which is controlled by a complex system that involves several sleep-promoting (GABAergic and serotonergic) neurotransmitters [11]. A recently discovered hypothalamic neuropeptide in blood plasma is orexin-A. Orexin-A (hypocretin-1) is a wake-promoting neuropeptide secreted by the lateral hypothalamus [12]. Orexin-A and orexin-B (hypocretin-2). Both are excitatory neuropeptides; however, orexin-A is more involved in promoting wakefulness.

8:45 / 10:01

New study proves intermittent fasting actually gives you energy (2018)



World J Diabetes, 2017 Apr 15;8(4):154-164. doi: 10.4239/wjcd.v8i4.154

Effects of intermittent fasting on health markers in those with type 2 diabetes: A pilot study.
Anasou TG¹, Bowen MW¹, Mansell KD¹

AIM: To determine the short-term biochemical effects and clinical tolerability of intermittent fasting (IF) in community-dwelling volunteer adults with type 2 diabetes mellitus (T2DM).

METHODS: We describe a three-phase observational study (baseline 2 wk, intervention 4 wk, and follow-up 2 wk). Anthropometric, and physical activity measurements (using the Yale Physical Activity Survey) were taken at the beginning and end of each study phase. In addition to the baseline and end of study stages, in addition to completing a remote food photography diary three times within each study phase.

RESULTS: At baseline, the ten participants had a confirmed diagnosis of T2DM and were obese (mean body mass index (BMI) 36.90 kg/m²). We report here that during the 4-week IF period, there were significant group decreases in weight (-1.395 kg, P = 0.009), BMI (-0.47 kg/m², P = 0.001), and waist circumference (-4.1 cm, P = 0.001). Participants preferentially chose eating in daily hours fasted in the IF phase (+5.22 h), although the mean duration of the IF phase was 11.5 h. There was a positive relationship between the increase in hours fasted and the decrease in weight (r = 0.71, P = 0.001), but not for afternoon or evening SMBG (all P > 0.1). Fasting glucose levels were below 9.05 mmol/L, compared to 52.6% at baseline, and C-reactive protein (CRP) normalized during the IF phase. There was a significant decrease in total fat intake when compared to baseline. Physical activity increased during the intervention phase and subsided during the follow-up phase. All individuals with 6/10 participants stating they would continue IF.

CONCLUSION: The effects of IF in those with T2DM may improve key health markers that may improve key health markers.

1:20 / 5:35

Intermittent fasting actually helps protect against type 2 diabetes (studies show)

The Transition Period

- ▶ You cannot go from being an insulin resistant sugar burner to a insulin sensitive fat burner overnight.
- ▶ There will be a transition period that can last a week or two that may include the following difficulties:
 - Hunger ← This is a common one
 - Fatigue ← This is a common one
 - Headaches ← I had 1 on day 3
 - Nausea ← I did not experience
 - Dizziness ← I did not experience
- ▶ Part of this is actual sugar withdrawal! Your body will experience withdrawal symptoms from sugar like any other drug.
- ▶ Your hunger needs to adjust to a new schedule. It will happen.
- ▶ The fatigue is because you will not have easy access to your fat stores for energy until you become fat adapted. It can take one or two months to become fat adapted but fatigue does not last that long.

Transition Slowly

- ▶ Going cold turkey into everything will be the toughest way.
- ▶ I recommend the following schedule: (don't rush, this is for life)
 - 1-2 weeks: Eliminate sugar and processed carbs
 - 1-2 weeks: 12 hour TRE -- example no eating 8pm to 8am.
 - Start skipping breakfast doing 16:8 TRE. No eating 8pm to noon.
 - After a while of doing 16:8, I settled into the 17-avg schedule.
- ▶ If you experience hunger or fatigue or any of the other symptoms, just know that it is temporary.
- ▶ Know that your body is creating and growing the zillions of fat burning enzymes and mitochondria that you have been lacking.
- ▶ When you get to that other side, you will be a fat adapted, fat burning machine!
- ▶ When you have been doing 16:8 for several months, occasionally skip lunch as well as breakfast to give you a 20 or more hour window. Maybe do that once or twice a month when it fits in naturally.

Be Flexible – TRE allows it

- ▶ First of all, don't be a slave to the clock and feel like you have to start and stop your windows at an exact minute.
- ▶ Sometimes you will be early, sometimes late. No problem. Stuff will come up but just work around it as best as possible.
- ▶ Sometimes there is a breakfast event or late event or an opportunity for a nice Sunday breakfast with family.
- ▶ Don't be the person sitting there with no food. Partake and enjoy it.
- ▶ This is not like Keto where one cheat meal messes you up for days. Every day you get that long insulin break accumulates the benefit.
- ▶ If you have breakfast one morning, one option is to skip lunch too the next day.
- ▶ The other option is to just not worry about it!

Advanced TRE (optional, don't freak)

- ▶ This is optional – don't let it scare you off if you are new to this.
- ▶ After you have been doing 16:8 for several months, it will be easy to extend your fasting window on occasion.
- ▶ Occasionally, push to a 20 hour window either by skipping lunch or just compressing your meals into a 4 hour window.
- ▶ When you are fat adapted, this will be easier than you might think. There will be no hunger.
- ▶ These 20 hour fasts can be useful if you know you will be having a big dinner full of not so healthy foods or you overate already.
- ▶ And occasionally, (again optional) you can skip an entire day.
- ▶ These will give you very deep insulin breaks, with lots of fat burning and autophagy. 16 hours is just when certain benefits begin.
- ▶ Each time you extend beyond your longest fast, your body will create more fat burning enzymes just like runners create more red blood cells by pushing past their longest runs.

General Advice

Shop the perimeter of the store

- ▶ This is standard advice but its for the most part true.
- ▶ Shopping the perimeter allows you to get whole foods. Real foods. Fruits, vegetables, meats, dairy including eggs.
- ▶ Eggs are a healthy and delicious source of protein: 6-7 grams per egg with 0 carbs and only 70 calories.
- ▶ There are a few good things in the middle like frozen vegetables, apple sauce (no sugar added apple sauce) and **coffee!**
- ▶ And there are some bad things on the perimeter including some very high carb, high sugar yogurt marketed as being “healthy”.
- ▶ But for the most part, shopping the perimeter allows you to avoid most of the “foods” that contain simple carbs, sugar and lots of other “processed” junk.

Deli Meat

- ▶ The deli counter is a very easy way to get lean, low or no carb protein.
- ▶ Here is HEB oven roasted turkey breast for example – only 60 calories for 2 ounces. 11g of protein and 0 carbs.
- ▶ Read labels:
 - Some deli meats have carbs some do not.
 - Some cheeses have carbs, some do not.
 - Salami has 0 carbs but has **4 times the calories** of oven roasted turkey.
- ▶ Another tip: the “cubed” versions are easier to throw into salads.

HEB OVEN ROASTED
TURKEY BREAST

Packed on: 04.28.18 Sell by: 05.05.18 @ 13:19

NET WEIGHT \$/lb \$ 13.51
1.595 lb 8.47

turkey: oven roasted(turkey,turkey broth,contains 2% or less of:salt,dextrose,sodium phosphate, rubbed with,paprika,dehydrated onion,spices),
KEEP REFRIGERATED



0259176 14 13514

580

HEB San Antonio, TX. 78204

Nutrition Facts

Serving Size 2 oz (56 g)
Servings Per Container Varied

Amount Per Serving	
Calories 60	Calories from Fat 15
%Daily Values *	
Total Fat 1.5g	2%
Saturated Fat 0.5g	3%
Trans Fat 0.0g	
Cholesterol 25mg	8%
Sodium 400mg	17%
Total Carbohydrate 0g	0%
Dietary Fiber 0g	0%
Sugars 0g	
Sugar Alcohols 0.0g	
Protein 11g	

My go-to meal during weight loss or maintenance when I'm home alone

- ▶ Here is a very filling, delicious and easy to make meal that is low carb, high in protein and has healthy vegetables.
- ▶ Half a head of lettuce, olive oil and white vinegar dressing, 5 to 8 ounces of deli meat, shredded cheese, cucumber, bell peppers, salt and pepper.
- ▶ Make sure you salt your food (sea salt is preferable). You can lose a lot of water and hence a lot of salt eating low carb. But you need salt. It adds flavor as a bonus.

Don't Drink Your Calories

- ▶ Everyone knows sugary soda is bad.
- ▶ But fruit juice like OJ is just as bad. Your body can't even distinguish.
- ▶ Real fruit is fine because its fructose is bound up in fiber and is slowly time released. Your insulin levels do not spike high.
- ▶ But drinking fruit juice is the same as drinking soda – large quick insulin spike that takes a long time to fall.
- ▶ Drinks can easily add many hundreds of calories per day.
- ▶ Drinking is not a good way to get calories because drinks do not fill you up like real food.
- ▶ With water and the many 0 calorie drinks available, there is no good reason to add calories with drinks.
- ▶ A little cream in coffee is one exception (explanation later).

Drink Lots Of Water

- ▶ Its pretty well known that you need to drink a lot of water when trying to lose weight.
- ▶ At least 64 to 96 ounces of water per day is recommended.
- ▶ It is needed by the liver to metabolize fat.
- ▶ If you get dehydrated, your kidneys cannot remove toxins efficiently and the liver has to do the job (**instead of** its fat burning job).
- ▶ Dehydration leads to fatigue and poor workout performance.
- ▶ Water helps fill you up and curb appetite.
- ▶ It helps keep things moving to keep you regular.
- ▶ I drink two or three 12 oz. glasses of water immediately upon waking.
- ▶ I find room temperature water much easier to drink than cold water.

Coffee

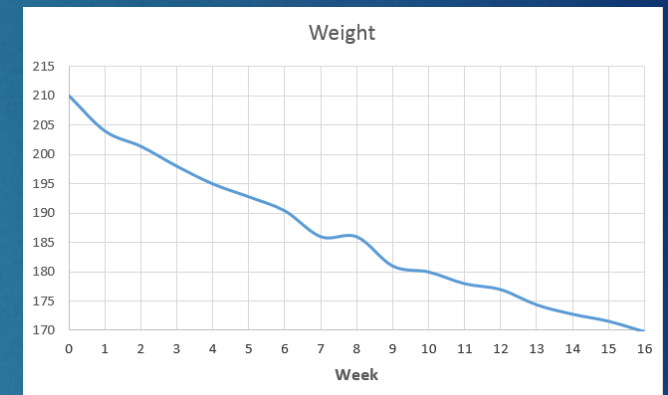
- ▶ Coffee is ok!
- ▶ Coffee is better than ok: it has numerous benefits.
- ▶ 0 calories by itself.
- ▶ Curbs appetite.
- ▶ Raises metabolism.
- ▶ It's delicious! Makes it easy to skip breakfast.
- ▶ You can have coffee with artificial sweeteners and a splash of cream.
- ▶ Use heavy whipping cream, not half and half, milk or creamer. Why?
 - Cream has **no insulin response** so does not break a fast.
 - Cream is 100% fat – it just mixes in with the fat already in your blood.
 - Don't load up on cream though – it still has 50 calories per tbsp.
- ▶ Suggestion: don't have your coffee immediately after waking. You won't be hungry right away. Have water upon waking. Wait an hour or two to have your coffee to curb appetite all the way to lunch.

Artificial Sweeteners

- ▶ They're ok! (from a weight loss perspective)
- ▶ I can't guarantee their safety but I believe they are safe.
 - The health risks of obesity and hyperinsulinemia are far greater.
- ▶ They have 0 calories but more importantly...
- ▶ They **do not spike insulin** so they do not break a fast.
- ▶ Use liquid versions if possible – The granule versions can have 3 or 4 calories per packet due to “dextrose” or “maltodextrin” filler.
- ▶ The FDA allows them to say 0 calories if calories are under 5.
- ▶ The few calories are not really the problem. The problem is those fillers are sugar like substances that have an insulin response.

Diet Soda

- ▶ Some people claim that drinking diet soda negatively affects weight loss progress.
- ▶ I drank about 2 to 4 diet cokes per day during my entire 40 lb weight loss and it did not seem to slow me down in the slightest.
- ▶ But what about those studies that show a correlation between drinking diet soda and being overweight?
- ▶ I believe there are 2 things at play here:
 1. Correlation is not causation. People who are already overweight for reasons having nothing to do with diet soda are more likely to drink diet soda so as not to make the problem worse.
 2. Diet soda is very enjoyable to drink with certain kinds of salty junk food such as chips, pretzels and fries. So much so that the enjoyment will cause you to eat more (and easily MUCH MORE) of the junk foods. These things just don't go nearly as well with water or other drinks. The junk food, not the diet soda is the real problem but be aware of this real effect so you can avoid it.



Workout!

- ▶ Working out is very important.
- ▶ If you go on a low calorie diet without working out, you will lose muscle along with fat. TRE mitigates this but not completely.
- ▶ This will cause you to plateau and then gain the weight back with an even slower metabolism than you started with.
- ▶ Bigger muscles allow you to lift heavier weights while working out which burns more calories while you work out.
- ▶ The more muscle you have, the higher your metabolism will be even while sleeping because muscle is “metabolically active”. (Higher TDEE)
- ▶ 1lb of muscle burns 3 times as many calories per day than 1lb of fat.
- ▶ You will look better. “If your body is shaped like a pear and you do a low calorie diet without lifting, you will simply end up looking like a smaller pear.” (Not my quote but I don't know who to credit)

Workout Fasted

- ▶ This is really key. You have ideally been fasting since last night and fat is already flowing because insulin is low.
- ▶ Your muscle (and remaining liver) carb stores are fully sufficient to power you through a great workout (as is your fat).
- ▶ Your workout will help deplete whatever remains of your carb stores so that your first meal after fasting will be used to replenish your carb tanks instead of being turned into fat.
- ▶ Working out has been itself found to reduce insulin resistance and thus improve insulin sensitivity.
- ▶ You may have heard, you NEED carbs to get a good workout. This is only true BEFORE you are fat adapted.
- ▶ When you are “fat adapted” you will have killer workouts fasted. Better in fact because digestion saps energy!

Strength Training

- ▶ Weight lifting or some form of strength training is essential.
- ▶ **If you don't strength train while losing weight, you will lose muscle.**
- ▶ Strength training builds metabolically active muscle that will turn your body into a fat burning furnace.
- ▶ Studies have shown that the **biggest component of metabolism is fat-free mass**. I.e. how much **muscle** you have.
- ▶ Your muscle burns calories 24/7, even when not working out.
- ▶ Run from any program that puts you on a low calorie diet and tells you that you cannot or should not strength train!
- ▶ Losing muscle reduces your metabolism and thus reduces the amount of calories you burn daily.
- ▶ This makes it easy to plateau at the low calorie level and easy to regain the weight and even more because of lower metabolism!

Cardio (empties your carb storage)

- ▶ Cardio is not as essential as weight training but I highly recommend doing it.
- ▶ It is bonus calories you're burning (300 to 600 per session probably).
- ▶ **Weight training depletes your muscle carb stores and cardio depletes your liver carb stores.** After your cardio you will definitely be running on fat. And your meals after workouts refill empty carb storage instead of fat cells.
- ▶ Cardio improves your endurance – you can trot up 4 or 5 flights of stairs and not be winded at the top.
- ▶ Cardio is the ONLY thing that works your heart muscle. You can't lift weights with your heart to strengthen it.
- ▶ Cardio will give you a strong heartbeat lowering your pulse rate. The heart of a runner needs to beat literally tens of thousands fewer beats per day!
- ▶ Doing cardio during the “transition phase” is especially beneficial. Do cardio early in the morning to deplete liver carb stores. The more hours you spend fueled by fat alone, the quicker you will become “fat adapted”.

Consistency

- ▶ There's an expression: "Showing up is half the battle".
- ▶ With working out, showing up (**consistently**) is 90% of the battle.
- ▶ Consistency is the key. Several days a week. Week after week. Month after month.
- ▶ A lot of people spend too much time figuring out the perfect routines but not enough time doing them.
- ▶ They buy fancy gadgets to measure vital signs to make sure they're in the correct "fat burning zone" for cardio but then aren't consistent.
- ▶ You don't need expensive technology. It's not rocket science.
- ▶ Running for example: if you're sucking wind and can't maintain, you're going too fast. If it's super easy, you're going too slow.
- ▶ Simple as that, but DO IT!

Weights and Cardio on the same day

- ▶ If you do weights and cardio on the same day, you should do the weights first.
- ▶ Fatigue from the cardio can compromise the effectiveness and intensity of the weight training.
- ▶ Cardio is easily done on fat alone. In fact, it is preferable not to have any carb stores left when doing cardio. Your workout will be fueled entirely by fat.
- ▶ Weight training on the other hand benefits from having carb stores in the muscles you are working which is why you don't want to deplete those stores with cardio first.

An example workout schedule

- ▶ A workout program is **FAR beyond** the scope of this document about Time Restricted Eating.
- ▶ Besides that, there are **many many** different good ways to workout.
- ▶ Consistency is the key so it's important to find a routine that you can be consistent with. This page is *****Just an example***!**
- ▶ What is the best gym? The one you will go to. **It must be convenient.**
- ▶ You don't need a gym membership or even weights. A lot can be done with body weight exercises (pushups, pullups, planks, etc.)
- ▶ Here is what I do if you're looking for **an example** starting point.
 - Monday Planks: Front plank then side planks (awesome for core)
 - Tuesday Back (Pullups or Rows), Run
 - Wednesday Chest (dumbbell bench press), Shoulders (raises or press)
 - Thursday Biceps, Triceps, Run
 - Friday Abs: Leg Lifts and/or crunches
 - Saturday Run
 - Sunday Nothing

Myth: Aging slows Metabolism

- ▶ It is commonly thought that metabolism slows with age.
- ▶ When we were younger, we seemed to be able to eat whatever we wanted without gaining weight.
- ▶ As we got older, it seemed like we could gain weight just by looking at food.
- ▶ This real effect generally *coincides with age* but the good news is this is **not** *caused by aging*.
- ▶ The effect is caused by a combination of insulin resistance and a loss of muscle mass due to lack of exercise.
- ▶ Both of these things happen very gradually. But over the years and then decades, the cumulative effect becomes large.
- ▶ Both of those things are addressable with TRE and strength training.
- ▶ Become fat adapted and lift heavy things. Then watch your metabolism roar back as your energy levels go through the roof!

Myths Debunked – Let's Review

- ▶ You need to eat 5-6 meals per day to “regulate blood sugar” or to “stoke the metabolic fire”.
 - No: Its best to keep insulin low as much as possible by eating infrequently.
- ▶ You need to eat 5-6 small meals per day for “hunger control”.
 - No: small meals create hunger – big meals prevent it.
- ▶ Breakfast is the most important meal of the day.
 - Breakfast is the most important meal of the day **to skip**.
- ▶ Fasting will put you into “Starvation Mode” reducing metabolism.
 - *yes, slightly* after 60-72 hours. Otherwise fasting raises metabolism!
- ▶ You have to “carb load” to get a good workout.
 - Your workouts will be better fasted once you are “fat adapted”.
- ▶ Fasting causes muscle loss.
 - Fasting preserves muscle by raising HGH (human growth hormone).
- ▶ Eating fat will make you fat.
 - Sugar and processed carbs were the real enemy all along.
- ▶ Aging slows metabolism.
 - It often coincides with age but is caused by insulin resistance and muscle loss.



What about Keto?

Ketosis and Ketogenic Diets?

- ▶ When your carb stores are very low, your body will burn fat for energy.
- ▶ This is called Ketosis because the fat must be converted to something called ketones to be used as fuel.
- ▶ Ketogenic diets commonly called “Keto” diets are designed to maximize the time you spend in ketosis. The way they do this is by being ultra low in carbs since carbs spike insulin the most.
- ▶ The standard ketogenic diet is about 75% fat, 20% protein, 5% carbs.
- ▶ Some versions are 90% fat, though I can’t imagine eating that way.
- ▶ While in the weight loss phase of TRE, I recommend eating *relatively low carb* so as to keep insulin in the “normal” range for eating vs. the high spikes you get from sugar and refined carbs. This allows you to return to baseline insulin level as fast as possible after your eating window ends.
- ▶ But with Time Restricted Eating (unlike with Keto diets), you can have good carbs, even fruit and baked potatoes without worrying about ketosis. Avoid sugar as much as possible during the weight loss phase.

Why TRE is better than "Keto" (IMO)

- ▶ TRE and Keto have the same goal: keep insulin low so that you have access to your fat, leading to weight loss and increased energy.
- ▶ Keto does it by severely restricting the kinds of foods you can eat. It restricts your diet to foods that spike insulin the least.
- ▶ TRE does it by letting insulin fall to base and then keeping it there for 10+ hours every day by simply not eating in that window.
- ▶ Even on the restrictive keto diet, your body does not get nearly the break from insulin that it gets from TRE. Low carb is not no carb and protein spikes insulin – just not as much as carbs.
- ▶ So even if done perfectly, Keto is only about 70% as effective as TRE at giving your body an insulin break.
- ▶ Most people don't like the food choices available under Keto. Missing the foods they love causes people to cheat or give up on Keto.
- ▶ If you never eat carbs, you will lose those enzymes becoming only a fat burner. You will lack what Mark Sisson calls 'metabolic flexibility'.

Why being Fat Adapted is better than being in Ketosis.

- ▶ Any little thing can knock you out of ketosis. It is a fairly fragile state and can take days to get back in once you are “out”.
- ▶ Being fat adapted on the other hand is the opposite of fragile. It takes months to achieve and would take months to undo.
- ▶ Getting into and remaining in ketosis requires very strict eating. TRE does not. When I was doing Keto I was told “Better not have a cheat meal. It will take **days** to get back into ketosis. It’s not worth it!”
- ▶ With TRE, you can achieve the same or better reduction of “time under insulin” by reducing the time of your eating window.
- ▶ Under TRE, the fewer meals you have per day, the more kinds of foods you can have. On a keto diet, your list of allowed foods is always the same very restrictive list.

Why low carbers can gain several pounds after eating carbs.

- ▶ The body retains **2.5 grams of WATER for every gram of glycogen** that it stores.
- ▶ If you've been doing a low carb diet for a while, your glycogen stores are probably low so that your body must use fat for energy.
- ▶ Depleting your glycogen stores has also caused you to lose the water weight your body hangs on to with the glycogen. This is why you initially lose pounds quickly going low carb.
- ▶ Let's say you start eating a lot of carbs, enough to gain 0.8 lbs. of glycogen. The scale will also measure the 2 lbs. of associated water.
- ▶ The next day you see a 3 pound gain on the scale and freak!
- ▶ You have not gained 3 pounds of fat. You may not have even gained *any* fat.
- ▶ When you lower your carb intake and exercise, you will lose it quickly.

Music Analogy

- ▶ Under TRE you don't eat "diet food" or restrictive "keto food".
- ▶ You try to eat "healthy food" as much as possible but you can have carbs and every meal is not a salad.
- ▶ The small eating window allows you to have more satisfying, enjoyable meals without exceeding your daily calorie budget.
- ▶ Everyone likes music but not everyone likes the same kinds of music.
- ▶ Would you rather listen to music you don't like 5 or 6 times a day? Or would you rather listen to music you like 2 or 3 times a day?
- ▶ You will be much more satisfied eating fewer meals if they fill you up and you enjoy the food.
- ▶ That satisfaction and enjoyment will make TRE easy to stick to and easy maintain as a lifestyle.

Maintenance after a traditional diet

- ▶ Maintenance is the term for what you are supposed to do after you hit your "goal weight" on a diet.
- ▶ You obviously can't eat the same way you did while you were gaining weight. If you do, you'll gain the weight back.
- ▶ You can try to commit to "eating clean" and sticking to a maintenance "calorie budget" spread over your N number of meals.
- ▶ You have to do this pretty much perfectly from now on. Sound fun?
- ▶ But no one can be perfect. Every time you slip up, you gain a little. Then a little more. And a little more.
- ▶ Before you know it, the weight creeps back on.
- ▶ This is why almost everyone who loses weight ends up regaining it.

Maintenance on TRE

- ▶ Maintenance on TRE looks exactly like TRE except with higher calorie meals. TRE is truly a **Program for Life**.
- ▶ You are already fat adapted and are used to the smaller eating window so it is easy to continue it as a lifestyle.
- ▶ The smaller number of meals gives you a much bigger calorie budget per meal.
- ▶ You don't have to be a "perfect" and "clean" eater all the time. No one is perfect and you can just be an imperfect human being who can enjoy food.
- ▶ On traditional maintenance, if you have a really high calorie dinner, you're toast because you've already had breakfast, lunch, and snacks. That dinner blows your calorie budget but on TRE it wouldn't.
- ▶ **Continuing with TRE prevents insulin resistance from returning!**

Example calorie budgets

- ▶ Let's say you're a person who maintains weight at 2200 calories and targets 1500 calories to lose.
- ▶ Look at how much more satisfying your meals will be on TRE.
- ▶ And how much easier it will be not to go over budget.
- ▶ Your standard diet meals are small and unsatisfying.
- ▶ On maintenance for example, it's **very easy** to go over 700 calories at dinner and each time you do that, weight creeps back on.
- ▶ It is much more difficult to go over TRE calories and thus difficult to regain weight. Your dinner is literally **twice the calories** of a standard diet or maintenance dinner!!

LG NS means Lean Gains "No Snack" after dinner

Meals	Standard	Lean Gains	LG NS	Lunch-Din	Warrior	OMAD	Time
Breakfast	300	0	0	0	0	0	7:00 AM
Morning Snack	100	0	0	0	0	0	10:00 AM
Lunch	350	500	500	600	0	0	12:00 PM
Afternoon Snack	150	150	150	0	500	0	3:00 PM
Dinner	450	700	850	900	1000	1500	6:00 PM
Evening Snack	150	150	0	0	0	0	8:00 PM
Total	1500	1500	1500	1500	1500	1500	
Maintenance							
Meals	Standard	Lean Gains	LG NS	Lunch-Din	Warrior	OMAD	Time
Breakfast	500	0	0	0	0	0	7:00 AM
Morning Snack	150	0	0	0	0	0	10:00 AM
Lunch	550	700	700	800	0	0	12:00 PM
Afternoon Snack	150	150	150	0	1000	0	3:00 PM
Dinner	700	1200	1350	1400	1200	2200	6:00 PM
Evening Snack	150	150	0	0	0	0	8:00 PM
Total	2200	2200	2200	2200	2200	2200	

The two red columns are my preferred schedules

Benefit Summary

- ▶ The benefits of TRE compared to other diets and lifestyles
 - More filling, satisfying meals
 - More enjoyable food (less restrictive food choices)
 - Easier to keep within calorie budget
 - Convenience (very easy to do vs. many small meal plans)
 - Prevents or reverses insulin resistance
 - Higher Metabolism (boosts Norepinephrine)
 - More Energy, Less Fatigue
 - Boosts HGH (preserves and builds muscle)
 - Less Hunger (eventually no hunger)
 - Autophagy
 - Detoxes your body by constantly using old stores and creating new
 - Increased focus
 - Numerous health improvements
 - Reduced risk of numerous diseases
 - Increased longevity
 - Easiest maintenance program to stick with as a lifestyle
 - Least likely to regain weight

Quora.com

- ▶ I have written further, more detailed articles/answers on quora.com
- ▶ See <https://www.quora.com/profile/Richard-Nicholas-16> for the things I have written.
- ▶ I would start with this one: “If skipping meals is bad...”



Richard, you crossed **50,000 views** on your answers today! Tue



2,000,000+ people were sent your answer in the Quora Digest: [If skipping meals is bad, then why do experts say intermittent fasting is healthy?](#) 13h



You're now a **Most Viewed Writer in Intermittent Fasting and Fasting.** 4h

Worth a read

- ▶ This woman explains how TRE/IF has changed her life. I couldn't explain better than this how different your life is on TRE vs. a traditional "diet" or a traditional "maintenance".
- ▶ She really drives home why TRE is so easy to stick to long term whereas the alternative is nearly impossible.
- ▶ And even if you **can** stick to it, your life is miserable but it doesn't have to be.
- ▶ <https://www.quora.com/For-weight-loss-what-do-you-eat-when-you-go-out-to-eat-at-a-fast-food-with-friends>

For weight loss, what do you eat when you go out to eat at a fast food with friends?



Patricia Faulkner
Answered Jun 4



Whatever I want, I just would not eat again later. The way I became overweight was by listening to "common sense" advice given to me like I have to avoid fast food at all costs, I have to eat six times a day, I can't skip breakfast, never skip a meal, blah blah blah. If you look into the research, none of this is true. It's calories in calories out. Who wants to be left behind when their friends go out to eat? No one. Who wants to order a salad... worse than that, A FAST FOOD SALAD when all their friends are diving into burgers and fries? No one.

For me to lose weight as a woman who has previously lost and regained forty pounds several times in the past, I need to eat 1,400 calories per day AT THE MOST, and even then I would be losing weight very very slowly. 1,400 divided by six is about 233. 233 calories. Per meal. (Already, that McDonald's salad with grilled chicken is out of the question with at least 350 calories). I was never full. This led me to not only eat those small meals, but then be so tempted by delicious things like fast food I'd cheat. When I would cheat, I'd eat at least 1,000 calories in that cheat meal, (blowing all hope of weight loss that day out of the window) and feel guilty for breaking the diet. That guilt would either lead to binges or further restricting "bad" foods that would just lead me to obsess about eating them. If I was being "good", I'd tell my friends and family "I can't go out to eat with you, I'm on a diet." And I'd feel very sad, and rightly so, because I was missing out on some of the best parts of life. If I was being "bad", I'd go out with them and aim to not go too crazy. Either I'd succumb to temptation and "cheat",

leading to a lot of guilt and no weight loss, or I'd be "strong" and not eat too much, but be so miserable and jealous of whoever I was eating with for being able to eat that I'd wish I hadn't gone out in the first place. Not only that, I would become incredibly depressed realizing that if I did lose weight (which I did many times) I'd have to continue to avoid fast food my whole life if I wanted to keep it off. It was a vicious cycle of restricting, losing weight, binging, putting it back on and then some.

No thanks. Now I eat one meal a day. I eat 1,200 calories after I work out. I eat whatever I want, wherever I want. If my friends are going out to dinner that night, I don't eat until that night. I am left feeling full and happy for the rest of the day. I don't get hungry again until just before bed time. I go to sleep and when I wake up the hunger is gone. I work out and by the time lunch rolls around I'm really hungry again. But it's ok because- ta da! I can eat! Not only have I lost weight, my obsessive binging/restricting cycle with food is gone, my guilt from "cheat" days and "dirty food" is gone. There are no more cheat days. There is no such thing as dirty food. No more cravings that gnaw at my soul. Every craving I have is satisfied, and because I know that, I hardly have cravings at all now.

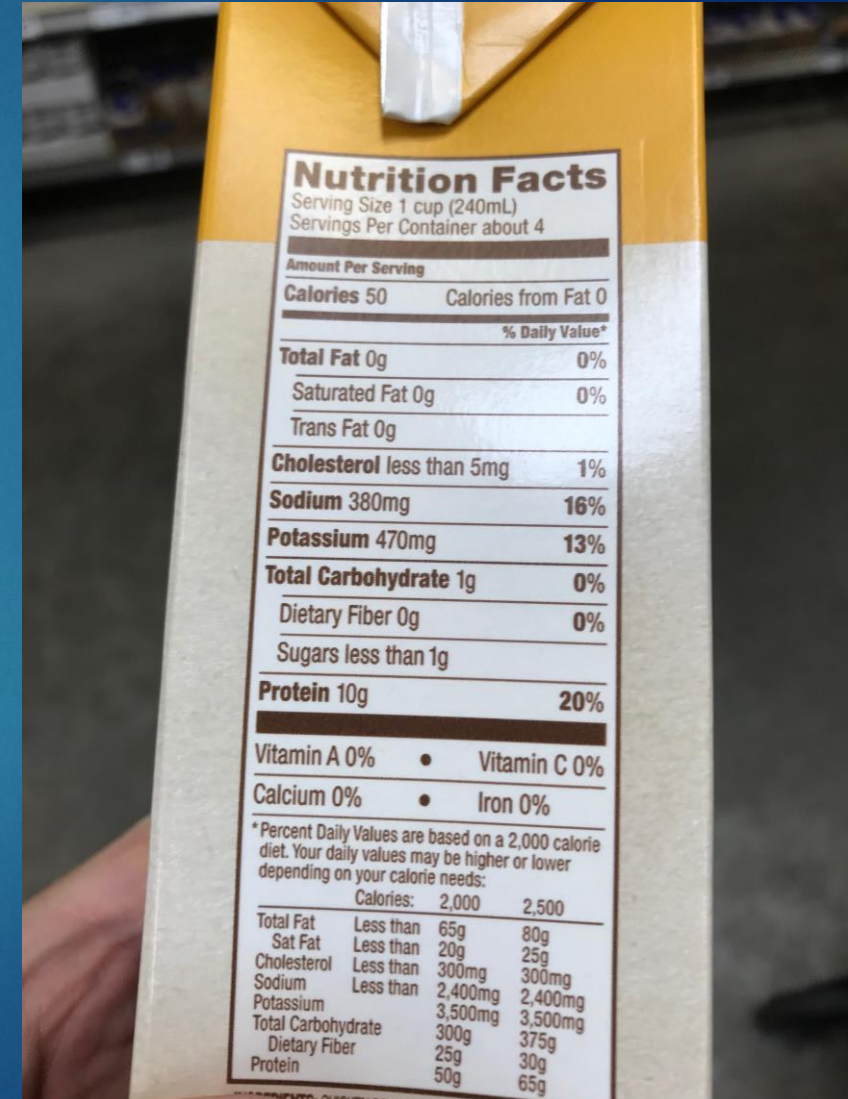
Maybe some people can lose weight by avoiding fast food and eating several low calorie meals a day (if you want to call them meals. To me they're snacks). I can't. It's just not realistic or sustainable for me. My life was miserable eating like that. I usually make healthier choices that have more nutrition than fast food, but I never restrict or tell myself I can't eat what I want anymore, or that I can't go out to eat with friends, or that I have to stop eating even though I'm not

Apple Cider Vinegar

- ▶ Can be used to add a little flavor to water.
- ▶ Has no insulin effect so can be consumed during fasting window.
- ▶ Has positive effects on your digestive system.

Bone Broth

- ▶ Why do people who do TRE and Intermittent Fasting talk about Bone Broth?
- ▶ Bone Broth provides a way to supplement some protein in on a longer fast, say 24 hours or more.
- ▶ It is done to prevent any muscle breakdown or enable muscle gain on a longer fast.
- ▶ **Do not need it for 16:8 or 18:6 TRE.**
- ▶ This chicken bone broth has 0 carbs and 0 fat. It is all protein.
- ▶ You can get 20 grams of protein for 100 calories.
- ▶ Because it is pure protein, it raises insulin very little. Insulin will be back to base quickly.



Why I don't recommend X.

- ▶ Without naming names, some people know I started out doing a certain commercial program X.
- ▶ X was about 1000 calories per day and consequently they said you must NOT work out because calories are too low.
- ▶ They said you would not lose muscle as long as you ate the proper amount of protein.
- ▶ I consistently lost muscle on this program: 1 lb. of muscle for every 3 lbs. of fat. This is unacceptable! And is counterproductive.
- ▶ I believe programs like these are designed to maximize pounds lost *on the scale*, rather than what you really want: fat loss, muscle gain.
- ▶ People see results on the scale and don't realize they've toasted their metabolism. They are then highly likely to regain weight, thus renewing the need to go back on X.
- ▶ Sensible programs are higher in calories and encourage working out. Absolute weight loss is slower but is the proper weight to lose.

Contact

- ▶ If for any reason you want to contact me about this presentation, my email is Richard_Nicholas@timerestrictedeating.net
- ▶ I would love to hear any corrections, suggestions or feedback, positive or negative, success stories, etc.