Fat Loss & Health Guide

Fat Loss Philosophy Guide:

Contents:

Introduction – The Crux of the Problem:

Fat loss occurs through a chain of mechanisms and processes that result in stored body fat being converted from the storage form of fat (adipose tissue) to energy for the body's processes, with the final process being the exhalation of the final by-product of these processes: $C0_2$.

What does that mean?

Body fat is simply stored energy. This energy is liberated and used under certain conditions. When it is liberated and used (Oxidized), the construct of body fat is lost in the process. Repeat the process over time and you have body fat and weight loss on a scale which is noticeable to the individual.

And then come the inevitable cascade of new fitness influencers and people spewing potentially unsubstantiated nutrition advice all over the internet... Well, not here.

This is all because of the ***Law of Energy Balance***.

So, what is that?

Energy Balance – As Simple and Complex as "Calories In Vs. Calories Out"

Energy Balance is the predominant and, more importantly, fundamental physical mechanism by which weight regulation occurs.

This is because this is a law of physics, not simply an axiom I've plucked out of the air to sell my coaching.

The First Law of Thermodynamics states that:

"Energy cannot be created, nor destroyed, but only converted into different forms."

The human body is in a constant state of energy regulation.

Our muscles are in a constant flux between breakdown and building.

Our heart is constantly contracting and relaxing to keep blood pumping.

Our brain is constantly awake and working, even when we aren't.

Our digestive system is constantly working to regulate feelings of hunger and fullness.

Etcetera... Etcetera...

All of this is to highlight that Energy Balance is at the heart of life, and how much body fat a person has is no exception to this.

Energy Balance in Three Simple Equations:

1. Energy Intake < Energy Expenditure = ***Positive Energy Balance***.
2. Energy Intake ≈ Energy Expenditure = ***Neutral Energy Balance***.
3. Energy Intake > Energy Expenditure = ***Negative Energy Balance***.

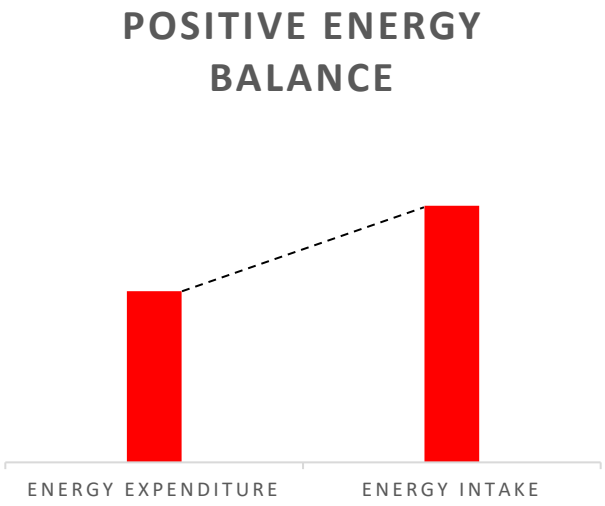


Figure 1: Graphic illustration of Positive EB

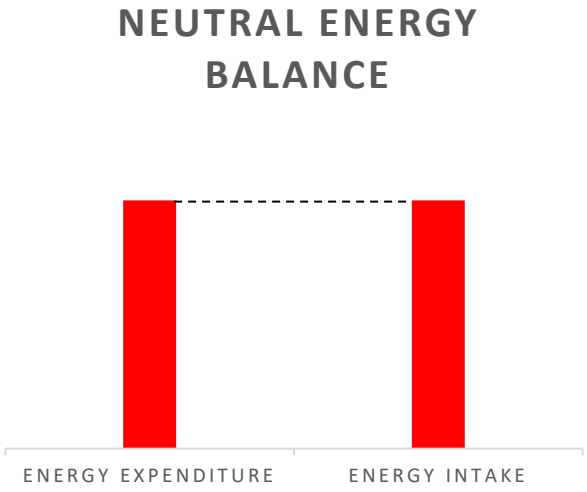


Figure 2: Graphic illustration of Neutral EB

The result of each?

Over time…

Positive EB = Weight ***Gain***.

Neutral EB = Weight ***Maintenance***.

Negative EB = Weight ***LOSS***.

If that made you angry, I'm sorry…

But the laws of physics and the universe don't care.

And your feelings don't make them any less true.

Negative Energy balance is also referred to as a "***Caloric Deficit***" and therefore by definition…

If you are not losing body fat, you ARE NOT in a Caloric Deficit.

Understanding the Caloric Deficit:

"What works for your friend, father / mother, son / daughter, may not work for you."

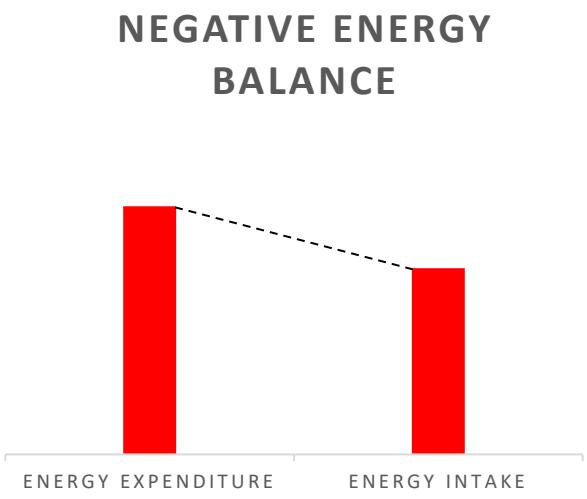


Figure 3: Graphic illustration of Negative EB

A Caloric Deficit is specific to the individual and as such, everyone will be slightly different. This is because everyone varies in how much energy they expend in a given time, how much occupational physical activity they do, whether they go to the gym and what type of training they do, their dietary composition and conditions affecting a person's rate of energy expenditure (such as Hypothyroidism).

It is complex; however, it can be made a lot simpler by understanding a few key components of how our weight and energy stores are regulated.

Energy In = The cumulative calorie value of all the nutrients you consume throughout the day. *Meat, Vegetables, Fruits, Breads & Grains, Sauces, Sugar in Tea and Cream on Frappes, EVERYTHING counts.*

Most things have a caloric value, no matter how small they still count. Even things like "Calorie-free" beverages still have calories, just substantially less than full-sugar / full-fat counterparts.

Energy Out / Expended = The total amount of energy you expend *"calories you burn"* during a given time (day, week, month etc.), from the following components.

Components of Energy Expenditure:

Basal Metabolic Rate (BMR) = The amount of energy you expend via your body's essential, life-sustaining functions, without any form of movement or food ingestion. (Keeping the lights on, and heating on basically).

Thermic Effect of Food (TEF) = The energy expended via the digestive process (breaking down food in the mouth and stomach, absorption of nutrients in the digestive tract etc.).

Thermic Effect of Activity (TEA) = The amount of energy expended through muscle actions and locomotion, whether it be conscious or unconscious.

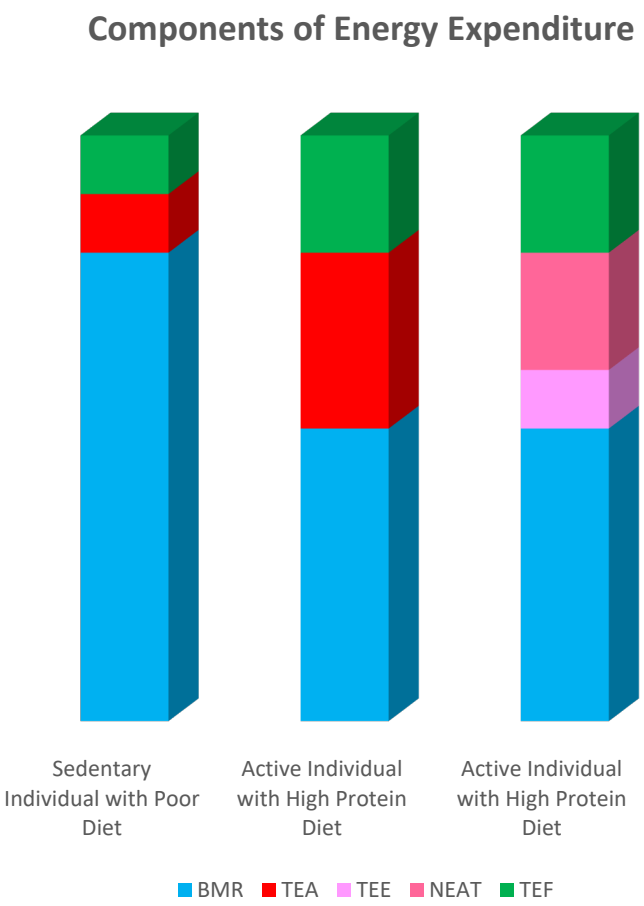


Figure 4: Illustration of Energy Expenditure Components & respective contributions to the total. Pillar C just has TEA split into TEE and NEAT, as you will also sometimes see used.

You may also see *TEA* represented by two distinct components used interchangeably.

Thermic Effect of Exercise (TEE) = Energy expended through structured physical activity either in, or outside of a specific gym-based environment, but the activity is conscious and often goal-oriented.

Non-Exercise Activity Thermogenesis (NEAT) = Energy expended through unconscious physical activity, often as the result of fidgeting, tapping feet, and other ***unspecific*** movements / activity you do throughout the day (Acts of Daily Living – such as walking outside of structured exercise can also fall in here. I.e., Taking the stairs instead of the lift).

You may see the height of the graphs and get into the misconception that these people expend the same amount of energy; but this is not the case. This illustrates that the different components contribute different amounts towards a person's overall energy expenditure, but by no means will the final value be the same.

A sedentary individual has a much higher contribution from BMR due to simply not moving as much as an active person, but this doesn't mean they expend the same energy, in fact they will expend far less.

An active individual will see their BMR contribution be much lower because other things like physical activity and digestive thermogenesis (TEF) will contribute much more, and this will result in them expending far more energy.

So, when it comes to losing body fat, you need to be in a *Caloric Deficit*... That isn't really helpful, is it? No, of course not. So, let's get into the structure I would use to base a sustainable dietary approach on, so that you understand what really makes a dietary approach successful and so you don't become a *"95% of diets fail"* statistic.

Enter stage left – ***The Sustainable Diet Pyramid***.

The Sustainable Diet Pyramid:

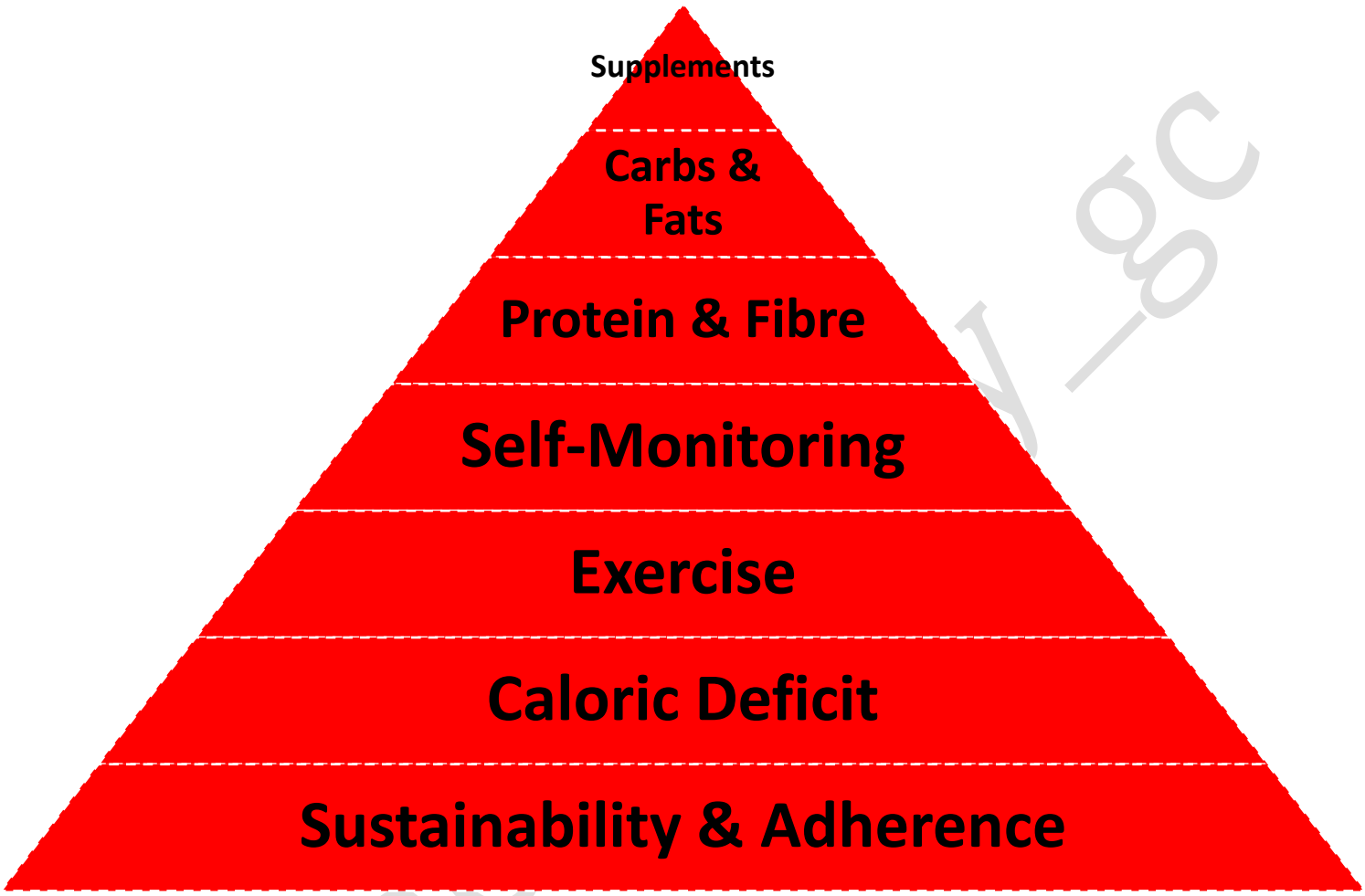


Figure 5: Sustainable Fat Loss Pyramid - Adapted from *"Fat Loss Forever"* by Norton, L., & Baker, P. (2021).

If you can't see yourself adhering to a way of eating / dietary style 6 months, a year, 2 years, 10 years, from now, what's the point?

Whilst it's true that a significant percentage of people fail at the weight loss process, it isn't because the *"diet fails,"* it's because adherence drops. Everyone can go on a diet and lose weight over a few weeks,

so *"diets"* do work, it's just beyond that when the person gets sick and tired of it, they stop adhering to the diet, and then they fall back into old habits and end up back where they started or maybe even worse off.

Rinse and repeat and you have the *"Yo-yo Dieting"* effect, where this process repeats and repeats like a yo-yo in its cycle of vertical movement.

This is very damaging, so we're not gonna do that.

Instead, this is gonna be a basic roadmap enabling you to help craft your best approach so that you can not only lose weight and keep it off, but also learn far more about nutrition and science and enable you to continually progress towards goals far more than you would have had I just said,

"Go do this."

You're gonna start learning to become your own scientist.

And remember...

This will only work if you do.

Getting The Fundamentals Right:

"What Actually Grows Businesses: The Fundamentals; Everywhere, All The Time" – Alex Hormozi.

The reason why I've chosen this quote in particular will make more sense a bit later...

Sustainability & Adherence

The most essential thing with successful long-term weight loss is ADHERENCE and SUSTAINABILITY, as when – as previously mentioned – when Adherence drops, relapse occurs and the direction of progress reverses back to the start.

In the literature, Adherence has been shown to be a significant predictor of not only weight loss, with 12-month weight loss being greater in study participants who were most compared to least adherent (PMID: 18268511), but also weight regain, with the most adherent during the diet phase showing greater weight maintenance, via lower average energy intake and greater activity, over a 2-year period (PMID: 21164500).

So, given the importance of Adherence, it's important to find a dietary approach that you can then sustain, as if you can't sustain what you're doing then by definition you can't adhere to it. This is where we can start looking at variables like:

When we eat in accordance with our daily life and when we exercise.

Time-restricted eating and whether we skip breakfast / supper.

What distribution of macronutrients we prefer.

Goals.

Timeframes.

Rates of weight loss that is not going to be too quick to make it far more likely you relapse and fail.

All of these help us form a sustainable approach based on evidence and preference, and a slight focus on preference is important, as in order for something to be sustainable it has to be enjoyable to some degree.

Dieting sucks. We just need to make it suck as least as possible.

Don't exclude foods you like and don't include foods you hate.

With an exception to Fruits and Veggies...

Sorry, find ones you like (there'll be at least one).

But the main point is, no matter what way you choose, it has to be something that you can KEEP DOING.

Choose the work you want to do and the way you want to do it.

Calorie Deficit:

Once you have some idea what works for you, and to be fair, it may require some experimentation to figure that out. You can try to imagine how you'll feel doing something for six months to one-year, but a certain degree of trial and error will be necessary.

But whether it be intermittent fasting (skipping breakfast), or six small meals per day, or 2 meals and 2 shakes, in order to lose body fat, you need to be intaking less energy than you expend.

Period.

But how much of a deficit is good / optimal? Is faster better? Is slower better? What role does exercise and physical activity play?

Well, this may be sad for you to read, but long-term weight loss success is going to take a lot of A) Work, and B) Time. To learn what really works for you requires a lot of self-experimentation and initially this will be very frustrating, as you will feel as though you are making no progress when in reality you are.

It takes time to learn when you get and feel hungry, when you currently habitually eat, what your current energy intake and level of energy expenditure is, but these are particularly important.

Fast Vs. Slow Weight Loss:

Most want to get to their ideal goal / ideal body composition yesterday. Well, you want to get out of this thought process as quick as possible because I'll make it clear now, and have already made it clear, it ain't gonna happen. When it comes to sustainable weight loss, ***The Slower, The Better***.

This is because a smaller caloric deficit will result in slower rates of weight loss, however, you will have less of the negative effects of fast weight loss that contribute to the aforementioned *yo-yo dieting* phenomenon. These "negative effects" can be summed up by the term ***Metabolic Adaptation***.

Metabolic Adaptation comes down to 3 things that forms a sort of "Self-Defence System" to Famine [1]:

1. DEFEND – Metabolic rate slows to preserve energy reserves.
2. RESTORE – Increased hunger and fat storage efficiency.
3. PREVENT – Increased fat cell number, making future weight loss harder.

These consequences are unavoidable as they are inherent to our biology, these mechanisms are designed to favour storage over utilisation due to our evolutionary circumstances and hunter-gatherer origins, persisting for millennia without food abundance, but need to be understood as they apply heavily to way so many people fail.

The faster and more aggressively you diet, the more aggressive your biology is going to push back. This is because your body doesn't know the difference between you wanting to lose weight for "x" reason and the tribe – you included – not having any food to live. So, it sets in motion various processes to keep you alive as long as possible.

The negatives of Metabolic Adaptation can be illustrated in the studies done on contestants on the TV show "The Biggest Loser"

which promoted this super aggressive, *"lose as much as you can as quick as you can"* dietary philosophy. These morbidly obese people, subjected to what was for them a very low-calorie diet and silly amounts of exercise for their experience, belittled on TV for the world to see, did indeed lose lots of weight because of this.

BUT...

A follow-up study (PMID: 27136388) of these individuals (14/16 of them) immediately, 30-weeks, and six years post-show and found that:

1. The sample's average rate of weight loss equates to ~1.94kg/week lost.
   a. $58.3kg \div 30\ weeks = 1.94\ kg/week.$
2. On average, they regained 41.0kg of the average 58.3kg they lost in the six-year period after the show.
3. BMR decreased by, on average, 610kcal/day (2,607kcal/day down to 1,996kcal/day; Mean Avg.) but REMAINED SUPRESSED even after the weight was regained (BMR decrease = 704kcal/day six-years post, Mean Avg. = 1,906kcal/day) rather than increasing with weight regain as we would have previously expected (Figure 6).

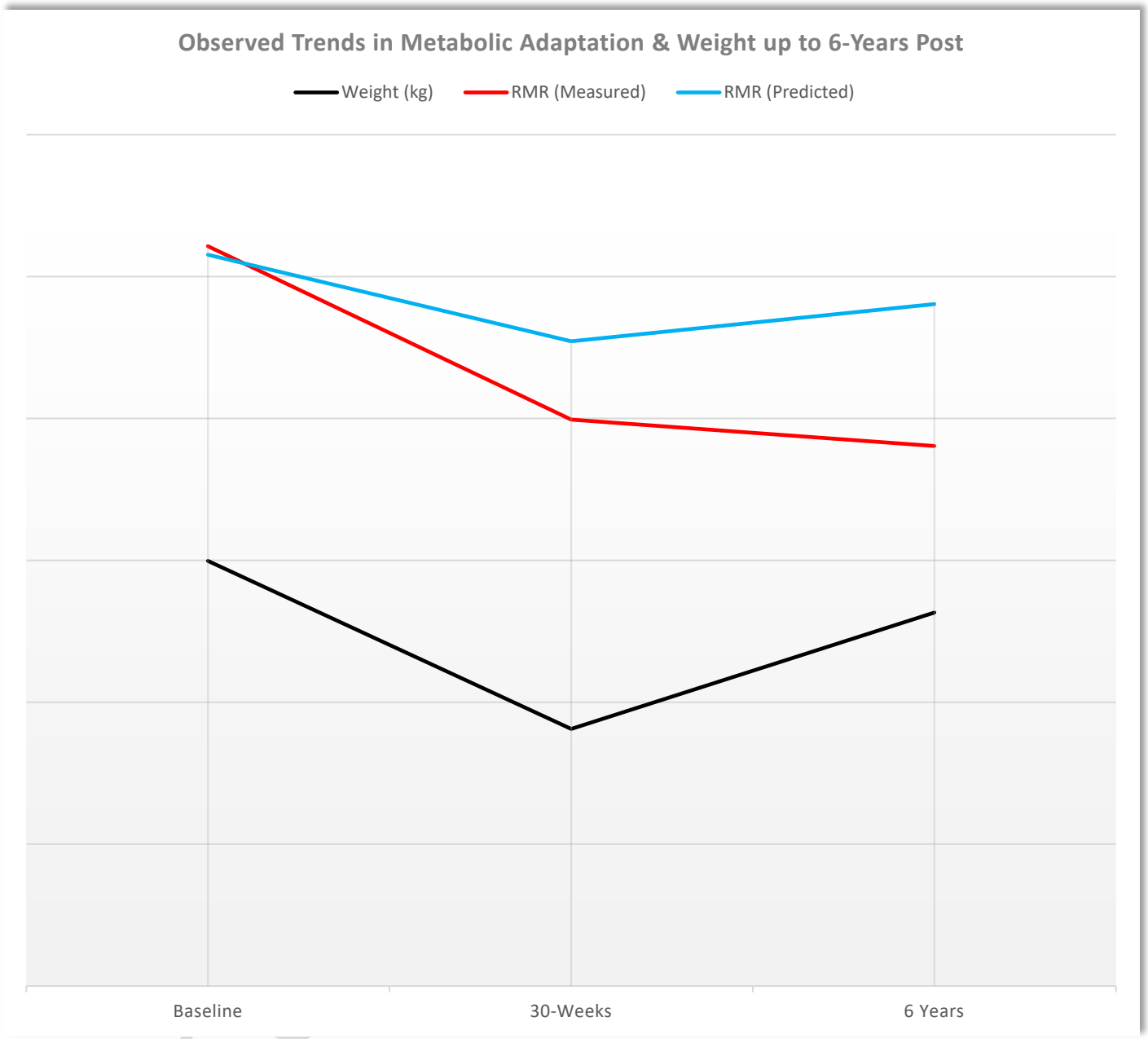


Figure 6: Observed changes in Resting Metabolic Rate (Measured vs. Predicted) and Weight in TBL Contestants Over 6 Years. The disparity between Measured & Predicted highlights the significant effects of Metabolic Adaptation.

This tells us that rapid and unsustainable weight loss leads to serious long-term detriments, now these people would find it much harder to lose weight in the future should they want to. This is just one example of why slower weight loss is better for long-term success.

There's a reason the phrase *"95% of diets fail"* is so sadly commonplace and this want to have it yesterday contributes to this in a big way. It's not the only factor, sure, but it's a big one.

Be the tortoise and win the race.

Deciding a Rate of Weight Loss:

Using the example of "The Biggest Loser" contestants, we can say that a rate of weight loss that averages at ~2kg / week is way too fast to be sustainable. So, what is a rate that is likely to be sustainable to most people?

The ***upper limit*** of what I would advise for anyone would be what would equate to approximately 0.45kg / week (~1lbs / week). If that doesn't seem like a lot, it is. Trust me. The range of 0.2-0.45kg / week is going to provide a good trade-off agreement between noticeable weight loss onset and sustainability, as it is not too quick to be impossible to sustain but also quick enough to start seeing appreciable progress within, say, 4-8 weeks.

That's right. Within ***4-6 WEEKS***.

Not 4-6 hours or 4-6 days... 4-6 Weeks.

If you can't even make that level of commitment, you might as well turn back now. But you've made it this far, and that gives makes me think you're a little more serious than most about this. I have faith in you.

So, what would that look like?

This would necessitate a Caloric Deficit of ***~1750-3500 kcal / week*** to achieve an average weight loss of this rate of ***~0.2-0.45kg / week***.

Therefore, on a day-to-day basis, this equates to 250-500 kcal / day below your maintenance energy requirement. Great!

How do we use this?

Well, now we need to find out where we currently are in terms of Energy Balance and to do that, we need an accurate picture of our energy intake.

Logging On:

By logging on, I don't mean to your email, I mean logging what your intake on a daily basis in terms of your nutrition and doing so as accurately as possible via a food scale.

You should use a food scale because I can almost guarantee that you cannot accurately determine your true energy intake without it. People are notoriously bad at knowing the energy value of foods, evidenced by the current obesity epidemic and most people not even knowing where a food's nutrient label is.

Hint: It is probably on the back.

But people are also often terrible at accurately estimating portion and serving sizes; often in the mind what we think is "1 Serving" is actually 2, 3, or even 4+. This is another big problem; hence we use a scale for objective measurement. 40g is 40g.

Be prepared to be very depressed at how small 1 Serving of cereal actually is

How long to do this for?

I advocate for a minimum of 3 days but ideally 5-7 days.

This is because it HAS to be reflective of your CURRENT HABITUAL INTAKE.

The weekends... Ah the weekends...

As great as they are, they are potentially a huge problem here. If you track, say, only Monday-Friday and you're fairly good, but you go overboard on weekends, this is not an accurate representation of your habitual intake due to how much your weekend binge effects the average.

Either track over an entire week or choose days that reflect the average and account for this. This often means tracking on a weekend (I.e.: Friday, Saturday, Sunday, Monday).

How do you track?

OBSESSIVELY.

This is an information-gathering phase of the operation. As such, we want as much information as possible, a little bit of obsession can help with that, any information left unaccounted for weakens our ability to put effective solutions in place.

Halloween is just around the corner at time of writing, so let's talk about the spooky effect of "Ghost-Calories" which are those insidious nutrients that are often allowed to skirt under the radar due to our lack of perception and thinking that certain things "don't count."

In terms of energy, EVERYTHING COUNTS.

Fruits, Vegetables, Drinks, Meats, Beans, Legumes, Nuts, Bread, Grains such as Rice & Pasta, the butter you cook / use in your sandwich, the milk & sugar in your tea / coffee (and what type of milk you use), and the whipped cream and toppings your uber-expensive seasonal drink from large, branded chains.

Leave no stone unturned and where you cannot use a scale to get an objective measurement then yes, use your best guess / approximations based on serving sizes in your tracking app (if you choose to use one), provided you learn what actual measurements are and exercise a consciousness in your reporting, your estimates will get better over time.

The aptly named “Ghost Calories” refer to the calories that sneak in as a result of errors in reporting / tracking, or as a result of bias, and result in the under-reporting that is so commonly seen in the literature even as far back as 1998 (PMID: 10933410). The Canadian Community Health Survey identified under-reporting rates as high as 10% for those aged 12+, and that under-reporting does depend on many factors such as body composition, sex, activity level etc. (PMID:

19226926). And another study highlighted that depending on the method used to assess energy intake, under-reporting values range from ~7% to as high as 20% (PMID: 19594967).

For reference, take the generous estimate of 10% under-report and logged 2,500 kcal for the day, this would mean they actually ingested at least 2,750 kcal for the day, which is significant. Add this up over time and it's easy to see why people get into the "I gained weight only eating "X" kcal" fallacy.

The point being under-reporting energy intake is very common and so you should do your best to report and track as accurately as possible.

So, what do you use to track?

Whatever you want really.

Pen & Paper...

MyFitnessPal...

The notes app on your phone...

Post-it notes...

As long as you have a full and accurate picture, doesn't really matter what specific tool you use. Use more than one if you like. Can use a pen & paper if you don't have your phone to hand and then update your tracker / notes app later!

What matters more is how accurate you are, not what you use.

Okay, so, what do I do with this information?

Do a simple mean average of all the days calorie values:

$$\frac{Day\ 1 + Day\ 2 + Day\ 3 + Day\ 4 \ldots}{Number\ of\ Days\ Tracked}$$

And voila!

Average daily calorie intake established!

Example (***figures simply for illustration purposes***):

$$\frac{2700 + 2247 + 1878 + 2467 + 3750 + 3562 + 2053}{7} \sim 2{,}665\ kcal/day$$

Assuming you haven't been gaining significant weight across this period of time, or across weeks leading up to this, we can use this as this is reflective of your maintenance energy requirement by definition.

If your weight hasn't been stable recently, this may not be as accurate. However, there are ways to get around this and still get you to a valid starting point. This is just one way of doing it that I like as it teaches you about food & calorie values, and your habits.

Just check how much the Friday and Saturday skew the average when adjusting the same values for just Monday-Thursday (below).

$$\frac{2700 + 2247 + 1878 + 2467}{4} \sim 2{,}323\ kcal/day$$

See why accuracy and getting a full picture is important?

Similarly, these values can easily be skewed the other way and over-report (though this happens much less often). If we only had the last 4 values of this same week spread, for example:

$$\frac{2467 + 3750 + 3562 + 2053}{4} \sim 2{,}958\ kcal/day$$

Once we have this though and provided it is accurate, the next step is relatively simple, we subtract our ideal calorie deficit amount from this and that gives us a good starting point to measure.

In our example of average 2,665 kcal / day, a good starting point may be, say, 2,400 kcal / day or maybe slightly more (2,350 kcal / day). You can do more if you like, but again, bear in mind the risks of losing weight too quickly – just

because you don't lose a kilo in the first week doesn't mean you failed, it means you heeded the warning signs inherent in human biology and acted accordingly. The reason so many fail is because they think the scale has to move straight away and by a significant margin. ***IT DOESN'T***. And if it does, maybe you did fail...

Failed to heed your biological warning signs in favour of short-term gratification, which may just cost you in the long run.

Don't fall for it.

The Movement Component:

Exercise & Daily Activity:

Exercise [and Daily Activity] goes hand in hand with fat loss.

However, and this will sound weird, but ***you shouldn't exercise solely in the pursuit of fat loss***.

This is because exercise should be an intrinsic part of your life anyways for the myriad of health benefits it has, helping to lose fat is merely a bonus. Not only that, the more you exercise, the hungrier you will get afterwards due to the increased energy expended and so there is a greater likelihood of you eating your deficit back and staying

at maintenance. You can have too much of a good thing, exercise is no exception. A balance between exercise & daily activity is key.

Is there a best exercise modality?

Other than the one, or two maybe, that you will ***consistently do***, there isn't a "best" modality for fat loss. All are useful.

The typical suggestion is that to reduce fat mass it's best to do aerobic training, and this isn't entirely wrong (PMID: 23019316). However, to only view it this wat neglects the host of benefits resistance training has, particularly in that it is the single-most effective method to increase lean & skeletal muscle mass, which is also very important.

This is the closest thing we currently have to a fountain of youth. It not only expends greater energy than simply being at rest, but also helps us slow the negative effects of things like Sarcopenia (age-related muscle wasting) by maintaining muscle mass and functional strength (PMID: 30414822) and by aiding in the maintenance of a healthy bone mineral density (PMID: 28975661) and physical performance (PMID: 34911483), in particular strengthening activities and resistance training (PMID: 30671455). Exercise helps keep us strong and metabolically healthy & helps combat Type II Diabetes

(PMID: 17876019) and some suggest that even the slightest benefits from combined exercise can be helpful when it comes to conditions like Diabetic Peripheral Neuropathy (PMID: 32215272).

The list could probably go on forever.

This is why I would advocate for a focus on regular resistance training but it by no means has to be the only form of exercise you do. Whatever exercise you like to do, go and do it.

I would advocate for a combination of both, whilst making Activities of Daily Living more in favour of increasing Energy Expenditure via increasing NEAT.

This may be opting to take the stairs rather than the lift / escalator where possible (and not standing still like a lemon on a fucking escalator...), parking your car further away from work so you have to walk a bit further or engaging in other methods of transportation such as cycling to work / the gym if possible. Getting off the bus a stop earlier etc.

If you are very sedentary right now, anything you can do to promote physical activity in your life has the potential to add up and make huge changes to your body composition.

The Accountability Component:

Self-Monitoring:

Weight loss is a solo endeavour.

You may have friends or peers in your group who want to lose weight as well and so you can sort of engage in it together, working together to keep each other accountable and on track, this support is a great thing to have so you're lucky if you do...

But they aren't gonna do the work for you.

They can't.

The only way you're gonna be able to stay on track is if you make sure that you stay accountable and you monitor yourself on this journey, because no one else is going to.

Even if you hire a personal trainer, they can give you the plan / roadmap much like I'm doing now, but we're not living with you 24/7 as your personal chef and going to the gym for you.

There are key elements to success that you have to do. Call it ***WORK***.

"Weight loss may be relatively simple, but by no means is it easy."

You have to exercise accountability every day.

There are different strategies one can employ to get to the same outcome, we just have to find the one that works best for you.

Tracking Past The Initial Measurements:

Tracking for a week is easy.

Tracking for a month... Not quite as easy but doable.

Tracking for 3 months... Difficult but again, manageable.

Most will have given up by this point or long before but meticulously tracking your food every day for a period of 6-12 months is a great way to build up confidence in yourself that you can consistently carry out an action that is consistent with the task you want to accomplish (weight loss). Over time this will have net positive effects into

transitioning over into other factors that are also a part of the wider goal you want to achieve (exercise, sleep, daily activity etc.).

Also, accurate mental estimations of energy intake require a long learning process and tracking is a key part of this. If you want to be able to look at a plate of food and be able to estimate the energy content and nutrient distribution of that plate, you need a solid reference point.

That reference point is the months and years of tracking you do.

So don't just track for that initial 4-7 days.

For something to become habitual, it has to be done repeatedly over long periods of time.

You don't have to use this toll nonstop during that time, your goals may change, or you may hit a goal weight after a 6 months and after a short period of adjusting to your new maintenance energy requirement you don't need to track anymore. That's cool too.

You never needed to track in the first place.

It's just a useful tool for developing awareness and remaining accountable, so that you can accomplish what you wanted / needed to.

Other Forms of Self-Monitoring: Time-Restricted Eating:

Time-restricted Eating (TRE) has another very fancy name you may have heard of – Intermittent Fasting (IF). This means only eating in a certain window of time – often an 8 hour period – and then not consuming any nutrients in the other remaining hours of the day.

It's skipping breakfast / dinner. That's it. ***You skip a meal; you eat less calories***.

This has been touted to have numerous "miracle" benefits and many will swear by it being the best thing since sliced bread, but it is simply another way of creating a calorie deficit. Nothing magic about it other than that. ***Equally*** as ***effective*** as continuous energy restriction (PMID: 20921964) And all the purported benefits of fasting, the biggest one you'll find from fasting zealots on social media being "Autophagy" (the process by which the body cleans out damaged cells / repurposes the body's own tissue for metabolic processes). However, the degree to which this occurs is no different compared to

a calorie deficit without using IF, so it isn't unique to this dietary structure despite what some would have you believe, and remember too much Autophagy from prolonged caloric restriction or fasting has also been proposed to have negative implications via autophagy-stimulated cell death (PMID: 37527766). Autophagy is a natural, physiological process with a lot of positive effects. However, it isn't the definitive cause or only cause of this repair and repurposing process, both this and caloric restriction are intrinsically involved (PMID: 30172870).

Can it work? Yes.

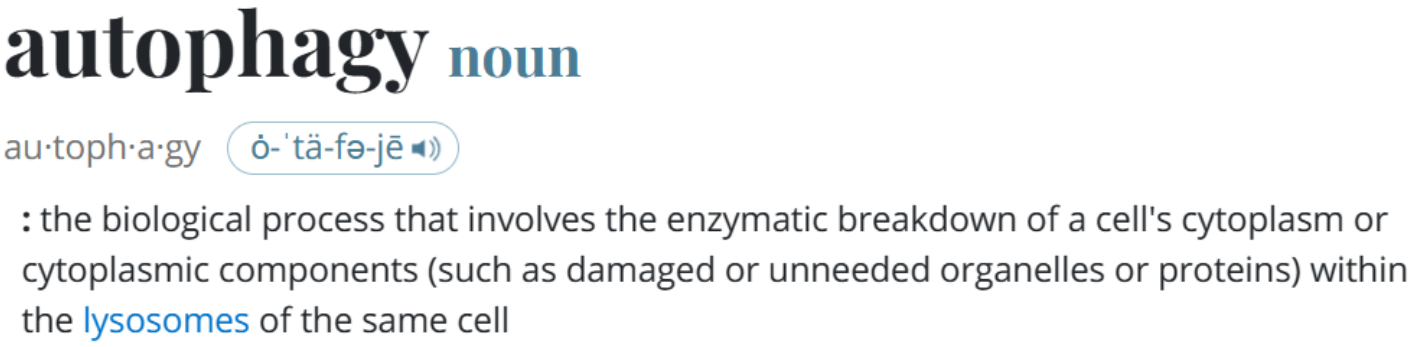


Figure 7: Autophagy Definition (Merriam-Webster)

Is it the only way? No.

Is it the *"best"* way? It depends.

It may be for you, won't be for someone else, and also may be sub-optimal depending on goals, but for body fat loss it's a perfectly valid and useful method.

Other Forms of Self-Monitoring: Ketogenic Diet:

The Ketogenic Diet (KD) is a diet that is characterised by a macronutrient distribution that is heavily skewed towards a very low carbohydrate content and comparatively much higher dietary fat content. Traditionally, the KD consists of a 4:1, Fat:Carbohydrate Ratio, delivering a total of 90% calories from dietary fat, 8% from Protein and 2% from Carbohydrate (PMID: 31399389). Many have touted it to be another miracle cure for all the world's problems, but like IF or a combination of KD & IF, it's simply another way of creating a calorie deficit.

You have to exercise caution, however, as overconsumption of certain nutrients that may be prevalent in such a diet structure (particularly Saturated and Trans Fats), can promote likelihood of negative health outcomes. This is due to the causal relationship between Low-Density Lipoprotein Cholesterol (LDL-C) and Coronary Heart Disease (CHD) risk, with increased long-term LDL-C exposure resulting in much

higher risks of CHD (PMID: 23083789). Many Saturated Fats (SFAs) and especially Trans Fats (TFAs) being shown to significantly increase total cholesterol, but in particular serum LDL-C and so replacement with unsaturated fat sources may be more favourable to long-term health outcomes (PMID: 12716665). SFAs potential role in Atherosclerotic Cardiovascular Disease (ASCVD) risk is also why general recommendations are to keep them at <10% Energy Intake (PMID: 34649831).

Additionally, some evidence suggests that substituting traditional dairy items for those modified to reduce the SFA content and enrich them with unsaturated fats has beneficial effects on LDL-C by attenuating the rise in it via consumption (PMID: 32020168).

There is evidence to refute the purported dangers of SFAs (PMID: 26268692), and it is quite compelling, with studies going back as far as the mid 80's up to 2014. Aforementioned authors also noted that whilst SFAs can significantly raise LDL-C, some also raise the High-Density Lipoprotein (HDL-C) or "Good" Cholesterol (PMID: 12716665). TFAs do not seem to share this property. However, it is important to bear in mind that increases in LDL-C has been identified

as an independent risk factor for some of the aforementioned negative health outcomes, with associated effects only being observed across the lifespan, so it is still worth keeping an eye on SFA and especially TFA intake until greater conflicting evidence becomes available.

Can it work? Yes.

Is it the only way? No.

Is it the *"best"* way? It depends.

Other Forms of Self-Monitoring – Carnivore & Vegan:

You can probably guess what I'm going to say regarding this section... In a fat loss context, they're both?

Ways of creating a Caloric Deficit! Yes, absolutely!

These two are possibly the most zealous groups you'll see in online nutrition spaces, where ideology and beliefs trumps scientific data.

The evidence that unprocessed meat consumption is inherently harmful to us in recent years has been shown to be very unsubstantial, with only weak or no evidence supporting claims of unprocessed red meat consumption in typical consumed doses causing harm or

increased risk of preventable disease when looked at over the long-term (PMID: 36216940).

However, evidence has highlighted various limitations to both dietary approaches, particularly showing that those who consume more plant food items typically get far less protein – though still enough for basic health – than meat-eaters, and also experience greater deficiencies in Omega-3 Fatty Acids, B12, calcium and iodine and also lower bone mineral density (PMID: 35010904). However, the same study also showed that meat-eaters get far less dietary fibre, Polyunsaturated Fats, as well as levels of Vitamin C, E, Magnesium and Folate compared to those who eat more plant-based items, showing that both groups are at potential risk of nutrient deficiency due to not having nutrients present in the other group which isn't surprising.

There is no "one is better than the other here" because they both have strengths and limitations. And using the historical argument as proponents of these diets love to, because "our ancestors / roman gladiators did this so it must be best", humans (*Homo Sapiens*) for the vast majority of their evolution were hunter-gatherers.

***HUNTER*... *GATHERERS*...**

Meaning they did not eat just one, ***they ate both*** (Harrari. 2015), depending on what they could get their hands on at that time and what they had to spare from previous excursions to get food.

Remember that next time you see this stupid argument for either.

But from a fat loss context, whether you eat only meat or only plants, it still all comes back to creating an energy deficit. Whether you choose to eat a certain way because you view a cow or chicken as a friend, or food, matters not.

Can they work? Yes.

Are they the only ways? No.

Are they the *"best"* ways? It depends.

Keep It Out Of The Damn House:

Accountability requires making smart decisions. Smart decisions often cause pain / discomfort in the short-term, requiring sacrifice and therefore not feeling good. One of the ways you can make smart decisions is with your structuring of your environment – structuring it for success.

I've been berated for acting on this myself, by those who funnily enough aren't successful in losing weight meanwhile I was – that's past me on the front cover btw – people often don't understand how important their environment is and how it affects their weight loss success.

"You should just have WILLPOWER!!!" is something that is often paraded by people that believe in their own mind they have the answers to effective weight loss but fail to actually accomplish that. They get into their heads that those that are successful either have genetic advantages – which they may, but that isn't the real problem – are on steroids – which they may be, helping gain muscle but they don't make you 5% body fat – or are just *"lucky"*. What they fail to consider is this:

Those who have the greatest willpower often structure their environment and life so that they have to use it as infrequently as possible.

This is because *"willpower"* is a finite resource, you only have a certain amount of it, and so you have to be careful with how it is used. One of the main drains on your *"willpower"* is your environment, which many

say are becoming more *"Obesogenic"* (literally meaning "creating obesity").

This is because our environments nowadays are ones of an abundance of food and a relative absence of physical demand to attain it. There is likely an abundance of high-calorie, nutrient-devoid foods in your cupboards and an abundance of high-calorie, hyperpalatable, nutrient-devoid food outlets with *Drive Thru* lanes and *Click and Serve*, within a few seconds or minutes of you, and to get it you can either initiate a short walk a few rooms across or get in the car and initiate a series of pedal pushes and small stick movements to go and get it.

Hundreds, potentially thousands, of calories in. Maybe a singular unit of energy expended to go and get it, outside of digestive thermogenesis (more in the next section). We've come a long way since our hunter gatherer days in the jungle or on the Savanah, but this is a double edged sword given more people know are overweight / obese and suffering greater from preventable, non-communicable, obesity-related diseases than ever, and our environment and how it influences us are tailored towards this. Not as a result of a *"big food*

industry" conspiracy necessarily, but it's fair to say that the big fast foods chains are benefiting highly from these modern changes to our environment and poor lifestyle decisions.

That's why if there's a food that you know you can't resist consuming the entire packet, tub, or bar of, then you shouldn't have copious amounts of it in your close proximity on a day-to-day basis.

Out of Sight, Out of Mind.

If you can't stop at *"just one or two"* digestive biscuits, then maybe they shouldn't be mainstay in your cupboard. If you can't deal with *"just one serving"* of Ben & Jerries, then maybe don't have a freezer shelf full of tubs of it. If you simply *"have to devour"* the whole family-sized bar of Galaxy, then maybe opt for the regular sized ones and only buying them when you really, really want them. If there's three McDonald's, a KFC and 5 Chippies on your regular commute home from work, then maybe look to change your route so you either don't pass them, or instead pass a proportionate number of gym / exercise facilities.

This is exercising discipline in your environment, and it means that you have less reliance on willpower because the thing causing the craving has been removed from the equation. You may still experience the craving, you very likely will – this isn't easy – but you'll be less likely to act on it because it's now more difficult. Even the ever-so slightest difficulty or disruption, such as needing to drive to Tesco and brave potential human interaction or a few extra turns on your way home, may stop you from engaging in these behaviours.

You can ignore this element but do so at your peril. Your environment and the people within will exert positive or negative effects on you, you get to decide which it is, and I strongly advise you to do so in favour of positivity. You want positive people that will keep you push you and keep you accountable, not people who blow smoke up your arse and make you feel good in the short-term – keeping you bound where you are – and an environment that makes good behaviours obvious and attractive and bad behaviours *invisible* and difficult.

An interesting case study was observed in James Clear's book *Atomic Habits: An Easy & Proven Way to Build Good Habits & Break Bad Ones*, whereby someone wanted to increase the amount of water people

were consuming on the floor of the office building they were in, as it was only really soda and *"unhealthy"* carbonated beverages that were readily available in the vending machines. So, they put water stations with bottled water all around the office – free to take for anyone working – and stocked a few of the vendors with water bottles also. What do you know? With water becoming more obvious due to it's placement and attractive due to the lack of cost and availability for when people are busy but thirsty also, people started to drink significantly more water.

So, things that aren't benefitting you in the pursuit of your weight / fat loss goals you need to get gone. People around you will probably push back and kick off as you say no to a few nights out and nightly takeaways, but that's just revealing who wants to see you succeed and who doesn't – as those who want you to succeed won't care too much about you missing out on these things, they'll care more if you deviate from the path you walk in favour of one that's either gonna take you in the opposite direction or keep you where you are.

Someone who wants the best for a person struggling with alcohol addiction won't be mad if they don't come to the pub as much

anymore, they'll be happy you're acting in a way that's better for you, and if they catch you in the pub, they'll be the first to tell you to get your ass back home because they want the best for you.

Effectively Tracking Body Composition Changes:

Tracking body composition changes can be done in a few and multiple concurrent ways, so it depends on what works best for you. Many make mistakes with this though so it's important to have a good system of measurement in place.

Some of the common measures include these plus combinations of them:

1. Weighing Scales.
2. Progress Photos / Videos.
3. Skinfold Calliper Tests.
4. Body composition analysis machines (DEXA, *InBody*, *BodPod* etc.).

Each of these have associated pros and cons but all are valid and useful. Scales are a common household item and so are likely readily available, easy to use, repeatable, and work long-term. Progress photos / videos also share these properties. Body

composition analysis machines may be difficult, however, in terms of accessibility. If your gym has an *InBody* scanner available, then why not take advantage of it but probably not something you're gonna have around the house, the data it provides will be by far the most useful though.

Table 1: Pros & Cons of Common Measurement Techniques.

PROS AND CONS OF MEASUREMENT TOOLS			
SCALES	**PHOTOS / VIDOES**	**ANALYSIS MACHINES**	**SKINFOLD CALLIPERS**
Reliable provided conditions consistent ☑	Semi-reliable ⇔	Reliable ☑	Semi-reliable ⇔
Easy to Use ☑	Very easy and convenient ☑	Can be difficult to access / expensive ☒	Relatively Accurate ⇔
Repeatable ☑	Very Highly Influenceable ☒	Highly Influenceable ☒	Relatively Repeatable ⇔
Effective for Long-term Use ☑	Can visually show past and present ☑	Many objective outcome measures given ☑	Dependent on skill of practitioner ⇔
Highly Influenceable ☒	No objective measurement ☒	High quality machines have high accuracy ☑	Invasive ☒
Have to be done repeatedly ☒	Subject to negative visual bias ☒	Effective for Long-Term Use ☑	Can be used long-term ☑
Only one measurement ☒	Relatively Repeatable ⇔	Repeatable ☑	Slightly more specific measure than weight / photos alone ☑

The common thread with measurement techniques is that they're only as good as the person doing them, which will most probably be you. For example, you'll notice I listed each one here as *"Highly Variable"* which is because the conditions upon which your measurement rest will influence said measurement to a greater or lesser degree depending on the factor.

The most important thing is that – and this even applies in your food tracking – is that you're consistent in the conditions you measure your changes in weight. I.e.: If you always weigh 1900 in the evening after a specific session fuelled by 150g chicken breast, 300g rice and 200g vegetables because you're at the gym and using the fancy weighing machine then keep to that every time you measure. Personally, I'd advise that you weigh first thing in the morning post-dump / post-pee and before any food / water, every day, and take the average at the end of the week.

Either the mean or median. So the mean will be the sum of every measurement you took divided by how many measurement days you have. The Median requires you to rank all weights in ascending order

and pick the middle one, repeating this process week on week and comparing averages.

Example – Mean:

Day 1 – 87.7kg. Day 2 – 89.5kg. Day 3 – 87.7kg. Day 4 – 92.2kg. Day 5 – 85.5kg. Day 6 – 87.2kg. Day 7 – 88.0kg.

$$\frac{87.7 + 89.5 + 87.7 + 92.5 + 85.5 + 87.2 + 88.0}{7}$$ Mean ≈88.3kg.

Example – Median:

Day 1 – 87.7kg. Day 2 – 89.5kg. Day 3 – 87.7kg. Day 4 – 92.2kg. Day 5 – 85.5kg. Day 6 – 87.2kg. Day 7 – 88.0kg.

Rank Order: ~~85.5~~, ~~87.2~~, ~~87.7~~, 87.7, ~~88.0~~, ~~89.5~~, ~~92.2~~

Median = 87.7kg.

Provided you are consistent with which one you use, you can use either, despite the results being different. Albeit still relatively small. Personally, I'd advocate for the Median Average.

By keeping measurement conditions the same, you help account for fluctuations and factors that influence body composition measurements day-to-day and across the day. As you change from

fasted-fed, dehydrated-hydrated, unpooped-pooped, stressed-relaxed, rested-exercised-recovery, catabolic-anabolic, all of these play a role in influencing the numbers on the scale – your relationship to the Earth via gravity – or the screen in terms of your body composition.

Certain ones are more accurate than others as well, however, fancy machines and devices are not completely necessary. As your average weight comes down on the scale over time, you will notice yourself getting leaner. It will be slow, and then it will appear like you've all of a sudden gotten *"ripped"* when you fully notice how far you've come, and you will be shocked. You don't need a fancy body scanner for this. Scales and a mirror will be more than enough.

Section Summary:

Self-monitoring is a key driver of sustainable fat loss and sustained weight loss, and it comes in various forms, but ultimately, it's there to keep you accountable.

If you track your food meticulously, that's a form of self-monitoring.

If you choose to only eat at certain times, that's a form of self-monitoring.

If you only choose to eat certain foods / a certain way, that's a form of self-monitoring.

I advocate for BALANCE but do whatever you find works for you.

The *"best"* way / method is the one you will stick to.

And for things that don't serve you, get them out of your damn house. Environment and people in it will heavily influence your success.

The Nutritional Component (Pt. I):

Protein & Fibre:

Macronutrient.

Macro – Large.

Nutrient – A substance or ingredient that promotes growth, provides energy, and sustains life.

There are four macronutrients that exist that provide energy to fulfil these demands:

Carbohydrates [4]. (Fibre [1-3]).

Fats [9].

Protein [4].

Alcohol [7].

Yes, alcohol is its own nutrient.

The numbers in brackets indicate the calorific value of each nutrient per gram of said nutrient:

Carbohydrates have 4 kcal / gram of Carbohydrate.

Fats have 9 kcal / gram of Fat.

Etc. Etc.

The reason why protein and fibre are set as more important than other nutrients is for the values they provide above the other nutrients in terms of long-term health benefits, as well as increased satiety (feeling of being full), greater levels of digestive thermogenesis (Thermic Effect of Food – TEF) and more. Let's break it down:

Satiety:

Increasing Protein and fibre intake seems to have very positive effects on Satiety when dieting. As outlined below, protein intake is a big

contributor to satiety and thus helps prevent the classic weight cycling (*Yo-yo Dieting*) effect (PMID: 23107521).

Abstract

Obesity is a serious health problem because of its co-morbidities. The solution, implying weight loss and long-term weight maintenance, is conditional on: (i) sustained satiety despite negative energy balance, (ii) sustained basal energy expenditure despite BW loss due to (iii) a sparing of fat-free mass (FFM), being the main determinant of basal energy expenditure. Dietary protein has been shown to assist with meeting these conditions, since amino acids act on the relevant metabolic targets. This review deals with the effects of different protein diets during BW loss and BW maintenance thereafter. Potential risks of a high protein diet are dealt with. The required daily intake is 0·8–1·2 g/kg BW, implying sustaining the original absolute protein intake and carbohydrate and fat restriction during an energy-restricted diet. The intake of 1·2 g/kg BW is beneficial to body composition and improves blood pressure. A too low absolute protein content of the diet contributes to the risk of BW regain. The success of the so-called 'low carb' diet that is usually high in protein can be attributed to the relatively high-protein content *per se* and not to the relatively lower carbohydrate content. Metabolic syndrome parameters restore, mainly due to BW loss. With the indicated dosage, no kidney problems have been shown in healthy individuals. In conclusion, dietary protein contributes to the treatment of obesity and the metabolic syndrome, by acting on the relevant metabolic targets of satiety and energy expenditure in negative energy balance, thereby preventing a weight cycling effect.

Figure 8: Abstract from Westerterp-Platenga et. al. (2012).

This effect of improved satiety has been observed time and time again in many different publications (PMID: 18469287) and has been suggested to be particularly apparent in the context of negative energy balance (Morrell & Fiszman. 2017).

5.1. Conclusion and future trends

As general conclusions, according to Johnstone (2013), there is some evidence to suggest that enhanced protein-induced satiety effects are likely to be amplified, particularly in cases where negative energy balance is induced. The optimal amount of protein, the type, the timing of protein intake, and the interactions with other interventions (e.g., exercise) is still unclear.

Figure 9: Morrell & Fiszman. (2017).

Protein exerts these effects via actions on certain hormones related to hunger such as GLP-1 (Glucagon-Like-Peptide-1), as well as potentially having effects on Ghrelin when combined with either Carbohydrates or Fats, which are hormones secreted in response to energy balance, both which has been suggested to play a role in promoting signals of satiety and hunger respectively. This, as well as when Adequate Protein (10% Energy Intake) has been compared with Higher Protein (30% Protein Intakes), we observe greater satiety and diminished hunger responses (PMID: 16400055).

Further, evidence exists suggesting that the amino acids formed as a result of protein breakdown and digestion may also exhibit effects on a specific receptor – known as the calcium-sensing receptor, among others – in specific cells – known as L-Cells – in the GI tract, which has been proposed as a mechanism of how these satiety-promoting hormones are secreted (PMID: 29563822) though there is insufficient evidence to make definitive conclusive statements at time of writing.

This seems to remain the case despite differences in protein source also, as when meat and vegetable (soy) protein sources have been studied the results have been quite comparable (PMID: 24944057).

In addition, Fibre intake has been shown to have positive effects on perceptions of satiety, as shown by evidence from β-glucans found in oats (PMID: 26724468). The authors also make clear the very important aspect of satiety, that being that it is not instantaneous, but rather occurs over time with all aspects from food higher in fibre taking longer to break down in the mouth – giving more time for satiety signals to be sent – as well as slowing gastric emptying, all of which have been suggested to play an important role in appetite regulation.

Not to mention Fibre has a litany of health benefits, from reducing the risk of cardiovascular and coronary heart disease in dose-response relationships (Figure 10 - PMID: 24355537), and there have been observed inverse relationships between fibre intake and disease risk (increases in fibre in proportion to reductions in disease risk (PMID: 14980987)). Human Randomised-Controlled Trials (RCTs) showed adding fibre to a low-fibre diet

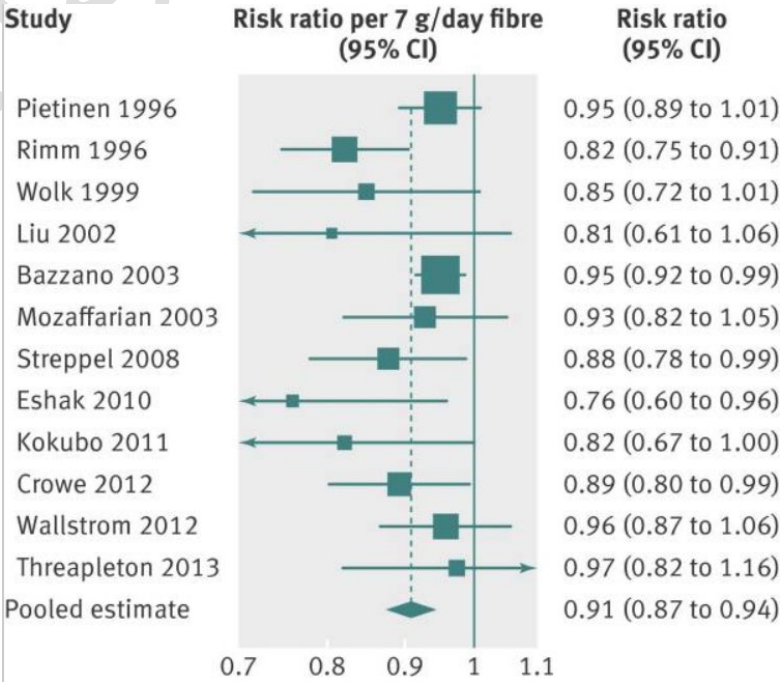


Figure 10: Forest plot detailing the magnitude of reduction to the Risk Ratio (RR) for CVD for 7g/day increase in Fibre (Threapleton et. al. 2013)

improved gut microflora profile (PMID: 20624673), and fibre has also been linked to improved outcomes regarding Atherosclerosis & CVD risk reduction (PMID: 31126110). Other key aspects of health that are positively impacted by fibre are colonic health and reduced risk for colorectal carcinoma (PMID: 33096647) and fruits seem to reduce the risk of hospitalisation from Diverticular Disease (PMID: 30084005).

To summarise this section, Protein in particular but also Fibre are far more satiating on the hierarchy of nutrient satiation than simple sugars or dietary fat (PMID: 18282589) and this is one reason why they should form the bedrock of your weight loss nutrition strategy in-line with the most sustainable approach you worked out and can adhere to.

Thermic Effect of Food (TEF):

On a basic level, the Thermic Effect of Feeding works out on a per nutrient basis as follows (PMID: 15507147):

1. Protein (20-30%)
2. Alcohol (10-30%)
3. Carbohydrate (5-10%)
4. Fats (0-3%).

To illustrate this, take 100 kcal of each nutrient being consumed. This would work out as 20-30kcal per 100kcal of Protein, 10-30kcal per 100kcal of Alcohol, 5-10kcal per 100kcal of Carbohydrate and 0-3kcal per 100kcal of Fat, being expended or "*burned*" simply due to the digestive process, which is a mix of Mechanical (mastication – chewing) and Chemical (stomach) breakdown and post-breakdown absorption in the intestines.

Protein is the most thermogenic macronutrient – *"Thermo"* meaning Heat and *"Genic"* meaning Creating / Generating – as observed by respiration chamber studies where Dietary-Induced Thermogenesis (DIT – another term for TEF) has been measured. Higher protein intakes (30% vs. 9% Energy Intake) resulted in a 4% increase in DIT over a lower protein condition. For reference, as it doesn't seem like much, this translated into nearly an extra 100 kcal expended at the end of the day (PMID: 10193874) for the higher protein group (HP) vs. the lower protein (LP) group.

When you convert the DIT kilojoule (kj) values for energy expenditure reported into kilocalories (kcal): the HP group = 1295 kj = ~310 kcal, whereas the LP group = 931 kj = ~223 kcal.

But how significant was the increase in protein amount? Well, the average energy intake in this study was 2126 kcal (and not statistically different between groups (2121 vs. 2132 kcal)). This places the HP group at ~159g (30% of 12 = 637.8 kcal. 637.8 / 4 = 159.45g) and the LP group at ~48g (9% of 2126 = 191.3 kcal. 191.3 / 4 = 47.84g) per day.

So, it is a relatively hefty increase for a relatively small improvement in TEF, however, it is very valuable in the grand scheme. The magnitude of this change may be small, but it's still a valuable fat loss tool, for this and for the aforementioned improved satiety reasons. Protein also positively impacts energy expenditure in another big way also, as we'll be getting onto next.

Whilst there also data suggesting that protein's effects on post-prandial TEF aren't that significant (PMID: 24376394), it's important to note that protein's contribution to overall energy in was much lower (~15% energy intake), and rather this benefit is best looked at in the context of overall / 24hr energy expenditure than just one meal, as this is more reflective of how increases in TEF fit into the fat loss

picture, as it simply contributes to the overall energy deficit over a period of time.

To this, others have also shown relatively small (3-5%) but still significant positive changes from increased protein intakes on 24hr energy expenditure from both meat based and vegetarian protein sources, with a total of about 29% total energy intake coming from protein (PMID: 11063440). There seems to be no clear convincing evidence for any superior protein source over another, so both animal and plant protein sources are valuable tools for improving energy expenditure via TEF.

Fibre is a similar story also. Fibre, due to its indigestibility slowing gastric emptying and increasing food breakdown time, it increases the energy requirement of digestion. Evidence to support this exists in the form of a "Whole Food "WF) vs. Processed Food (PF)" experiment conducted, where the PF condition showed a 46.8% less thermic effect than the WF condition (PMID: 20613890), with the difference largely being explained by the slight difference in protein intakes (WF = 20%, PF = 15%) but also due to the effects of processing methods (*"milling"*) which removes most of the bran and germ in the whole

foods, as well as many other micronutrients, ***including protein and fibre***, contributing to a much lower protein and fibre content and thus reducing the energy value provided and the DIT. The *"whole foods"* in this trial consisted of sandwiches with multi-grain bread, containing whole sunflower seeds and whole-grain kernels, and cheddar cheese. The PF condition consisted also of sandwiches, but the bread was instead white bread and a processed cheese product (Kraft Singles American, Pasteurized Processed Cheese Product).

For reference, the multi-grain bread contained far more fibre than the white bread (3g vs. <1g per slice), and also significantly more protein (5g vs. 2g per slice). Expressed as a percentage, this is a minimum of 300% more fibre and 150% more protein on a slice-by-slice basis.

This may also explain the marked increases in metabolic rate that persisted for a much greater duration in the WF group as opposed to the PF group (Figure 11).

This is why it is not an unsupported assertion that it is recommended to limit processed foods, especially during dieting, as they result in smaller magnitude changes metabolic rate (lower energy expenditure) and don't promote satiety to the same extent as more "*Whole*" foods.

Doesn't mean that you can't eat them, I don't promote exclusion.

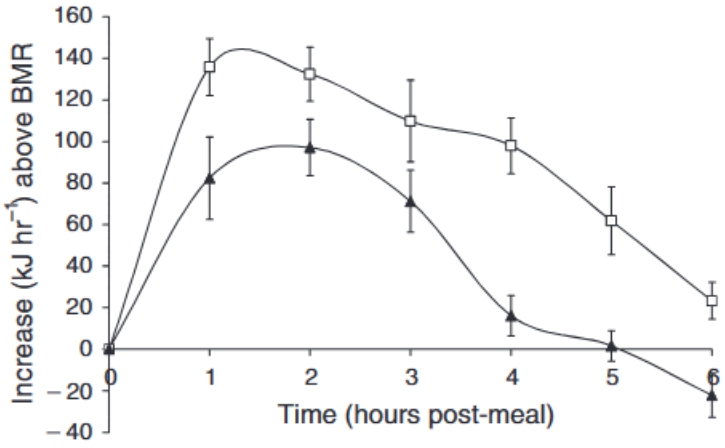


Fig. 2. Average increase in metabolic rate (±SE) above basal metabolic rate for 6 h after whole (□) and processed (▲) meal trials for 17 healthy individuals.

Figure 11: Graph of Metabolic Rate against time for returning to normal values for Whole & Processed Conditions (Barr & Wright. 2010).

Just means that it may not be the best choice to consume them in large quantities, as they also tend to be higher in energy, but also result in lower energy expenditure and don't promote satiety as much, and so better options exist to make the bedrock of your nutrition regime.

Basically, think of Protein as a really complex, flat-pack wardrobe that takes a lot of time, effort, and arguments with your significant other to get from flat-pack form (steak, chicken etc.), into wardrobe form (amino acids that form and rebuild tissues of the body). Whereas Fat is like a chair / some other household item that comes readily assembled (fat in food) and you just plonk it in the room without much effort and it's good to go (fat in the body – adipose).

This is because the structure of fat in food is basically the same as it is when stored in out body, so it takes very little effort to breakdown and absorb comparatively to protein and thus much less energy expended via TEF / DIT.

Targets:

Protein = 2.0-2.5g/kg/day. *Minimum 1.6g/kg.*

Example – 90kg Male = 180-225g/day. *144g/day.*

Fibre = 25g+/day.

More on Protein Source in the Protein Supplementation Section

The Body Composition Component:

This part is closely related to the exercise & daily activity section. Metabolic Rate is directly impacted by an individual's body composition as demonstrated all across the animal kingdom (PMID: 31262787). Also demonstrated in that same publication is that muscle mass plays a key role in this relationship in particular, as when the % of total body mass made up by muscle tissue exceeds a certain point (~40%) in mammals, we see higher values of BMR than expected from

body mass alone, and mammals with muscle mass <30% total body mass show the exact opposite.

At <30% muscle mass, mammals seems to have slower BMRs, diminished thermoregulatory ability (temperature regulation) and often reduced activity levels.

The good thing is, humans can increase their level of muscle mass by focusing on a few factors, some of which we have already been discussed such as exercise – in particular resistance training exercise (exercise using weights, such as dumbbells, barbells, kettlebells in a structured fashion, often to increase strength and muscle mass).

A key part of this is also, as you have probably guessed, Protein.

Protein is the building block of muscle tissue and is the integral nutrient to a process known as Muscle Protein Synthesis (MPS), which is part of the muscle growth process that is upregulated in the recovery response to a stimulus applied to muscle tissue.

Long story short, physical training results in the breakdown of muscle tissue – Muscle Protein Breakdown (MPB) – and the period of recovery afterwards facilitates the repair and growth of muscle as a

means to adapt to the stimulus that has been applied so that the next time it meets said stimulus it is better adapted to deal with it.

This is known as the *SAID Principle* (*Specific Adaptation to Imposed Demands*).

Strength training = Structures within the muscle and nervous system adapt to be able to generate more force.

Hypertrophy training = Muscle fibre size and number of contractile elements increase to increase muscle size.

Aerobic training = Muscle fibres become more efficient and able to continually work over much longer periods of time.

However, not all muscles fibre types are created equal in terms of their growth capacity / potential.

Muscle fibres are typically classified into 3 types (in reality they lie on a spectrum but for the sake of simplicity):

Type I – Slow-Twitch / Aerobic "*Endurance*" Muscle Fibres.

Type IIa – Fast-Glycolytic / Medium-Twitch "*Medium-Distance*" Fibres.

Type IIx – Fast-Twitch "*Explosive / Strong, Quick to Fatigue*" Fibres.

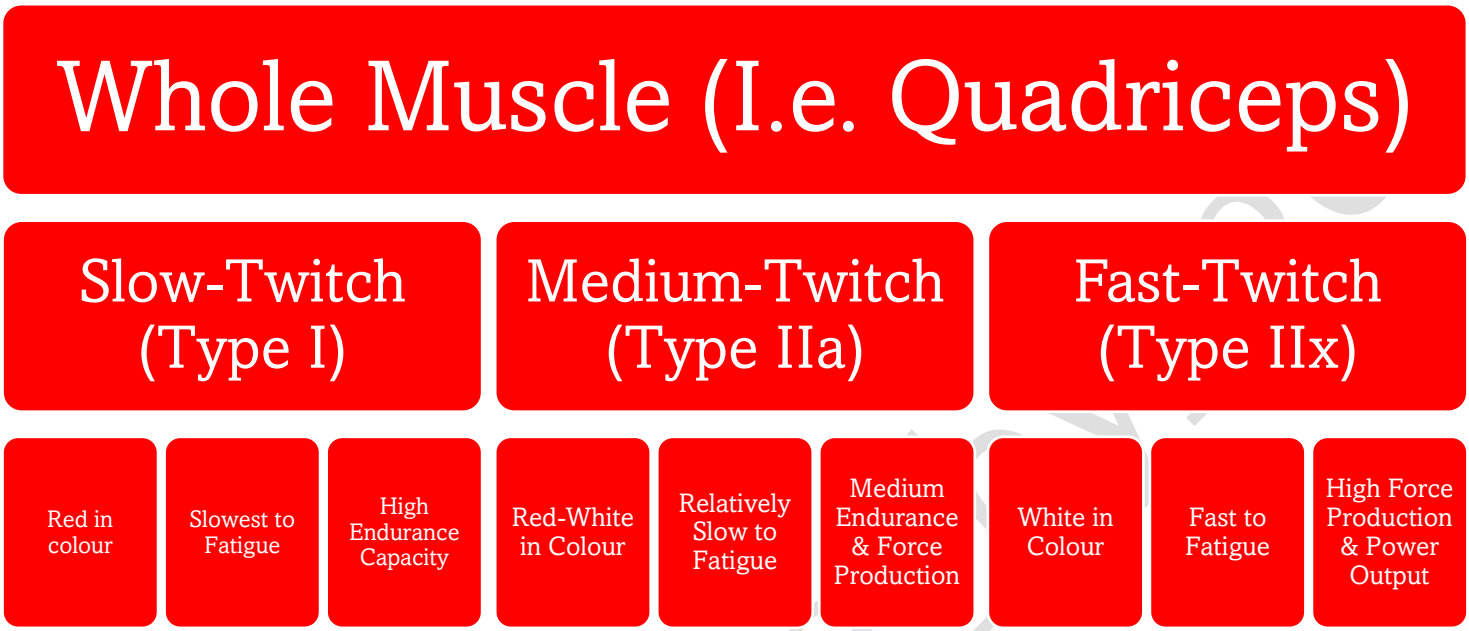


Figure 12: Classifications of Muscle Fibre Type that form the muscles / muscle groups of our body.

The muscle fibres most prone to increases in strength and growth are those that lie in the more fast-twitch end of the spectrum. All of them can grow and increase in size, but the Type II muscle fibres will grow far more than the Type I muscle fibres.

Hence why running marathons gives you very lean and efficient legs that can carry you over 26.2 miles relatively easily depending on your weight, but it won't give you the legs of the Mr Olympia. The Type I fibres will get bigger, but not to the same extent as the Type II fibres.

Protein's role is in the providing of resources so that repair and subsequent growth can take place and homeostasis (the body being

physiologically balanced) restored, as MPS is heavily driven by the need to compensate for muscle protein lost in what are known as "*postabsorptive*" (fasted / fasting) states, where amino acids may have been oxidised (expended / used) for liver glucose production (gluconeogenesis) (PMID: 22289911) and also in the need to repair damaged tissues within the body, such as that of an exercised muscle.

It is an advantage to weight loss to have a fast metabolism. However, if you are not "*metabolically blessed*" so-to-speak, you can still improve your situation by aiming to improve your body composition.

The Nutritional Component (Pt. II):

Macronutrient Distribution:

Once Protein and Fibre targets are established / set, Carbs and Fats can be largely divided to preference. So, whether you experiment and find you prefer high / low carb for example, both are valid.

Let's run some numbers for our previous 90kg male...

High Carb – 65% remaining Calories (35% Fat).

Low Carb – 25% Remaining Calories (75% Fat).

The protein requirement equates to a calorie range of 720-900kcal, so if our person has, say, a target of 2700 kcal/day (he's active outside of work and exercises regularly), that means there are 1980-1800 kcal/day left to split.

Carbs = 4 kcal/g.

65% of 1980/1800 = 1,287/1,170 kcal/day.

$$65\%\ \text{Carbs} = \frac{1{,}170}{4} = 293g\ UP\ TO\ \frac{1{,}287}{4} = 323g$$

Fats = 9 kcal/g.

35% of 1980/1800 = 693/630.

$$35\%\ \text{Fat} = \frac{630}{9} = 70g\ UP\ TO\ \frac{693}{9} = 77g/day$$

On the contrary, a higher fat condition may look something like this:

25% of 1980/1800 = 495/450 kcal/day.

$$25\%\ \text{Carbs} = \frac{450}{4} = 113g\ UP\ TO\ \frac{495}{4} = 124g/day$$

75% of 1980/1800 = 1,485/1,350.

$$75\%\ \text{Fats} = \frac{1{,}350}{9} = 150g\ UP\ TO\ \frac{1{,}485}{9} = 165g/day$$

Totals:

HC = 720 (900) + 1,170 (1,287) + 630 (693) = 2520 (2880). *Avg.* = *2,700.*

LC = 720 (900) + 450 (495) + 1,350 (1,485) = 2520 (2880). *Avg.* = *2,700.*

Body Composition

Over 24 weeks, participants in each group lost more fat mass than fat-free mass. The expected mean change in fat mass was −9.4 kg (CI, −10.9 to −7.9 kg) in the low-carbohydrate diet group and −4.8 kg (CI, −6.3 to −3.2 kg) for the low-fat diet group (mean difference, −4.6 kg [CI, −6.8 to −2.5 kg]). However, the percentage of total weight loss that was fat mass was similar in the 2 groups (78% in the low-carbohydrate diet group and 74% in the low-fat diet group). The expected mean percentage of body fat decreased from 41.0% to 35.2% (change, −5.8 percentage points [CI, −6.7 to −4.8 percentage points]) in the low-carbohydrate diet group and 41.1% to 38.3% (change, −2.8 percentage points [CI, −3.9 to −1.9 percentage points]) in the low-fat diet group (mean difference between groups, −3.0 percentage points [CI, −4.2 to −1.5 percentage points]). The expected mean change in fat-free mass was −3.3 kg (CI, −3.9 to −2.7 kg) in the low-carbohydrate diet group and −2.4 kg (CI, −3.1 to −1.7 kg) in the low-fat diet group (mean difference, −0.9 kg [CI, −1.8 to 0 kg]; $P = 0.054$). Changes in total body water explained most of the change in fat-free mass in both groups. The expected mean change in total body water was −2.4 kg (CI, −2.9 to −2.0 kg) in the low-carbohydrate diet group and −1.8 kg (CI, −2.3 to −1.3 kg) in the low-fat diet group (mean difference, −0.6 kg [CI, −1.3 to 0 kg]; $P = 0.052$). However, the low-carbohydrate diet group lost a greater amount of total body water in the first 2 weeks of the study than did the low-fat diet group (−1.1 kg versus −0.5 kg; mean difference, −0.6 kg [CI, −1.0 to −0.2 kg]).

Figure 13: Excerpt from results section (Yancy Jr. et. al. 2004)

This element of preference is why this approach is known as *"Flexible Dieting"*.

Different macronutrient distribution, and different numbers of calories coming from them respectively in each condition, but the end result is the same and so fat loss would be similar in both conditions.

I say fat loss because low carb / Ketogenic diets tend to result in *"more rapid weight loss"* in the short-term but this isn't the same as fat loss (PMID: 15148063), this results

from the excess water that is lost due to not intaking carbohydrates, which in their storage form of glycogen bond with water in an approximately a 1:2.7 Glucose : Water Ratio. So, for every 1g of glucose, 2.7g of water are also stored, which is also lost when carbs are reduced / eliminated, thus contributing to this perceived rapid weight loss, not body fat.

The body of evidence that has grown from the scientific process has increasingly shown no significant effects of varying macronutrient distribution on overall body fat loss (PMID: 29466592; PMID: 34168293; PMID: 18174038; PMID: 8561057), where any differences in weight loss in either condition becoming insignificant in magnitude within a year (PMID: 16476868).

Those that have reported greater weight loss and health outcomes with Ketogenic Diets did not track energy intake over the study timeframe and are conducted over relatively short timeframes (PMID: 37217318). This is important because weight loss itself is an important variable in health improvements via weight reduction, and that is caused by the magnitude of caloric restriction. So not having any control for energy intake prescription / reporting means that it's

impossible to know how adherent people were to the dietary conditions. Some authors have documented difficulty in adhering to low-carbohydrate conditions, so this is an important consideration (PMID: 34338787).

The final dietary carbohydrate intake ranged from 40.9 g to 90 g in the VLCK diet group and from 127.1 g to 217.6 g in the control diet group. The average carbohydrate

CONCLUSION

The VLCK diet appears to control glycemia and decrease body weight in the short term of up to 6 months in people with obesity and diabetes. Beneficial changes in serum triglyceride and HDL-C levels and a reduced requirement for antidiabetic medications in the VLCK group continued until 12 months. However, the quality of the currently available evidence is not sufficient to recommend VLCK diets. A major limitation of the VLCK diet is the lack of adherence to carbohydrate restriction.

Figure 14: Excerpts from Rafiullah, Musambil & David (2022).

Caloric restriction – regardless of method – is one of the most powerful intervention tools to promote increased life & health span (PMID: 33920973).

2.1. Calorie Restriction, Effects on Lifespan and Health Span

Healthy aging refers to the delay of molecular and cellular decline for the longest length of the lifespan, as aging is characterized by the accumulation of molecular and cellular damage, leading to structural and functional aberrancies in cells and tissues [7]. CR is the most robust intervention known to increase maximal lifespan and health span. The four most important CR-induced antiaging mechanisms are thought to be: neuroendocrine system adaptations, prevention of inflammation, hormetic response, and protection against oxidative stress damage [5]. Regarding neuroendocrine system adaptations, important involved factors are increased insulin sensitivity, reduced levels of anabolic hormones (e.g., insulin, testosterone, leptin), reduced levels of hormones that regulate thermogenesis and cellular metabolism (e.g., triiodothyronine, norepinephrine), and increased levels of hormones that suppress inflammation (e.g., cortisol, adiponectin, ghrelin) [5]. In rodents, CR prevents or delays a wide range of CNCD, such as cancer, atherosclerosis, diabetes, cardiomyopathy, kidney disease, autoimmune and neurodegenerative diseases [5].

Figure 15: Excerpt from Napoleão et. al. (2021).

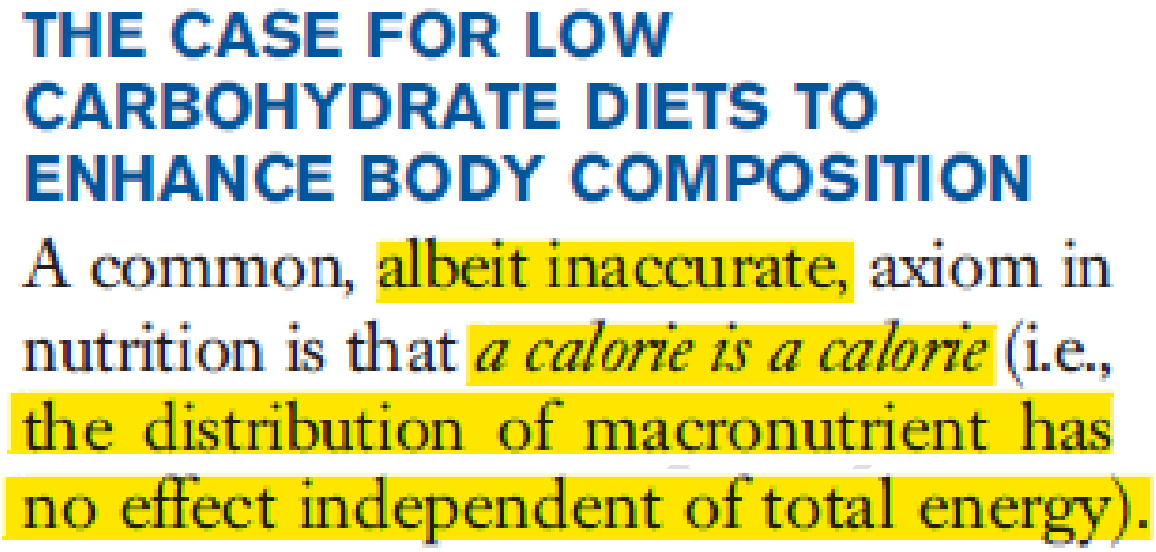
Others have tried to make the case that macronutrient distribution matters more than energy balance – in fact that energy balance neglects to take into account *"biological mechanisms of weight gain"* – with assertions like, *"a calorie is not a calorie"* whereby they argue that calories are not the same depending on where they come from, and calories are "good" or "bad" depending on their source (PMID: 29971406).

One of the studies in reference to this was also over a measly 3-week timeframe, and the diets were not equated for protein – which as

previously discussed, higher intakes contribute to greater increased in energy expenditure, possibly further increasing the deficit despite isocaloric conditions (PMID: 15533250). And whilst recommendations were given to participants to not start an exercise program during the study timeframe and only remain as active as they were prior to the start of the study – if they were sedentary, remain sedentary. If they were active, remain at the same levels of activity – which is a good recommendation, it wasn't directly measured so adherence to this recommendation is able to be questioned.

Also, the distinct benefit of novel reductions in trunk fat with the low-carbohydrate condition in particular have also not been replicated in the nearly two decades since this study as far as I am aware, and the use of DEXA scan – despite being a very valuable tool to measure body composition – is not sensitive enough to detect changes in body water, which as previously discussed is substantially lost under low-carbohydrate conditions, especially in the short-term. So, these results are very questionable, especially given the wealth of evidence we have to dispute these outcomes.

There is a logical fallacy present to, however, as calories are not a physical thing – it is a unit of measurement for the energy that different foods / nutrients provide.



THE CASE FOR LOW CARBOHYDRATE DIETS TO ENHANCE BODY COMPOSITION

A common, albeit inaccurate, axiom in nutrition is that *a calorie is a calorie* (i.e., the distribution of macronutrient has no effect independent of total energy).

Figure 17: Excerpt from Volek et. al. (2010)

1 Calorie is the amount of energy required to raise 1g of water by 1°C.

This is true, no matter where the energy comes from. Thereby they are equal and a calorie = a calorie.

SOURCES of calories are not created equal, as previously discussed different nutrients come from different foods and different nutrients exert different effects on overall energy balance by affecting energy in, out, or both.

Protein – Increased Satiety (Decreased Energy In) and Increased Thermic Effect (Increased Energy Expenditure).

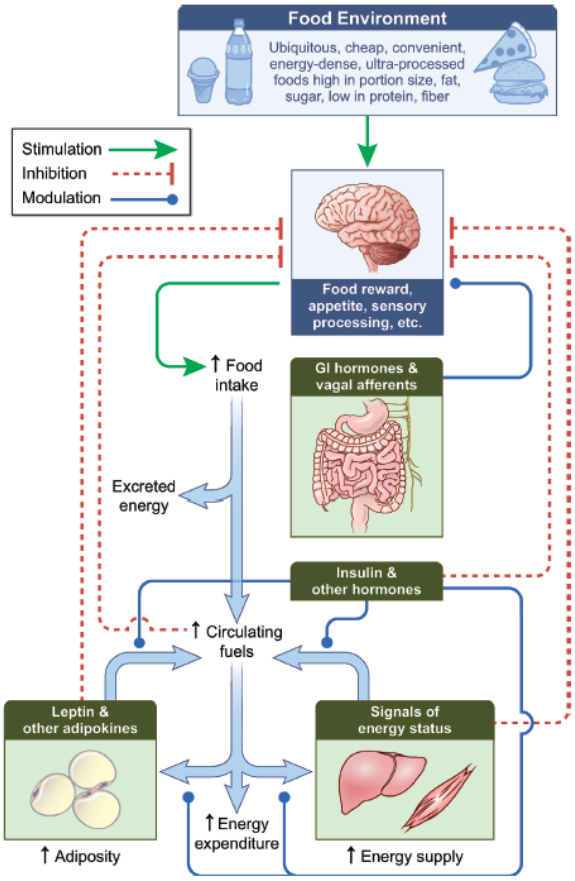


Figure 19: Relationship between food nutrient quality & environment and how this affects physiological mechanisms within the Gut-Brain Axis and reward systems (Hall et. al. 2022)

Increased food hyper-palatability and being completely devoid of protein, fibre, and micronutrients, can change and augment the physiological responses to food intake which the energy balance model does in fact absolutely account for (PMID: 35134825).

So 500kcal does in fact equal 500kcal regardless of it came from steak & vegetables or from ice-cream & a pop tart, but that does not mean that steak & vegetables and ice-cream & pop tarts are of equal value in someone's diet – one side is full of protein, fibre & micronutrients which is a major positive whilst the other is devoid of them, but both can be incorporated in a successful long-term weight loss regime.

All models of obesity ***have to satisfy*** the ***Principle of Energy Balance*** to ***avoid violating*** the ***Laws of Physics***.

So, where you get your calories from absolutely does matter. Just not in the way that many people portray. The foods you eat, and the overall food environment, are important drivers of increased adiposity. Hyperpalatable, nutrient-devoid foods exert several effects via the Gut-Brain Axis – stimulating reward systems resulting greater energy intake and inhibiting signals of energy status and the actions of certain hormones – until the responses of Leptin and other adipokines to the elevated levels of circulating fuels can inhibit this response resulting in cessation of food intake (Figure 17).

However, given these foods are devoid of protein & fibre, the window of satiety will be much smaller / shorter, resulting in greater frequency of this cycle repeating, thus becoming an important driver of increased adiposity / obesity. As such, they are not good candidates to be the bedrock on which to build a sustainable and healthy diet.

Targets:

No specific targets to be issued.

Experiment over time to see which works best for you.

However, a dietary structure favouring very high carbs at the expense of hitting baseline targets of dietary fat necessary for health is not advised. Similarly, a diet so high in fats so that you fail to hit your fibre targets is not advised.

As such, whilst it is recommended not to have excessively high intakes of Saturated (≤10% of total energy intake) & Trans Fats (minimal intake), and to hit a baseline target of ~25g fibre (fruits, vegetables, wholegrains and oats), the intake of carbohydrates and fats can be largely left to preference within these guidelines based on remaining energy intake.

The Budgeting Philosophy:

I chose that business quote earlier from Alex Hormozi for a reason. I'm by no means a hyper-successful businessman yet but hear me out. Dieting / Your Health is a lot like a business – energy in and out are like transactions going in and out of the bank (you) – and dieting is very similar to budgeting / money management.

If there are more transactions coming in than going out over time, the account grows and so does the number on your scales.

If there are more transaction going out rather than coming in over time, you get skinnier but so does your bank balance.

So, the first crossover between your body and your bank is observed, the balance between transactions in and out influences whether the account and you grow, shrink, or stay the same.

Another way of visualising this is like this:

Your body is a lot like a temporary storge warehouse. People's packages & parcels are constantly going in and going out via the distribution network, just like energy is constantly coming in and being used (going out) depending on how it's needed at that point in time.

If the number of parcels gets too much over an extended period of time and the distribution network cannot adapt to keep up (increased energy expenditure from increased energy intake), then the warehouse needs to get bigger (weight gain). If, for whatever reason, the number of packages coming in never gets to the point where even

a majority of the warehouse space is needed – then there is no needed for a big warehouse and so it can shrink down to a more appropriate size (weight loss).

Obviously, this is just an analogy, a warehouse can't just miraculously grow and shrink on a whim over a few weeks, but the premise is the same.

Then, just like how you choose to spend your money influences your financial status, how you choose to spend your energy influences your body composition and likelihood of success in dieting.

The foods you eat are akin to what you buy and the value they provide to you relative to goals you want to accomplish. Well-balanced meals are akin to successful investments, where the money you put in may not feel good initially, but you get returns on that investment that get you closer to where you want to be long-term.

The returns you get from these nutritional investments are increased TEF, increased satiety, increased resources to improve body composition which helps increase metabolic rate over time and increased health-related quality of life.

"Junk Food" or *"bad"* foods are akin to luxury purchases that feel good in the short-term but lack the same long-term benefit. Brand belts & clothes that cost hundreds of £££s, new luxury car that is amazing in all ways except it depreciates in long-term value 50% the minute you sit in it, getting wasted in the local nightclub, these are all well and good but provide very little in terms of return on investment and so you don't get them for that purpose but to make you happy.

Your diet shouldn't make you unhappy. There are people that love solely investing in stocks and don't spare anything for these other luxuries, and that's okay. Just like some can eat chicken, rice, and vegetables 5 times a day for the next 60 years with no problem. Most will not, so these strategies aren't as applicable and aren't likely to be successful.

These *"bad"* foods can help with adherence by making the diet more enjoyable, and so you're more likely to do it long-term and thus more likely to be successful. Like wearing that new belt / dress or driving that new car, it makes you feel good and puts a smile on your face.

Planning in Dates:

This method of weight loss also allows you to account for things you enjoy such as social events / dinners with your partner, as you can allocate more calories to one day where you plan to go out for a meal and allot less to the others – like investing more in one thing and less in others temporarily for greater long-term returns in sustainability.

What would that look like?

Let's say my average requirement is 2600kcal /day to be in a small deficit for the week, but me and my partner want to go out for some food and drinks on a Friday night. Given how much a restaurant meal may cost in terms of energy + desert and a drink or two, I'll allot myself say 700 extra calories on top of this to account for any extra calories, bringing my total for the day to 3300kcal. We go for food at around 1800 in the evening, with my total energy intake up to that point equalling ~2000kcal so I've got a lot of room to have a decent meal, a small desert and maybe a gin & lemonade and still be at this target.

All I'd have to do to account for this is take 700kcal total from the six days that remain. So that would mean taking just over 100 kcal

(~117kcal) from each of the other days, meaning on the rest of the days of the week instead of 2600 I'd aim more so for 2450-2500kcal per day. So for a huge increase in energy intake on the Friday so I can enjoy a nice meal with my partner, without obsessing about *"Am I eating too much to still be in my deficit?"* I can enjoy the evening and trust the process because I've accounted for it by adjusting my intake through the rest of the week.

So you can enjoy your life and social occasions and still make sustainable weight loss progress.

There's no reason why you can't lose weight and smile at the same time.

The Supplement Component:

Supplements are entirely optional and not necessary to successful weight loss. If you skipped here before reading anything else in these pages in an attempt to find a list of *"fat-burners"* and *"test boosters"* to get that *"God Bod"* in the next few weeks, you're doing yourself a disservice my friend.

Stop and go back, you won't find that here.

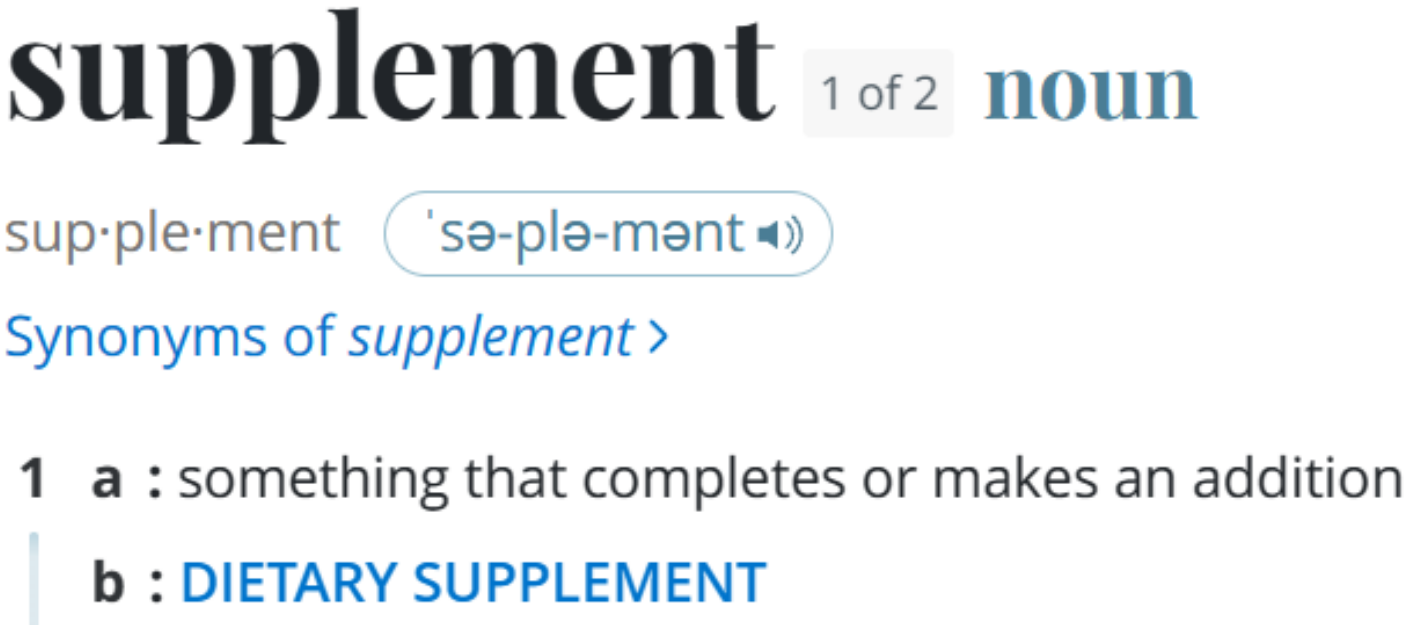


Figure 21: Definition of Supplement (Merriam-Webster).

This implies that there is a small aspect of something that needs to be filled by the addition of "x" – not that this should form the bedrock of the system – or the system is already complete and working but could be made better by the addition of a specific dose of "x."

So, supplements work by making what is already working better, not by exerting magical and mystical effects with many that are readily available for purchase (available *"over the counter"*) having only between modest and no benefit.

Performance-enhancing drugs (PEDs) work very similarly – outside of their potency – where they're made illegal largely due to the magnitude of effect that they have on our physiological systems as

well as potential negative effects to the health of the user / athlete, but still not magic.

That being said, certain supplements can certainly help with weight loss efforts, the main three of which are often referred to as *"Tier A Supplements"* based on the extensive research that has been done to document their performance and health benefits. These are:

1. Creatine Monohydrate.
2. Caffeine.
3. Protein.

There are many supplements available on the market, but these are the current top 3 for effectiveness in aiding in improving health and/or performance.

But again, whilst this is useful to know, you shouldn't be making supplements your priority until you've grasped the aspects below it.

Creatine Monohydrate:

Creatine is one of the most effective "Ergogenic Aids" that are legally available to athletes / gym goers.

Ergogenic – To enhance athletic performance.

Ergogenic Aids work by aiding in increasing the physical / mechanical work (muscle contraction for example) a person can do in a training session, thereby increasing the stimulus from training and the associated adaptations and thus increasing performance.

Different Ergogenic Aids are useful for different athletes in different events:

Those that allow athletes to complete higher training volumes will be very valuable to increasing muscle hypertrophy and aiding in accruing more lean mass – bodybuilders for example.

Those that help facilitate greater force production and quick ATP-resynthesis will be very valuable and useful for promoting muscular strength adaptations – powerlifters and sprinters for example.

Those that facilitate greater blood flow, vasodilation and, say, red blood cell number, will be very useful and valuable to athletes whose performance relies on greater aerobic capacity & endurance – cyclists and endurance runners.

Others also may work by enhancing recovery from training, thus allowing greater training frequency and thus volume / work done without overtraining, and therefore increasing the adaptative response.

Creatine works by enhancing the work that can be done particularly at the highest intensities / maximal exertions, as it works by increasing the rates of "ATP Resynthesis". It does this through a process known as "Phosphate Donation".

Quick Physiology Lesson:

In order to generate energy for muscle contraction (or any bodily process), a molecule known as ATP (Adenosine Triphosphate) must be broken down via enzymatic (involving enzymes – proteins that facilitate chemical reactions) reactions into ADP (Adenosine Diphosphate), as this process releases energy. In order for a process to continue, this cycle must continue. Without ATP, energy cannot be generated.

ATP was first discovered in 1929 by a German Chemist by the name of Karl Lohmann and was first synthesized – chemical structure determined – in 1948 by Alexander Todd. It is commonly known as

the *"energy currency"* due to its functions in virtually all forms of earthly organism.

When ADP is formed, it can and will be resynthesized into ATP, but this takes time. The requisite amount may not be available in the time it is required, leading to failure (muscle failure for example). The body reforms ATP in three ways in order of speed of resynthesis: A) Phosphocreatine (PCr), B) Glycolysis, C) Oxidative Phosphorylation.

How Creatine Works:

We won't be talking much on these aside from the first as that's the one that's relative to Creatine. One way ATP can be resynthesized is by the action of Phosphocreatine (Creatine molecule (Cr) + Phosphate Molecule (P_i)), this is the quickest of the available *"energy systems"*. PCr acts by donating the Phosphate attached to it to the ADP, reforming ATP very quickly, which is then broken down into ADP again generating energy.

Creatine supplementation helps with this process by increasing and bolstering stores of PCr within skeletal muscles so that more Phosphates can be donated to reform ATP quicker and thus higher

levels of work can be done in this very short timeframe. For truly maximal activities, ATP will be fully exhausted in ~8-10s.

This translates into more forceful muscle contractions, leading to greater strength, power & speed adaptations through increasing the stimuli for these adaptations in training.

How Effective Is Creatine?

Creatine's benefits can be described as "modest" in the grand scheme but certainly not small.

The International Society of Sports Nutrition released a position stand in 2017, where they highlighted that evidence has *"consistently shown that Creatine supplementation increases intramuscular Creatine concentrations, which may help explain the observed improvements in high-intensity exercise performance leading to greater training adaptations"* in addition to other potential benefits also. Studies contained within this publication have shown significant benefits of Creatine supplementation during intense training in isotonic lifting volume, fat-free / bone-free mass, and sprint performance (PMID: 9475647); as well as upper body explosive power & lean body mass – with an additional *"performance-protective"* effect where maximal squat, bench

press and explosive bench press performance diminished in the Placebo condition but not Creatine Monohydrate supplemented condition (PMID: 14685870) – in younger adults. Even in older adults, when Creatine is supplemented with resistance training, the performance of daily activities increases, increases fatigue resistance and lean body mass, and muscular strength above resistance training alone (PMID: 21394604), also greater long-term training volumes, upper body, lower body and elbow flexor strength, better performance of motor function tests – 30s chair-stand and getting up from the floor – and greater muscle / fat-free mass in older women (PMID: 23053133).

However, Creatine doesn't directly cause fat loss.

It is a supplement that allows you to work more and train harder, it doesn't *"burn"* fat. However, it's benefits will positively influence factors that do help with fat loss – resistance / high-intensity exercise to build muscle mass, thus contributing to a gradually increasing Basal Metabolic Rate providing that training is continual – and it is one of the best & cheapest supplements you can get.

How Much?

Creatine works by fully *"saturating"* your muscles with Phosphocreatine. In an average diet containing approximately 1-2g/day Creatine, muscle stores will be approximately 60-80% saturated (full) (Kreider et. al. 2017). Therefore, the goal of supplementation is to make up this deficit to 100%.

Meat sources tend to be the greatest food-based sources of Creatine. For example, 1lbs (~454g) of uncooked salmon / beef contains approximately 1-2g Creatine. Supplementation, however, can help make up this deficit much easier. The best way to do this is by *"Creatine Loading"* whereby 5g of Creatine is taken x4 per day for 5-7 days (20g/day), whereby a maintenance dose of 3-5g/day is taken every day thereafter to maintain the stores at 100% saturation (PMID: 8828669; PMID: 1327657). One can reach 100% saturation using just the maintenance dose; however, this will take approximately 28 days as opposed to 5-7.

Either way, there is really no reason not to use Creatine. It's cheap and safe and has pretty much nothing but benefits.

Creatine ☑

Caffeine:

Caffeine (A.K.A.: Methyltheobromine) is another effective supplement for aiding in fat loss by not only aiding in improving training and physical performance, but it's nature as a stimulant also results in a very small *"fat-burning"* effects by associated increases in energy expenditure.

Quick Physiology Lesson:

Caffeine is a legal and commonly available psychoactive substance. Psychoactive = Affecting the Mind. A.K.A.: *Stimulant*. Psychoactive substances can go the other way as well – Alcohol = Depressive Psychoactive Substance or, a *"Depressant."* Research conducted via MRI studies has seemed to highlight that Caffeine modulates neuronal activity in activities of the brain associated with executive and attentional functioning – such as the *Bilateral Medial Frontopolar Cortex* and extending to the *Right Anterior Cingulate Cortex* (PMID: 17936643).

Caffeine also works by latching onto what are known as Adenosine Receptors in the brain, covering them and preventing Adenosine from

building up on these receptors. This is part of what gives Caffeine its stimulatory property, as Adenosine build-up on these receptors is what makes you feel tired and ready for sleep – in addition to the rise of Melatonin (Sleep hormone). So, with the brain not having this build up of Adenosine, you won't feel as tired over the time the Caffeine is most active (peaks in the blood 40-80 minutes post-ingestion; PMID: 25355191) with Caffeine having a half-life (time it takes for half of the dose to be removed from the body) of 3-5 hours.

This action of blocking the Adenosine receptors is a primary reason why it's generally advised not to consume caffeine late into the afternoon – evenings, as it can heavily delay sleep onset and negatively affect REM sleep, which is very bad (PMID: 16936703). Ramos-Campo et. al. (2019) showed that ~388mg Caffeine (6mg/kg of their participant's body mass) taken late in the evening (1900hrs / 7pm) had significant negative effects on many markers of sleep efficiency and quality. So, whilst Caffeine is a good ergogenic aid, it is not a very good sleep aid.

Ergogenics and Thermogenics:

One Meta-Analysis published in 2011 showed dose-response increases in Caffeine-only & Catechin-Caffeine conditions (Caffeine + Catechin, such as commonly found in Matcha & Green Tea), in the range of 0.4-0.5kj increase in energy expenditure per mg of Caffeine intake (PMID: 21366839).

This is relatively small but not insignificant. For reference, 1kj (kilojoule – another energy / work done measure) ≈ 0.24kcal. So, taking the currently established *"safe upper limit (SUL)"* of 400mg/day, at 0.4-0.5kj/mg^{-1} this would equate to an increase in energy expenditure of 160-200 kcal/day. Provided you aren't consuming those calories back with copious amounts of sugar, high-fat milk, syrups & cream in your favourite brand-chain drink of choice, this can be very valuable to increasing one's total energy deficit without needlessly cutting calories back.

Low-Moderate Caffeine intake has also been suggested to have small magnitude benefits in increasing fat metabolism (PMID: 36495873). Important to remember though that this supplements your energy

deficit and may result in slightly better fat loss, not that Caffeine *"burns"* fat regardless of overall energy balance.

For the Ergogenic benefits of Caffeine, one possible mechanism observed in the data is the antagonism of Adenosine receptors (A1 & A2A receptors) in the forebrain region, supported by data showing the ergogenicity of Adenosine receptor antagonism in global and forebrain knockout mice (PMID: 32770138).

Caffeine's ergogenic effects are evident in endurance-related sports / activities (PMID: 30094798), as well as in upper body strength, power and muscular endurance (PMID: 29527137; PMID: 32551869). Improvements in performance in the knee extensors (quadriceps) for maximal voluntary contraction (MVC) and muscular endurance, with further meta-analysis implicating Caffeine having an effect on the CNS which is likely the case (PMID: 20019636).

How Much?

There is no *"effective dose"* for fat loss. As previously discussed, the increases in energy expenditure as dose-response, meaning greater caffeine intake = greater energy expenditure. The current SUL is

~400mg/day for the average person, but you can lose fat / weight without any caffeine intake and many do – it just helps.

For benefits in terms of Caffeine as an ergogenic aid, there is a slightly more definitive answer. Most of the data supporting Caffeine's ergogenicity supplement in the range of 3-6mg/kg. A few reference points:

50kg body mass = 150-300mg.

75kg body mass = 225-550mg.

100kg = 300-600mg.

And so on, so forth...

As I said, you don't have to use it, but it can and will help.

Caffeine ☑

See here for ISSN position stand on Caffeine (PMID: 33388079).

Protein Supplementation:

The bedrock of the macronutrients can also serve as an effective supplement if you're struggling to hit protein targets within your allotted calorie target.

That's all supplemental protein does. It helps you hit your overall protein target and does all the same things protein does – helps build muscle and recover from exercise, increases feelings of satiety from your diet, has the same effect from digestive thermogenesis etc.

Supplemental protein comes in many forms, but many are derivatives of one in particular – Whey. Whey is simply the protein derived from milk and concentrated into a very protein-dense powder form. This is known as Whey Protein Concentrate. Other forms of whey – such as Isolate and Hydrolysed – are simply this same thing but with some of the dairy components – lactalbumins primarily – removed so that those with issues digesting these dairy components (such as those who are *Lactose Intolerant*) can digest them more easily and with less gut distress.

Other protein supplements – Pea, Soy, and other plant-based proteins; Beef Isolate, Rice Protein etc. – are all variations of the same thing –

though from different sources – with the same desired outcome: Increasing protein intake. Just in a way that allows people to supplement in a way that aligns with morals / dietary choices.

Is There A Best Protein?

In some ways, yes. In others, no.

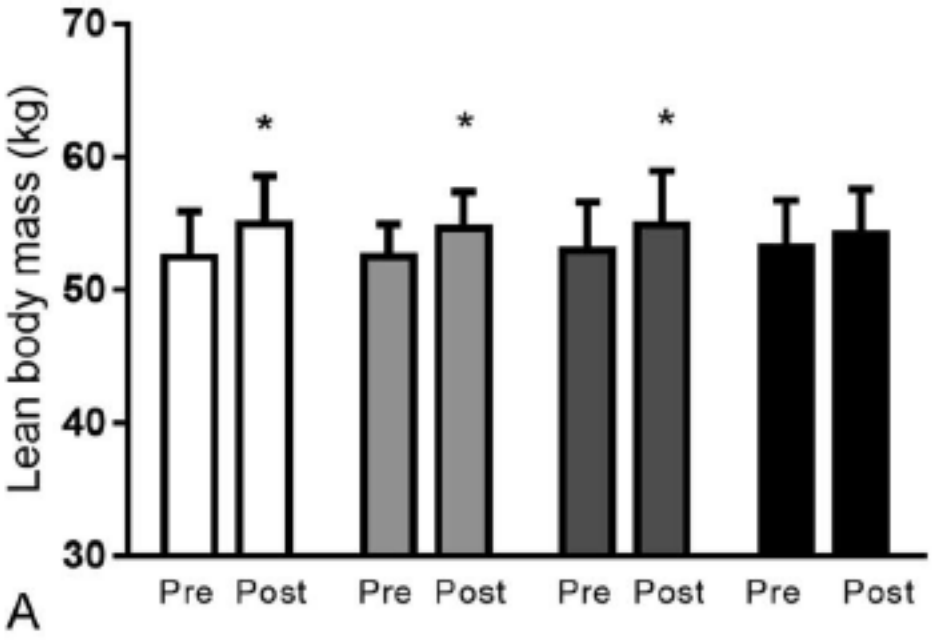


Figure 23: Changes in Lean Body Mass with Whey Protein Concentrate (White Bars), Beef (Light Grey Bars), Chicken (Dark Grey Bars) and Control (Black Bars) – Sharp et. al. (2018).

Whey is equally good at promoting gains in lean body mass as both chicken and beef, with no significant differences observed between conditions, but all promoted greater gains than the control condition (Figure 19 – PMID: 28399016). It also seems that different forms of whey, such as Hydrolysate, are equally as effective in promoting muscle protein synthesis given that they seem to promote similar muscle protein

synthetic responses and leucine transport into muscle tissue (PMID: 31095313).

However, the case can be made that plant-based sources of protein are inferior to whey protein for promoting gains in lean body mass, with nearly double the lean mass gains with whey vs. soy, even despite consuming similar calories and during resistance training (PMID: 24015719). Important to note here, however, is that lean mass does not directly equal muscle mass.

Reviews previously conducted on the topic, however, have seemed to indicate that whey is a more potent stimulator of muscle protein synthesis than other sources such as Soy & Casein Protein, with reasons often being cited as: Increased Essential Amino Acid & Leucine Content, and increased bioavailability (PMID: 20368372; PMID: 25757896).

However, that doesn't make them ineffective by any means, they can still be useful for making up total protein intake which is by far the most important variable. There is something that may help narrow the gap a little bit, however, and that is through the addition of specific digestive enzyme blend co-ingested with the corresponding source of

protein. This has been shown in data from Minevich et. al. (2015) comparing whey protein concentrate with an equally dosed 70:30 Pea:Rice protein blend, as well as the Pea:Rice blend + plant digestive enzymes, where the addition of the enzymes seemed to make the protein from the blend slightly more bioavailable and so we saw greater peak of essential amino acid uptake compared to the blend without the digestive aid.

In my opinion though, this doesn't do anywhere near enough to equate for the differences in bioavailability as there was still a large, nearly statistically significant disparity between plants + enzymes and animal proteins, with animal protein having a much higher essential amino acid peak value.

Complete vs. Incomplete Proteins:

The term *"Complete"* when it comes to Protein refers to the presence and amount of Essential Amino Acids contained within the food matrix. Complete is the name given to protein sources is the name given to sources where all nine essential amino acids are present in necessary doses to sustain life, and Incomplete is given to the proteins where one or more of these amino acids are lacking.

The term *"Essential"* means *must be attained through dietary means.*

Table 2: Essential and Non-Essential Amino Acids.

Essential	**Non-Essential**
Leucine*	Aspartic Acid
Isoleucine*	Glutamic Acid
Valine*	Alanine
Phenylalanine	Arginine
Tryptophan	Asparagine
Methionine	Cysteine
Lysine	Glutamine
Histidine	Proline
Threonine	Glycine
	Serine
	Tyrosine

*Branched-chain Amino Acids (BCAAs).

Our body synthesizes most amino acids from substrates / precursors that are already present within the body, glucose being the primary

source. Carbon skeletons for these amino acids come from intermediates of both the glycolytic and aerobic (*"Krebs Cycle"*) energy generation pathways and the process of *transamination* – using one amino acid to form another via the removal and conversion of its amino group – via more enzymatic reactions. The mixture of these processes is what allows amino acids to be derived indirectly from various substrates of our energy generation systems, not via direct nutritional intake (Litwack. 2018).

Essential amino acids on the other hand are not like this, the body cannot derive them from precursors within the body so they must be attained from food, and all are necessary for full muscle protein synthesis. One in particular of the essential amino acids is thought to be the primary regulator of muscle protein synthesis in humans – Leucine. If muscle protein synthesis is one of the main ways we build muscle, and building muscle helps with fat loss & improving body composition, then we don't want to be letting this slip and so protein source matters.

Wherever you can, you always want to try and get complete proteins. Failing that, a mixture of protein sources so that any absent proteins in one source are provided by another.

This is the other main problem with plant sources, however. Other than their lower bioavailability relative to meat-based sources, their essential amino acid content can be problematic.

This is because plant sources of protein are often lacking in essential amino acids – particularly Lysine and Methionine – and in comparison to animal sources the amount of protein which is essential amino acids seems to be lower (PMID: 26222750; PMID: 28847314). Despite this, however, with careful attention to one's diet and protein sources to ensure deficiencies of one source are covered by another, and enough protein is ingested on a daily basis to overcome possible bioavailability issues, plant proteins are very viable sources of protein (PMID: 35118103) and – even if not for the protein – most could probably gain a lot from incorporating more plants into their diet for their myriad health benefits.

In general, however, in terms of protein source, the best quality sources tend to be lean animal sources due to their high protein

content, high bioavailability and completeness in terms of their amino acid profile.

How Much?

No specific, *"one-size-fits-all"* answer as it depends on your overall protein target and whether you wish to supplement with protein or not, you do not have to, if you can hit your protein target via food only means within your energy deficit in a sustainable way that you can adhere to, you're probably best doing that.

However, if you're looking for a way by which you can supplement your protein intake in a very convenient, low-calorie manner, so you can afford yourself some extra flexibility or always have a source of high-quality protein on you – ideal if you work a busy schedule and struggle with meal prep / do a lot of travelling for work or other reasons – then you may wish to invest in some form of protein supplement.

Per serving, the same target for protein-containing meals exists – that being 0.4-0.55g/kg body mass – which is based on recommendations for maximising muscle protein synthesis from Schoenfeld & Aragon (2018), where a minimum intake of 1.6g/kg and an ideal of 2.2g/kg

are advised (PMID: 29497353). If you were to split 0.4-0.55g/kg across 4 meals spread out across the day – allowing sufficient time between meals for your body to resynthesize itself to protein intake – you would then hit the range of 1.6-2.2g/kg for the day. Given the tendency for protein shakes in particular to clump together during mixing, it may be worth taking this into consideration when deciding how much to use in a single serving.

For our 90kg individual from before, this would equate to 41-45g of protein. To hit this recommendation, given that most protein powder serving sizes are 20-30g it could potentially necessitate 2 or more scoops of depending on the powder (protein powder isn't completely 100% protein – though whey isolate is pretty close), so you may wish to divide even this dose up into two shakes to avoid the dreaded feeling of clumped watery powder.

There are no real drawbacks to protein supplementation provided it isn't overconsumed and given the vast number of different sources of protein supplement, there is one for virtually everyone. Again though, the key word is supplement. You shouldn't aim to base your dietary fundamentals around supplementation, merely understand that these

are things that can help you to do those things easier & for longer, and it's just as effective as other sources as previously mentioned.

You don't need to supplement with it, but you can if you so choose.

Multivitamins:

Multivitamins are quite simple, they're just like an insurance policy basically. No direct fat burning benefit, they just help you make sure you hit your micronutrients on the daily, which can be useful even if you have a relatively healthy diet just to make sure you aren't deficient in anything.

Odds are if you eat a well-balanced diet rich in fruits, vegetables, grains & fibre, lean protein from both animal and plant sources, you aren't going to be deficient in much. If you choose not to go this route and thus exclude certain foods that are rich in some nutrients but not others, then this may be more important.

As an example, if you choose to forgo fruits & vegetables because *"Carnivore Brah"* then you may very well end up deficient in micronutrients such as Vitamin C as this is far more abundant in citrussy fruits. Similarly, those who choose to go solely plant-based

can find themselves deficient in vitamins like B12 and Iron. As such, a multivitamin can be useful to make up for these deficiencies, though you should still aim to fulfil micronutrient needs as much as possible from your habitual diet.

If you notice a specific micronutrient deficiency but don't like any of the most common sources, then supplementing solely with that nutrient may also be advisable. Vitamin D is a great example, where it has been observed that as high as 1 in 6 adults in the UK are Vitamin D deficient which is most attributable to not enough exposure to sunlight, but if you don't like or have allergies to some of the dietary Vitamin D sources – salmon and other fatty fish, egg yolks and foods fortified with Vitamin D like milk and cereals – then supplementation with Vitamin D (≥10µg) may be warranted. In countries / places where natural sunlight is abundant, however, this may not be necessary.

The Neglected Component:

Jeez... What else could there be?

You don't want to *sleep* on this one I promise you.

SLEEP.

The often neglected component of everything body composition and training related – fat loss, muscle gain, strength improvements etc. – and by far the best fat burner, muscle gain supplement, and ergogenic aid you have is effective sleep.

Sleep is at the heart of life, training, and good health. And not prioritising sleep can have negative consequences on pretty much all efforts in improving body composition. Sleep has, for a long time, been proposed to be a novel risk factor in various negative health outcomes – for example insulin resistance and Type II diabetes (PMID: 16227462) – a condition that has been estimated to effect 529 million people worldwide with it having significantly worsened in recent years (PMID: 37356446). According to Diabetes UK, approximately 4.3 million people have been diagnosed with Diabetes, with 90% of these cases being Type II. This equates to 3.87 million cases. And these have increased by over 148,000 in the year 2021-2022 from 2020-2021.

Not to mention the National Sleep Foundation (NSF) have suggested that consistent difficulty with regards to sleep-onset latency and

consistent sleep duration and quality are strongly associated with negative mental health outcomes – for example those with difficulty falling asleep possibly being three times more likely to experience symptoms associated with depression than those who don't, and 45% of individuals with regular trouble falling asleep suffering moderate-severe depressive symptoms vs. 5% in those with little no trouble falling asleep (Figure 20).

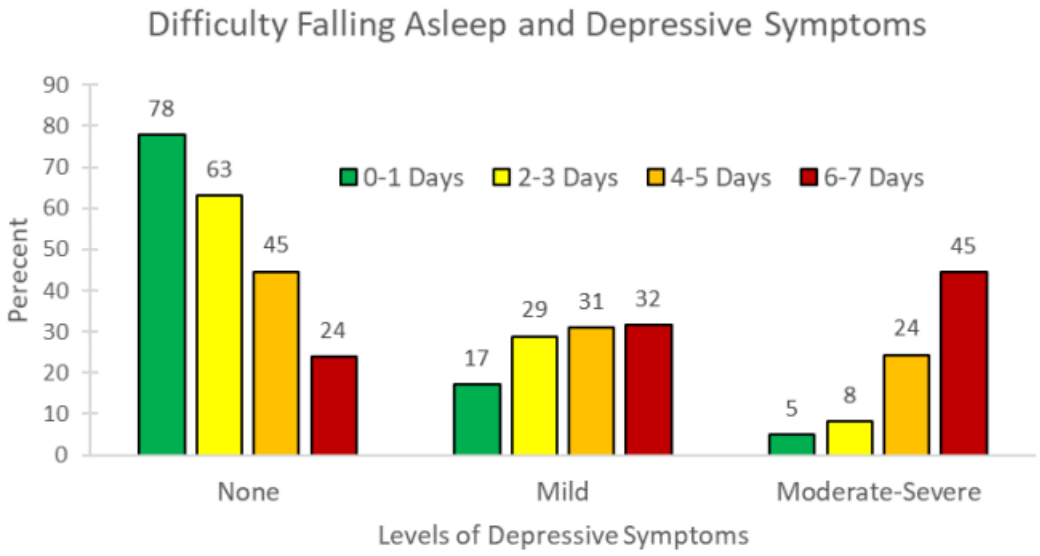


Figure 25: Relationship between Increased Difficulty in Sleep Onset & Depressive Symptoms and Symptom Severity (NSF. 2023).

Habitually short sleep durations have also been associated with modest long-term weight gain and incidence of obesity in the future, with an inverse association between relative risks of ≤15kg weight gain and longer habitual sleep duration was observed – meaning the shorter the habitual sleep duration, the greater the risk of long-term weight gain (PMID: 16914506).

Further, let's take one example of just one hour of less nightly sleep, 5 nights per week, where participants undergoing sleep restriction in this way loss less proportion of the weight they lost – meaning of the weight they lost it came more from lean mass vs. the caloric-restriction-only condition – despite similar overall weight loss and even though this sleep deprivation was balanced by proportionately increased sleep on the other 2 days of the week (PMID: 29438540).

One of the potential reasons for this is the alteration in circulating levels of food regulatory hormones that occur during prolonged sleeplessness / sleep deprivation, which has been shown to result in as high as a 30% decrease in maximum amplitude of Leptin – hormone that signals fullness – and as high as a 28% increase in Ghrelin levels – hormone signalling hunger – (PMID: 25012962), meaning you feel less full eating the same amount of food and experience greater sensations of hunger for every kind of food but particularly for carbohydrates, interestingly enough. These changes have not always been observed during sleep deprivation, but there is evidence to suggest that changes in these hormones plays a role, potentially resulting in increased habitual / *ad libitum* food

consumption, leading to weight maintenance / gain over time if not improved.

Further, the same review highlighted that short-term sleep reduction is positively associated with A) Increased food intake, B) Increased calorie consumption, C) Poorer dietary quality, and D) Increased alcohol consumption, with greater caloric consumption coming from increased consumption of snacks high in carbohydrates and fats – Hyperpalatable and easily overconsumed. An example to show how significant this can be as a factor in weight gain / impaired weight loss data from Brondel et. al. (2010), where due to a single night of sleep deprivation, from 8hrs down to 4hrs, participants ate on average 559 (± 617) more calories (+22%), with those participants also opting for more carbohydrate and fat foods during sleep restriction than protein sources like chicken breast at lunch and dinner (though overall protein intake was not different between groups) relative to the non-sleep restricted condition (PMID: 20357041).

It strongly seems that sleep is a very important factor to consider with regards to overall health and weight management and poor sleep is associated with various negative health outcomes, both physical and

mental / emotional, which isn't surprising considering mental / emotional health is highly dependent on physical health.

It's foolish to think you can just *think* or *will* yourself into good health without doing anything, you may feel temporarily better in the moment but that's really about it, but odds are if you're doing things to help benefit your physical health on a consistent basis and you're pushing yourself to do hard things in the pursuit of being a better you – not a stagnating or actively worsening you – then you'll start *feeling* better and experiencing greater mental health outcomes as a result.

There is no mental health without physical health.

And sleep is an integral, often neglected part of that.

Understanding The Problem:

Improving sleep comes down to one thing mainly that we can all benefit from in many areas of life – routine.

Sleep is regulated by what is known as the *Circadian Rhythm* – basically out body's internal clock – which governs pretty much everything to do with bodily processes, hormone secretions that influence when we feel tired and awake; full and hungry etc., as well

as our sleep-wake cycle. The main thing that *"sets"* our Circadian Rhythm is the big bright sphere in the sky that allows us to see – the Sun.

Quick Physiology / History Lesson:

Back before the advent of the torch and streetlights, the natural light from the Sun allowed us to get around and do things like hunt, gather, explore new territories, and when it disappeared as it does once every 24hrs, we could no longer really do these things. We aren't nocturnal creatures with accurate echo-location after all, could very easily end up tripping over a low branch in the jungle and smashing our head on a rock in the middle of the night, walking off a cliff not seeing the edge as it was surrounded by dark foliage in the pitch darkness, or being killed and eaten by a predator better adapted to hunting in darkness, like Batman.

So when night starts to come, our autonomic nervous system shifts to better reflect a state of relaxation and rest – *"Parasympathetic State"* – to prepare for sleep onset as dark is soon to come. Our body starts secreting a hormone known as Melatonin which helps bring about a state of sleep and through the darkness of the night we purge a

chemical known as *Adenosine* from the brain – which as it builds over the course of the day makes us feel more tired.

This is the opposite of what happens for the most part during the day, where our nervous system primes us for movement and activities where we need to be stimulated, again like hunting and gathering. This is known as a *"Sympathetic State"*, or *"Fight or Flight"*. When you are sympathetically stimulated – stressed in some way – you'll find it hard to sleep.

Circadian Rhythm is highly individual, with some naturally being tailored to early-rise, early-sleep, and others being later-rise and later-sleep. Both would have served well in the tribal days of old – early risers as top hunter-gatherers and late-sleepers making good night guards for the tribe and their encampment, keeping watch for predators / rivals throughout some of the night.

Taking Action:

Consistency:

Possibly the most important factor in getting consistent, good quality sleep is consistent, good quality bed and wake times. Good sleep is a

habit like any other. This doesn't mean in bed by 0808 and up by 0430, as not everyone's will be exactly the same, but having consistency in the time you begin getting ready for sleep, into bed and waking up the following is going to be imperative in ensuring you go through all the necessary phases of sleep in sufficient amount to maintain adequate physiological functioning and also facilitate full recovery and adaptation from exercise.

Having a bedtime routine is a good way to signal that time for sleep is nearing, so having specific activities that promote relaxation close to bedtime may be a good start. Stretching, having a bath, journaling... The more you do these activities at certain times before bed, the greater the body will associate these with preparing to sleep.

Similarly, sunlight in the morning when you wake up is a good way to set your circadian rhythm for the day, so that when it comes time to start getting ready for bed the natural rise in Melatonin isn't delayed and the time you've spent awake have accrued enough Adenosine to make you feel tired, so when you set your head down it won't be long before you're whisked away to unconsciousness.

There are things to be weary of when it comes to getting ready for sleep though, things to avoid for their potential to delay sleep onset and start negatively shifting your circadian rhythm.

So, aim to go to bed and get up at similar times every day, that's priority no. 1. It isn't always possible, but something to aim for.

Lights Out:

Differences in environment nowadays has had substantial impact on our Circadian Rhythms, particularly resulting in them becoming more delayed. Sleep is signalled by darkness, but we have more streetlights (not saying they're bad by any means – a great invention in my opinion) than ever emanating bright light into our eyes at night, supressing the secretion of Melatonin and making it harder to fall asleep. An example of this is a systematic review of 85 studies relating artificial light at night, where they highlighted that artificial bright light at night a) Suppresses Melatonin secretion, B) Increases sleep onset latency and C) Increases alertness (trait of the sympathetic nervous state) (PMID: 26375320) and while not necessarily intentional the potential consequences from this disruption to natural Circadian Rhythm, resulting from the increased over-reliance on artificial light

over the natural day-night cycle, is a major concern (PMID: 33049062).

Blue-enriched bright light, such as that which emanates from your smartphone, TV and laptop, seems to be particularly damaging to sleep quality – particularly in terms of Non-Rapid-Eye-Movement (NREM) sleep (PMID: 23509952) in addition to increasing sleep onset latency.

So put the phone away before bed, pick up a book, and get a reading light that can emanate warmer colours that is just bright enough to see the words on the pages, and as you get a few paragraphs in you'll start to feel your eyes getting heavier much quicker.

Also, as previously mentioned, Caffeine is another thing to avoid when it comes down to getting closer to your personal sleep window. By nature of it being a stimulant, it runs in complete opposition to promoting sleep, so avoid coffee / energy drinks late into your day when you're thinking about getting ready for sleep.

Temperature:

Temperature also plays a significant role in getting to and staying asleep. Bright light exposure may also have effects on body temperature (PMID: 10607020) – with brighter light in the evening resulting in raised body temperature that persists even into the first 90 minutes of sleep – potentially as a result of promoting increased blood flow from increased sympathetic stimulation. This is important to consider as core temperature plays a vital role in sleep onset – the body needs to cool slightly in order to enter sleep.

If you've ever struggled to fall asleep in the baking hot summer, this impaired cooling is also one of the reasons why. A major limitation of this study however was the sample size (n=5), so these findings are quite limited in their generalisability.

A researcher by the name of Kurt Kräuchi coined the term *"The Thermophysiological Cascade"* to describe the process by which temperature helps regulate and induce sleep, observing that mammalian species sleep during *"the Circadian Trough of their Core Body Temperature"* and that heat loss is particularly relevant for sleep onset – where sleep is typically initiated when heat loss is maximal

and the rate of change of core body temperature is at its peak (PMID: 17764994). He also noted that heat loss via increased vasodilation in distal skin regions (expansion of blood vessels in the limbs and extremities) promotes sleepiness and rapid sleep onset.

This is why one of the recommendations to help induce sleep onset is a hot bath / shower before bed, as the heat from the water will increase body temperature and when you get out and into bed vasodilatory processes will be increased to help dissipate this excess energy, inducing maximal heat loss and fast rate of change of temperature, which hopefully helps lead to a very small latency in sleep onset and better sleep. Adjusting the thermostat in the room and trying to make the room a little colder can potentially help with this also.

Summary of Good Sleep Habits & Extras:

1. Consistent bed & wake times – Consistent setting of circadian rhythm in alignment with natural light-dark cycles, leading to better quality and more consistent sleep. 8-9hrs per night recommended, no less than 7.

2. Avoid bright lights at night where possible – Stimulates the mind and delays the natural rise in Melatonin, not good when trying to settle down to sleep.
3. Temperature – Thermostat adjustment and distal vasodilation may help with sleep onset, hot bath / shower and a slightly cool bedroom may be useful.
4. Books in bed, not your Phone – Learning / Entertainment and facilitating quicker sleep onset, far better than spending hours in bed on your phone on social media / YouTube.
5. Exercise – Exercise is a sympathetic activity and can delay sleep significantly afterwards, as such you should aim to get your training done far before you aim to settle down to bed.
6. Darkness – Like avoiding bright lights, aim to keep your room dark to signal time to unwind and sleep. Blackout curtains may be a worthy investment if you are in a position to.
7. Morning & Evening Routines – Activities you do in the morning and evening that signal awake & alertness, and relaxation and sleepiness respectively. Morning sunlight, evening journaling / stretching.

8. Avoid Caffeine & Alcohol before bed – Both have negative impacts on sleep via increased sleep onset latency and impaired sleep quality and duration. Ditch the nightcap and watch your caffeine content late into your day.

Conclusion and Summary:

An analogy for effective long-term weight / fat loss can be found in a story you may have been told as a kid before the world went mad with the stories now being told to children (looking at you America) – *The Tortoise & The Hare*. A story where a tortoise – a very slow moving creature – gets involved in a race with a hare – a very fast moving creature by comparison. We don't know how long the race is, but anyway, they start and, quite predictably, the hare shoots off into the distance leaving the tortoise in its wake.

Job done, hare wins, right?

If you know this story, then you probably know where I'm going with this. Seeing it has a humungous lead with the tortoise just visible on the horizon, the hare decides to take a nap not too far from the finish

line – tired from the sprint and thinking winning the race is a foregone conclusion.

A period of time goes by, and more time again... He wakes up a while later and looks back, but he doesn't see the tortoise. In a panic, realising the error that has been made, he bolts for the finish line but alas, it's too late. Whilst he was asleep, the tortoise caught up and passed the hare and beat him to the finish line – winning the race and presumably winning a glorious leafy green celebratory dinner and no doubt went on to release a New York Times bestselling *Tortobiography* sometime afterwards.

How does this relate to successful fat loss? Like we discussed before, effective weight loss is a marathon not a sprint. Effective weight / fat loss is a lifelong process not just of loss but maintaining the weight that you lose, and to expect to be able to sprint uninterrupted for the next 10, 20, 30, however many years is ludicrous. You're gonna be working hard, but you need to be able to extend this work over long periods of time as well.

Trying to sprint and accomplish the race as quickly as possible generates so much fatigue that standards inevitably slip, adherence

falls and they end up either back where they started or worse – losing the race by being passed by those who understood the value of pacing and understanding it's going to take time, who sailed past them when they faltered. In many things, weight loss being no exception, it pays to be slow – it pays to be the tortoise.

It pays to go slower – sacrificing short-term comfort for long-term success.

You're gonna doubt whether this is gonna work. Especially in the beginning as weeks may go by before you notice any appreciable progress. However, because it took you longer, you will have more sustainable results, a greater appreciation for what it took you to get there, and a greater appreciation for the process itself – not just what you wanted out of it.

By committing to the process, as well as understanding and implementing the principles and behaviours contained within these pages, you will lose body fat and keep it off.

As people you know jump on the next diet fad, seemingly lose weight so much quicker than you and exhibit so much greater success than you ever will, when in a few weeks or possibly months they'll be in the

pantry devouring the digestives like there's no tomorrow and on the fast track to scaling the numbers, not descaling them. I don't want that to be you. Understand that everything can be a part of your diet provided you take care with A) Overall Energy Intake, B) Protein & Fibre Intake and C) Focusing on ***sustainability*** and ***adhering*** to your daily lifestyle habits, environment structure, exercise & self-monitoring accountability.

Do that repeatedly for a long time and, as Bill Walsh – head coach of the San Francisco 49ers and Stanford Cardinals, leading his teams to six division titles, 3 NFC titles & 3 Superbowl victories and himself to winner of coach of the Year 1981 & 1984, who allegedly popularized the *"West Coast Offense"* – would say in the title of his book, *"The Score Takes Care of Itself."* You focus on improving yourself and your team [if applicable], and the score – the result – will take care of itself.

You have to trust the process. If you don't, this is all meaningless.

Basically, most of you will probably benefit from either implementing or continuing with:

- Losing weight slowly. The Slower, The Better.
- Eating at the best times for you based on preference and lifestyle.

- Tracking your food accurately and meticulously.
- Including fruits and vegetables that you enjoy eating at most / all meals.
- Include lean protein sources in sufficient amounts at all meals.
- If you life to snack, incorporate high protein snacks for the majority – shakes, bars etc.
- Incorporate foods you enjoy into your diet.
- Plan ahead to allow yourself some freedom to enjoy social occasions.
- Exercise regularly, lifting weights especially, and remain active on the daily. And always looking to progress – to get stronger, fitter, faster, more muscular etc.
- Get good sleep every night – quality & duration.
- Choosing who and what is in your environment based on whether they / it moves you in a positive direction. And potentially getting rid of who and what doesn't move you forward – you choose who and what influences you after all, at least to a certain extent. You choose who and what you listen to, who and what you prioritise.

- Keeping foods you frequently overindulge on outta the damn house.
- Supplementing only if necessary to fill small gaps or make your already-working method even better.
- And doing all that over and over and over and over again... Until you are successful.

Thank you for taking the time to read and download this guide, I hope and have very little doubt you'll have found it useful. If you have any questions, feedback on this, or want specific help with any health / wellness / body composition goals you wish to attain, then get at me through the website or socials you found this guide within.

Instagram: @coaching_by_gc

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X: @coaching_by_gc

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If you're an audio learner, maybe also give my podcast – *"The Barbells and BJJ Podcast By George Cresswell"* – a listen and a follow as well on Spotify, Audible, Amazon Music & YouTube at time of writing.

If it's up and available when you're reading this guide, you can access me directly by downloading the *"Evidence-Based Excellence"* app from your app store and acquiring one of the many services available.

We could go on, as there is always more to learn, but this must stop somewhere.

Can't wait to see you soon.

GC 👍

Table of Figures:

Tables:

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