

ADVANCED DIET PROTOCOLS

PART ONE

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THE MODERN NUTRITION PROTOCOLS

HOW DIETS REALLY WORK

I often get asked “Are you the Paleo, intermittent fasting, or the ‘insert any other well-known diet’ coach?” My response: All of them and none of them!

I’m focused on personalization and you should be too. Nutrition is highly individual and everyday more and more research is being published in support of this! The ability to personalize your dietary habits, foods and more will provide you with true freedom while achieving your goals.

Is there really one ‘right way’ to eat for all people, considering our diverse ethnic heritages, modified DNA and changing environmental factors?

Surely not, which is why people are still struggling with their body composition and poor health markers by following generic advice that is intended for one subset of the population i.e. ketogenic diet for those that thrive from a low-carbohydrate intake.

Personal nutrition is not just about suggesting a particular diet protocol you have read about, or the current trend, but needs the consideration of:

Personal nutrition is not just about suggesting a particular diet protocol you have read about, or the current trend, but needs the consideration of:

- **Ethnic origin**
- **DNA**
- **Current environment**
- **Time of year**
- **Location**
- **Stress levels**
- **Toxicity status**
- **Lifestyle**
- **Likes/dislikes**
- **Personal preferences**

Current Philosophy

Here is a test you can try on just about anyone. Ask them to identify themselves as an 'eating type'.

The typical answers you will get are Paleo, vegan, vegetarian, intermittent faster, carnivore, omnivore or even the 'eat everything' type.

Eating is a tribal activity, and we are always seeking to belong to something or a specific group. When we belong to a type or a group, we become defensive about them and feel that it is the best system, therefore failing to see the bigger picture.

With regards to nutrition, that bigger picture is personalization. This is my problem with many of the current 'popular diets' – many of them do not account for the individual needs of the user.

“So Why Do They Work?”

THEY HELP ACHIEVE A CALORIC DEFICIT/SURPLUS

Firstly, although it is not “written on the box” many of the themed diets (e.g. Paleo, low-carb, keto) work because they are roundabout methods of achieving a calorie deficit. If you cut out processed foods (Paleo diet) from your diet, chances are fiber intake will increase and refined carbohydrate intake will decrease – resulting in reduced hunger and less food intake.

This 'calorie in, calorie out' equation is generally regarded as the main principle at play in whether you gain weight or lose it (Those who don't regard as that are trying to make a quick buck!).

Eat more than you need, gain weight (both muscle and fat, regardless of macronutrient ratio), or eat less than you expend, and you will lose weight (primarily fat, but some muscle too).

It's impossible to override or lose weight/gain muscle through some other mechanism. There are however, secondary factors that can help you achieve a deficit/surplus that are sometimes mistakenly adopted as an alternative e.g. low-carbohydrate diets. When we want to gain weight, we must eat more than we need to supply the body with sufficient energy and nutrients in order for it to be able to lay down new muscle tissue.

You see, even if you cut out carbohydrates but still consume more energy than you burn in a day, your body can synthesize fat cells (adipose) from carbohydrates through a process that has a very scary name – De Novo Lipogenesis (Think liipo – fat, Genensis – creation).

THEY IMPROVE FOOD TYPES (MACRONUTRIENT BALANCE)

Some of the modern dietary approaches take a food-first approach and focus on eliminating specific foods or food groups completely (e.g. Ketogenic diet). Some take an additive approach and instead, have you add nutrient-dense wholefoods (e.g. Paleo diet)

This ensures the person is then eating a high-nutrient diet which in turn makes them not only see visual changes, but notice improved health markers and performance in sport/exercise too! This usually means the person has more energy to exercise and will conduct it more often.

In addition, this also:

- **Helps them control their calorie intake (without counting calories)**
- **Provides longer periods of satiation (fullness) between meals**
- **Reduces overeating**
- **Provides higher total essential nutrients in diet**

THEY IMPROVE THE MICRONUTRIENT INTAKE (VITAMINS AND MINERALS)

A good diet highlights the importance of in taking adequate

micronutrients daily, including fiber and water. Many of the modern protocols do just this, placing emphasis on whole, single-ingredient foods. This ensures sufficient amounts of fruit and vegetables in the diet, which are also the cornerstones to keeping ample amounts of micronutrients in the diet.

THEY FOCUS ON FOOD TIMING AND MEAL FREQUENCY

Many of the modern nutrition protocols educate their users on the importance of nutrient timing, that is, about when certain nutrients can be consumed to improve the efficacy of the diet (e.g. Intermittent fasting) and performance adaptations (e.g. post-workout protein intake).

For example, everybody has heard of the ‘anabolic window’. It’s that 1–2 hour period post-training when our body is sensitized to absorb and utilize certain nutrients e.g. carbohydrates (depending on the training) and protein.

New studies have shown however, that if daily protein intake isn’t sufficient, the timing of your post-workout shake won’t have much of an effect. However, when daily intake is achieved, it is optimal to provide your muscle with essential amino acids to repair the damage done in the workout!

Many modern protocols will also set guidelines on eating frequency to match their other recommendations, thus further enhancing user compliance.

SUPPLEMENTS

Many modern protocols will also introduce some supplementation in the process of changing someone’s nutritional habits and routine.

We do know there are a number of supplements that have been field tested and research proven to show they work, but we must always consider the following two things:

- **Quality and Quantity** – does the quality of the supplement meet recommended manufactory standards and compliances? Have the key ingredients been significantly researched to prove results – and at the same dosages – prescribed in the supplement? If any of these factors are not met, you should avoid the supplement and find a better available alternative.

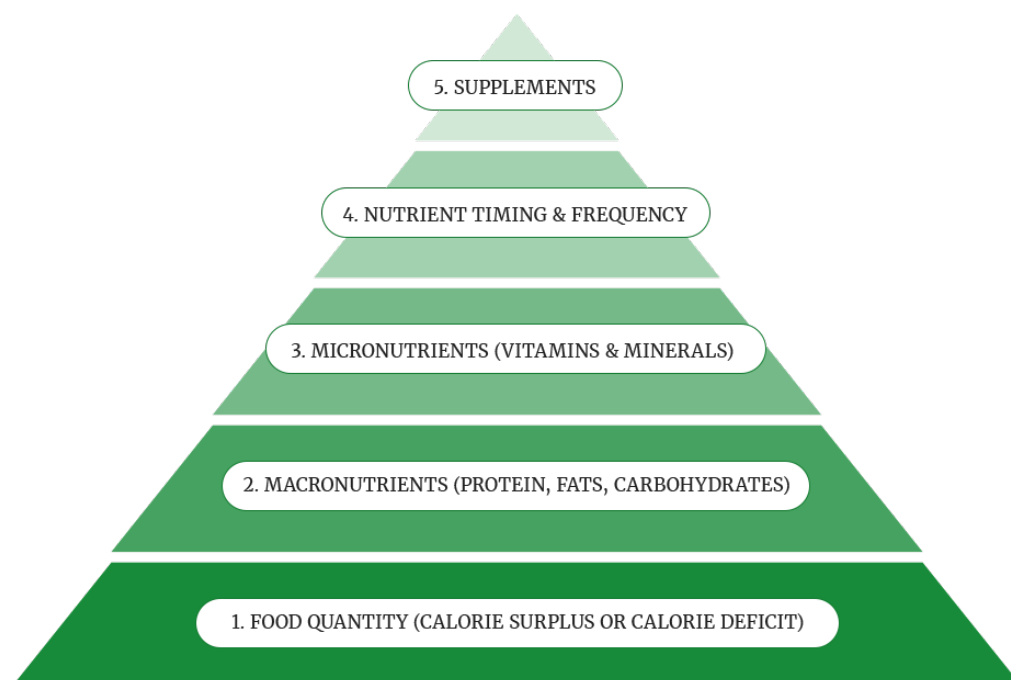
- **Is it safe** – are all the ingredients in the supplement approved by the World Anti Doping Association (WADA)? If not, you should avoid the supplement and look for an alternative that is. They are not worth the risk. However, this only applies if you are an athlete. Many supplements will be safe and approved by the Food and Drug Administration (FDA) but not WADA. Athletes that are subject to testing can only consume those approved by WADA, while everyday adults don't need to. But, with a few exceptions, you should stick to the WADA-approved supplements as they have been subject to rigorous testing and are deemed safe.

These two factors must always be considered when suggesting supplements, and even more so when understanding some of the supplements attached to modern nutrition protocols.

The previous information can be summarized into the following pyramid, with the base being the foundation- the most important- and working upward to the top level.

Many modern nutrition protocols achieve level 1, thus being able to manipulate the user's body composition. Others will incorporate levels 2-5, while adhering to all 5 levels always brings the best results.

These are the fundamental components to any plan. When we read the success stories and testimonials from those following a modern nutrition protocol such as Paleo, intermittent fasting etc., we must understand that this is a result of the manipulation of 1 or more of these categories.



Many of the modern nutrition protocols or 'diets' use a variety of guidelines, restrictions or techniques to achieve this. As a result, although they are all doing the same thing (or have a very similar objective) they will feel very different when following them.

Redefining Nutrition

When seeking to match the right nutrition protocol to someone, it has to be based upon their initial goals as well as their responses over time to these protocols.

Many individuals are solely focused on achieving progress as a change in the scales or the fitting of their clothes, but this is what is also holding them back the most.

This is why I set myself criteria to always work from when prescribing a nutrition program or dietary approach to my clients. Help them to see the other important markers of progress including energy levels, well-being, sleep, relationship with food and others like this.

From my experience this brings much better results and helps create a successful long-term environment for the achievement and maintenance of a healthy, balanced diet long into the future.

This is because we are moving away from a sole focus on how the person is looking to also considering their health and well-being.

Therefore, whether we are designing or simply following nutrition programs that may or may not include some of the modern nutrition protocols, we must ensure that we also take into consideration and respect how we respond emotionally as well as physically to these.

A nutrition plan that successfully ticks all your boxes will not only bring the best results but will also ensure it has the potential to become a long-term change in the process.

Redefining Nutrition

IMPROVED BODY COMPOSITION

This is what most people instantly want, be it fat loss or to generally look good naked. If body composition is improving without the expense of the other two components and it is maintainable, you are successful controlling energy balance.

IMPROVED HEALTH

Many people don't realize their health is a key driving factor to how their body looks. It is important for us to understand the benefits of following good nutrition that will not only improve body composition but overall health too. We should see better energy, sleep, mood, confidence and a generally improved bill of health.

IMPROVED PERFORMANCE

We should also be aiming for improved performance markers from our nutrition. Whether in sports, hobbies or general day time activities, they should be able to perform these to their maximum ability.

It's important to always consider and monitor (based on feedback) these three factors, especially when it comes to program design and when considering the possible introduction of various protocols and techniques.

This process will also help you assess any new protocols that you may hear or learn about. Before adopting these, always think: how will this make them feel, look and perform?

A drop or reduction in any of these three factors is a tell-tale sign that the current nutrition recommendations are not quite right for the person.

Summary

You will know you have found the perfect diet when you can tick off all three of these factors.

In order to find the perfect diet, we must match the right nutritional protocols and guidelines that also respect the body's composition and health pyramid.



THE MODERN NUTRITION PROTOCOLS

THE PALEO DIET

The Paleo, or hunter-gatherer diet is based on foods Paleolithic humans would have eaten. This type of eating is also known as primal or caveman.

The Paleo diet consists of real, whole foods so it focuses primarily on fruit, vegetables, meat, fish, eggs, nuts and seeds. It therefore eliminates a whole range of processed or man-made foods that contain preservatives, hidden sugars, sodium, additives, coloring, and artificial flavorings.

Despite the Paleo diet being based on the presumed diet of the Paleolithic humans, it is a modern nutritional plan that has seen a huge rise in popularity over the last number of years, mainly due to the amount of success stories achieved by those following it.

It is based on the premise that human genetics have scarcely changed since the Agricultural Revolution (also called the Neolithic Revolution) some 10,000 years ago, therefore modern humans are adaptable to the diet or diets of the Paleolithic period.

It has become a 'go to' nutrition protocol for many, with some believing it is how everyone should be eating. As a result the Paleo diet has become

a controversial topic in the nutrition world and it is important for us to have an unbiased understanding of this nutrition protocol.

History

Gastroenterologist Walter L. Voegtlin first popularized the Paleo diet back in the mid 1970's. He was among one of the first to suggest that a person could greatly improve their health by following a diet similar to that of the Paleolithic era. He self published the Stone Age Diet that highlighted that Paleolithic people were carnivores who ate mostly protein and fats, with small amounts of carbohydrates. Furthermore, based on his own medical practices of the time, he discovered some of the associated health benefits by following it.

It wasn't until the late 1980's that we saw any further publications on this diet, and in 1988, Eaton, Konner and Shostak published another book on this nutritional approach. In this book it was suggested that we should be achieving the same proportions of macro and micronutrients as were present in the diets of the late Paleolithic people. It did not include foods that were not available before the development of agriculture.

In 1989, Steffan Lindeberg conducted a scientific study known as the Kitava Study. This looked at the non-Westernised populations of Kitava in Papua New Guinea, which highlighted a correlation between diet and Western diseases. This is because the population of Kitava did not suffer from the same medical diseases as seen in those eating a Western type diet.

Since the 1990's we have therefore seen an increasing popularity for the return to a so called Paleolithic diet by many medical practitioners and nutritionists.

Today there are countless books, websites and campaigns devoted to promoting such a diet. There are numerous variations of the Paleo diet, but for the most part they are rooted in the similar principles.

FUN TOOL – We will dive into the benefits of this diet for some individuals, and there are ample. However, as with all dietary approaches, you will come across (especially if you have a social media profile) coaches that peddle this diet as the 'Be All, End All' claiming that "we need to eat as our ancestors did". All you need to say to those people is "What was the life expectancy of our Paleolithic ancestors? 29?"

The Basic Practice

The underlying key practices of the Paleo diet are rather simple: eat the same food sources that were available in any of the ecological niches of Paleolithic humans.

In the modern world this means following a diet from cultivated plants and domesticated animals' meat. It consists of foods that can be fished and hunted, such as seafood and meat; foods that can be gathered, such as, eggs, fruit, herbs, insects, mushrooms, nuts, seeds, spices and vegetables.

Also, the typical recommendations for meat consumption is that they are free-range or grass-fed, as they will contain less toxins and higher nutrient profiles compared to grain-fed domestic meats. For foods that can be gathered, it is suggested these are organic and locally grown, again to reduce pollution and potential toxicity issues.

Certain foods and food groups that were rarely or never consumed by humans before the Neolithic Agricultural Revolution are excluded from the diet, mainly dairy products, grains, legumes, processed oils, refined sugar and salt.

For fluids, water is the main source, with man-made drinks, alcohol and coffee being eliminated. Some natural teas may be permitted.

To Summarise This Information

Allowed:

- **Poultry, fish, red meats (purists prefer organic/grass-fed)**
- **Eggs Fruit (purists stick to berries)**
- **Vegetables (except nightshades like tomatoes, potatoes and eggplants)**
- **Nuts (except peanuts)**
- **Seeds (sparingly)**

Not Allowed:

- **Grains and legumes**
- **Milk and milk products**
- **Refined/added sugars**
- **High omega 6, refined or hydrogenated vegetable oil**
- **Nightshade vegetables such as tomatoes, potatoes, eggplant**
- **Added salt**
- **Coffee or alcohol**

Health Benefits Of A Paleo Diet

The rise of popularity of the Paleo diet is due to a number of benefits that people can experience from following it consistently.

People following the Paleo diet may experience the following benefits:

- **Increased and more stable energy levels**
- **Improved sleep**
- **Cleaner skin and healthier looking hair**
- **Mental clarity**
- **Improved mood and attitude**
- **Improvements in those suffering depression and anxiety**
- **Less or no bloating, decreased gas**
- **Sustained weight loss**
- **Muscle growth, increased fitness**
- **Lowered risk of heart disease, diabetes and cancer**
- **Higher immune function and a general feeling of well being**
- **Improved glucose tolerance; increased insulin sensitivity**
- **Improved lipid profiles**
- **Healthier gut flora**
- **Better absorption of nutrients from foods**
- **Reduced allergies**
- **Improvements in those with respiratory problems, such as asthma**

Going by the above list the Paleo diet has a lot to offer, so it's important to understand why we may see such extensive benefits.

Weight Loss

WEIGHT LOSS

When you stop eating high calorie, refined-carbohydrate foods like white bread, cereal and pasta, you'll likely achieve a calorie deficit rather quickly. The question is, do you thrive and feel good while avoiding these foods. The primary sources of carbohydrates in the Paleo diet are fruit and vegetables. By eliminating a particular food group from the diet we reduce our daily intake of calories which will lead to weight loss. Also, studies have shown that a low carbohydrate diet may support greater weight loss than a conventional low fat, high carbohydrate diet (Once again, by making it easier to achieve a calorie deficit). Plus, you're likely to consume a higher amount of dietary fiber, which prolongs the feeling of fullness following meals and helps reduce how much you want to eat daily. Lastly, eliminating all processed high-calorie, low-nutrient foods from the diet will lead to further calorie reduction and contribute to weight loss.

HEART HEALTH

Following the Paleo diet, you consume higher amounts of quality meat and fish, which leads to an increased intake of Omega 3 fatty acids. According to the American Heart Association, increased Omega 3 consumption can help to lower blood pressure, decrease triglyceride levels and reduce your risk of sudden cardiac death. The increased fiber intake can also improve your cholesterol levels, which helps your heart health.

STABLE BLOOD SUGAR

Eating a diet based around whole, single ingredient foods, including one high in fiber and low in carbohydrates, helps to control blood sugar levels. This has a considerable effect on managing the risk for Type 2 diabetes, and even reversing the symptoms of it.

Who Is The Paleo Diet For?

Essentially, the Paleo diet is focused on quality meats, fish, and vegetables with some fruit and nuts.

It's difficult to argue against the fact that this is a great 'foundation' diet for those seeking optimal body composition and health, and there are plenty of testimonials to back this up.

So, a better question might be – Who is this diet not right for?

Despite the modern nutrition protocol being very simple, that does not mean it is easy to follow – have you ever tried to live on just meat and vegetables alone?

Due to the limited nature of the Paleo diet, many can find they are excluding too many food items at once and fall off the wagon completely.

It is quite a restrictive diet protocol, and in today's modern society where we are surrounded by non-Paleo foods, it can feel very repetitive and dull.

Since we now understand the reasons why we might see so many benefits, it may be possible to achieve sufficient results without necessarily applying the full protocol. We can therefore extract the 'useful' or 'applicable' parts and incorporate them into our daily routines.

For example, take an individual that is seeking fat loss – we know a diet low in refined carbohydrates and foods can help to reduce the daily energy consumed right?



THE MODERN NUTRITION PROTOCOLS

INTERMITTENT FASTING

Intermittent fasting (IF) has become one of the most talked about modern protocols over the last number of years, and rightfully so, it breaks the rules. For decades we have been told to eat every 2-3 hours and to eat breakfast upon waking; to kick start our metabolism for optimal body composition and health.

IF goes against this, and many protocols suggest reducing your meals and delaying breakfast. Also, many protocols suggest eating less during the day and feasting at night, again going against the saying 'eat breakfast like a king, lunch as a prince, and dinner as a pauper'.

IF therefore goes against many of the typical recommendations from fitness professionals and has grasped the attention of many people.

What Is IF?

In its most basic form, IF is essentially the practice of occasionally (or at certain times) going for periods of time without food.

That's right, you don't eat anything. This typically raises two key questions:

- 1. Don't I do this when I'm sleeping?**
- 2. Surely you will loose weight by not eating?**

The answer is yes to both of these questions, but we must look at the facts in more detail to better explain this modern protocol.

Everybody fasts, whether it's from an overnight fast (when sleeping), during periods of food scarcity or perhaps even for religious reasons.

IF is not a 'diet', but rather a dieting pattern. Essentially, it is making a conscious decision to skip certain meals. You are therefore deciding on a specific time period to consume your daily calories, while forgoing food at other times of the day.

Over the last few years this has become increasingly popular with the health and fitness conscious as a further means to manipulate their eating habits for increased results.

How Does It Work?

Looking at what IF is, it appears to be a rather simple protocol on the whole, however there are a variety of other protocols that follow this general ideology, but are very different in practice.

There are a number of popular IF protocols that are worth knowing about and understanding.

Unlike some of the modern nutrition protocols, the lack of scientific basis behind IF has left it open to manipulation by many users and proponents.

The current research on fasting is still relatively new and it wasn't until its increased popularity that we have been able to get a true reflection of the benefits and negatives it has on a large population.

Existing 'lab' research is minimal on humans and many studies are of poor quality. Furthermore, it appears that many of the benefits of IF were noted when compared to 'normal' diets i.e. Western type diets. Therefore, results from a scientific standpoint appear positive but could be disputed regarding accuracy and scale.

Many of the various IF protocols have therefore been based on other scientific studies along with strong support from anecdotal evidence. It appears that many people have had great success with various IF protocols and it really does seem like a case of 'test it yourself and see if it fits'.

Common IF Protocols And The Variations Between Them

TIME-RESTRICTED FEEDING (16-HOUR FAST WITH 8 -HOUR EATING WINDOW)

This is a form of IF made popular by Martin Berkham. It is focused around a short daily eating window of 8 hours, followed by a 16 hour fast. The general recommendations are to start the eating around 12pm (around midday) and finish around 8pm (just before bed). This means the bulk of the fast is completed overnight with the remaining hours coming first thing in the morning.

This protocol also promotes a diet consisting of wholefood sources of protein, grains and healthy fats.

Weight training should be conducted during the fasting period but with the consumption of 10g Branch Chained Amino Acids (BCAA's) prior or immediately following it.

EAT STOP EAT (24 HOUR FAST, 1 OR 2 TIMES PER WEEK)

This IF protocol takes the previous *Lean Gains* daily fast and extends it to 24 hours, but only 1-2 times per week. Outside of this, normal foods can be consumed, ideally coming from healthy wholefoods.

In addition, the location of your feeding window is not overly important, you can pick the start of your fast, so it can be morning to morning, or dinner to dinner, the choice is yours.

ALTERNATIVE DAY FASTING (ADF) (36 HOUR FAST, 12 HOUR EATING WINDOW)

This is considered one of the most aggressive forms of IF, as food is consumed only every other day. You have a 12-hour eating window by: 8am–8pm followed by a 36 hour fast from all foods. There is less focus on the food choices and calories intake during the eating window than with the other IF protocols, although if you do plan to try this out, you should keep the focus on these important principles. It is funny that this approach has the least focus on the composition of the food, as there is considerably less time to consume all of your nutrients!

WARRIOR DIET (20 HOUR FAST, 4 HOUR EATING WINDOW)

This is somewhat similar to the *Lean Gains* protocol and extends the fasting window up to 20 hours each day. It is typically recommended that the eating window is conducted in the evening to reap the benefits of fasting throughout the day. It is possible to eat a small number of selected foods during the fast (or also known as the under-eating phase) that may enhance the effects of the fast and better prime the body for a large influx of food during the short eating window (over-eating phase). It is recommended that weight training occurs just before breaking the fast. This is repeated daily.

The Benefits Of IF

So, when it comes to the benefits of fasting, there is something we need to consider. We have mentioned a range of different approaches, which should not be all grouped as 'fasting'. The 16/8 method, is now referred to as time-restricted feeding, because while technically it is fasting, our body does not activate the same metabolic responses as it would to a 24 or 48 hour fast.

If you have heard of fasting, you have no doubt heard of the magical benefits that it can have on dead cell turnover and regeneration (autophagy) which may help to reduce the risk of disease. BUT, what they don't say here is that this process occurs after a 16-hour fast only in rodents, for whom 16 hours is a much greater portion of their lifespan than it is for us humans.

It is therefore not yet agreed that short-term fasting can provide the host of benefits that it is often touted for in online blog articles that you might have come across.

Here are some of the more proven benefits of fasting -

ENHANCED FAT LOSS AND MUSCLE RETENTION

Short-term fasting may help to enhance important hormones that play a role in muscle growth e.g. growth hormone. In addition, there have been some studies showing that time-restricted feeding matched to a traditional restricted-calorie diet may help to preserve muscle mass while losing weight.

REDUCED HUNGER LEVELS

When we fast and deprive the body of a source of carbohydrate for an extended period of time, it will switch to burning fat as the primary fuel. This results in a reduced hunger or need for carbohydrate and many people report feeling less hungry after a short couple of days following this diet.

MORE STABLE ENERGY LEVELS AND IMPROVED MOOD

Fewer meals usually means more stable blood sugar levels, leading to more stable energy and improved mood. Also, being liberated from eating 6+ meals compared to traditional 'diets', brings a sense of relief and reduced irritability.

INCREASED MENTAL FOCUS AND CONCENTRATION

For the reasons above, many people also report having more focus and mental clarity during their fasting windows. This may be in part due to some hormonal changes, but most likely due to the stable blood sugar levels i.e. no spikes and dips in energy levels.

The Negatives Of IF

Overall, there are very few negative side effects with intermitted fasting.

The biggest drawback for many is transitioning onto such a protocol. Moving from eating 6 meals a day to 3, all by delaying breakfast and incorporating fasted weight training can be a difficult task.

This can be a lot to throw at a body in one go, so taking it easy and introducing various components at a time can improve compliance.

IF can be complex for people who have issues with blood sugar regulation, suffer from hypoglycemia, have diabetes etc. It should only be considered in healthy individuals without health conditions.

Aside from avoiding this protocol with certain clinical populations, there is evidence that IF affects men and women differently.

Research is now suggesting that there can be some significant negative side effects of intermittent fasting for women.

Many women find that with IF comes sleeplessness, anxiety, irregular periods and a myriad of other symptoms such as hormone deregulation.

Another study examined the effect of alternate-day fasting on blood lipids. Women's HDL improved and their triglycerides remained stable. For men, HDL remained stable and their triglycerides decreased.

It's therefore clear that due to the metabolic and hormonal differences in males and females, this might determine how we respond to a stressor like intermittent fasting. After all, not eating is a further stress on the body.

Summary

Intermittent fasting in all of its various forms can potentially offer a lot of benefits. It's important to consider as the research is still unclear whether these benefits are coming from an improved diet, calorie control or increased exercise.

When recommending IF protocols it's important for the user to be in a good state of health, eating whole unprocessed foods, getting sufficient sleep, reducing stress and exercising well. It should, therefore, be an addition to an already effective and consistent training and nutrition strategy.

Fasting can elicit a powerful response in our bodies, which therefore needs to be carefully monitored and adjusted to the person. Always start slow and build up to the longer and intense fasts.

Until future long-term human studies are conducted on the true physiological benefits, but also downsides of IF, it's important to remember that one size does not fit all and everyone is different.

That being said, IF and its various protocols are worth experimenting with in a safe and controlled manner.

USEFUL TIP: When you begin this approach, it can be common for to 'fall in love' with the reduced hunger levels. This might result in the desire to decrease your feeding window to 6, or sometimes even 4 hours. This should be a little red flag, as you are trying to get the most out of it and imposing further restrictions on yourself. Unless you have been following the diet for weeks to months and are ready to shorten the window slightly to fit your lifestyle, we recommend that you avoid this.



THE MODERN NUTRITION PROTOCOLS

CARBOHYDRATE BACKLOADING

Carbohydrate Back Loading (CBL) has become yet another highly talked about modern dietary approach over the last number of years. Like many other approaches, CBL goes against traditional nutrition and dieting recommendations.

Tradition tells us that we must eat our carbohydrates early in the day, otherwise the energy from this will not be used and therefore will be stored as body fat.

Then CBL was published, and it told us to eat not just some, but all, of our carbohydrates at night. CBL has therefore gone against typical advice from fitness professionals and has gained a lot of attention.

What Is CBL?

CBL in its most basic form is essentially the practice of delaying the intake of your daily carbohydrates.

The term 'carbohydrate Back Loading' was given to this practice after American training and nutrition consultant John Kiefer published his eBook called 'carbohydrate Back Loading'.

There were many books previously published on carbohydrate cycling, but none as extensively researched and referenced as Kiefer's. Due to some clever marketing, the book quickly became a hit, and one of the most talked about modern protocols.

BASIC CBL SUMMARY

1. Shift calories to later in the day, eating lighter in the morning and early afternoon, and feasting at night. This may include skipping breakfast.
2. Keep carbohydrates at an absolute minimum throughout the day until training.
3. Train in the afternoon, at around 5pm or so.
4. Start ingesting carbohydrates after your training session, up to 30 minutes later.
5. Continue eating carbohydrates throughout the evening. These are the key cornerstones to the CBL template, which appears at first to be heavily centered around nutrient training.

How Does CBL Work?

The heavy reliance on nutrient timing from the protocol is based around controlling and manipulating cellular, hormonal and biological responses to a delayed carbohydrate intake.

The reasoning for delaying carbohydrates during the day is to limit the release of insulin in the body. This is the hormone secreted from the pancreas in response to carbohydrate intake. Insulin promotes the uptake of glucose (simple form of carbohydrate) uptake by our muscle cells to keep blood sugar within a stable range. For this reason, it is considered an anabolic hormone i.e. it works to build smaller things up into larger things.

Of course, if we activate a rapid insulin response frequently each day, from refined carbohydrate intake, we can be at risk of this system becoming less efficient or effective. The muscle cells become less responsive to its effects i.e. insulin resistance.

Carbohydrates are the primary nutrient that triggers an insulin response. When insulin is consistently high and volatile, it not only will promote fat storage (in an energy surplus), but it will also lead to fluctuating energy levels.

FUN FACT: It is always important to remember, that insulin will promote fat storage only if energy intake (kCals) is more than what we expend. If we are following a calorie deficit, the absorbed glucose will simply be used as energy. That is why energy balance is the ultimate factor for weight gain and weight loss.

The CBL protocol is therefore based on this theory, and is structured to control insulin to not interfere with fat burning yet still promotes muscle building and recovery.

When we deprive our body of carbohydrates for a given length of time, it can increase the ability to absorb and utilize this nutrient, when it does get it. That is in essence, one of the main staples of this diet.

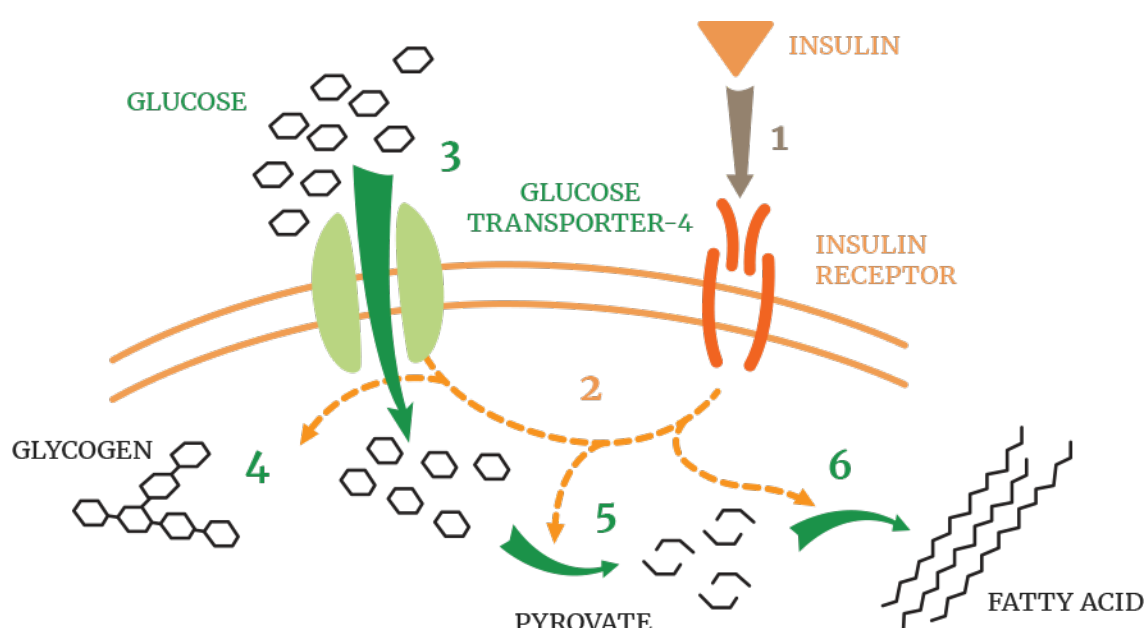
By the inclusion of mid-late afternoon weight training, we can promote the muscle's sensitivity to carbohydrate i.e. insulin sensitivity. This will result in the rapid absorption of carbohydrates as they enter the bloodstream as glucose and will be used to restore the depleted storage of carbohydrate in the muscle. This may reduce the likelihood of it being stored as fat. I feel like a broken record here, but it needs to still be in the face of a calorie deficit, or else the timing of your carbohydrates won't do much!

This occurs by the relocation of our GLUT (pronounced 'glute') glucose transporters. GLUT comprises a family of proteins that work to transport different nutrients from the blood into muscle. GLUT transporters can carry a number of nutrients, but specific ones i.e. GLUT4 specifically transport glucose. They are located in the jelly-like outer coatings of cells and are normally exposed on the cell's surface.

The more insulin sensitive someone can become, the more they can recruit GLUTs 4 & 12 and bring them to the surface of the cell to transport glucose into them.

Resistance training can increase the activity of GLUT4 when carbohydrate is ingested. . Therefore, by delaying weight training until late afternoon, we can increase the sensitivity of the muscle cell to glucose.

It is also suggested that resistance training not only causes GLUT to relocate without insulin but may also increase the amount and concentration of GLUTs 4 and 12 in muscle cells.



The diagram above shows the effect of insulin on glucose uptake and metabolism. Insulin binds to its receptor (1), which in turn starts many protein activation cascades (2). These include: translocation of GLUT-4 transporter to the plasma membrane and influx of glucose (3), glycogen synthesis (4), glycolysis (5) and fatty acid synthesis (6).

Resistance training equips muscle cells to absorb glucose at a faster rate, either for storage or energy production. CBL has therefore been one of the first protocols to combine nutrient and weight training timing together.

This protocol is therefore aimed at intermediate to advanced fitness people with an interest in maximizing body composition. So, if you do not train regularly, this is not going to be a great option for you.

Setting Up A CBL Diet

Aside from simply delaying daily carbohydrate intake to the evening (or post workout), Kiefer's book goes into in-depth information on how to maximize the effects previously discussed i.e. maximizing fat burning and glucose sensitivity.

BREAKFAST

CBL uses the basis of a typical intermittent fasting template – delay breakfast, small meals during the day and have a larger, carbohydrate-rich meal in the evening.

This is based on the fact that eating (or not eating) early in the day dictates the metabolic status of the body for the rest of the day.

This is to enhance the fat-burning effects of the diet. In the morning, the stress hormone cortisol is at its highest. Cortisol is catabolic, it breaks things down, and is responsible for the breakdown of triglycerides into free fatty acids (FFA's) for metabolism. Essentially cortisol promotes the mobilization of our fat stores for energy in the morning, providing other hormones such as insulin do not interfere.

Therefore, skipping breakfast and adopting an IF-type protocol is recommended.

KEY INSIGHT: When skipping meals is an aspect of a program or dietary approach, it is important to keep an eye out for compensatory behaviors. These include, having double portions in the first meal later in the day or excessively snacking. This can be due to disordered eating behaviors or simply an increased appetite. Regardless, it means this approach isn't for you and you should revert to a traditional meal structure.

AFTERNOON

Once the fast is broken, it is done so with a low-carbohydrate meal, consisting primarily of lean protein and unsaturated fats from wholefood sources. The goal here is to keep the total grams of carbohydrates under 30-50 grams.

Green vegetables, meats, cheese, fats and limited amount of nuts comprise the diet during this portion of the day e.g. 2-egg omelette with cheese and nuts.

POST WORKOUT

This is the point at which carbohydrates are introduced back into the diet,

and according to Kiefer, in great abundance too. If it is in close proximity to training of a reasonable intensity, aim for high-GI sources of carbohydrate including white rice, bread, fruit. However, a healthy balance is always important so be sure to include some wholegrain sources too!

Some studies show that adding a source of complete protein to your carbohydrate intake will increase the insulinemic response and can accelerate the rate of uptake! However, this is only important if you don't consume enough carbohydrates, so not overly important. BUT you should definitely include a source of protein in this meal, there are no downsides of it!

On non-weight training days, the high carbohydrate meals should be replaced with high protein and healthy fats – so no 'back load' occurs. There are some exceptions to this rule.

A SIMPLE CBL DIET

Approx. Meal Time	Meal
Upon waking (8am)	Coffee, coconut oil, mineral water
Late Breakfast (12pm)	4 eggs scrambled with chorizo & spinach
Late Lunch (4pm)	Stuffed avocado with bacon pieces
Resistance Training	
Late Dinner (8pm)	2 large chicken breasts, white jasmine rice, home-made popcorn and rice cakes
Non-Weight Training Day	
Late Dinner (8pm)	Caesar salad with 2 chicken breasts

The Benefits Of CBL

The CBL protocol incorporates a number of various techniques with a major emphasis on nutrient timing.

There are very few studies examining this diet, so the benefits are largely based on personal experiences, coach opinions and mechanistic claims. But theoretically it may help with;

FAT LOSS

The inclusion of an IF approach alongside delayed carbohydrate intake can promote fat oxidation earlier in the day, which, if paired with a Calorie deficit, will promote fat loss.

IMPROVED ENERGY LEVELS AND CONCENTRATION.

Some report that by removing refined carbohydrates from their meals during the day, they do not get the typical afternoon energy crash or lethargy. This is based most likely on the reliance on fat and ketones for energy which proves a slow, but steady source for our muscles and brain.

CONVENIENCE

Many people find the CBL protocol fits well with their lifestyles and is therefore an easy-to-follow diet to adhere to in the long term.

FOOD-FIRST APPROACH

An advantage to CBL is the low emphasis placed on the time-consuming process of calculating and tracking calories. Although the author of the book states this is important, it is not a critical component of the protocol. For some people this is an easy and stress-free protocol that can help improve body composition in the process.

There are two such studies that are commonly referenced throughout the book, that highlight that CBL is more effective than traditional dieting for building muscle and losing fat.

The first study compared the effects of eating 70% of daily calories in the morning vs. the evening on body composition. 10 subjects were placed on a 6-week weight loss (calorie deficit) diet, and the group that ate the majority of their daily calories in the evening lost more fat and less muscle than the morning group (1).

The second study consisted of a 6-month program where Israeli officers ate about 1,500 calories per day, with one group eating carbohydrates throughout the day and another eating the majority of carbohydrates at dinner. Research found that the evening group lost more body fat than the control group and enjoyed greater levels of satiety (2).

POTENTIAL DOWNSIDES OF CBL

The greatest drawback to CBL is its debatable scientific foundation, thus the question must be asked– is it really any better than traditional calorie-controlled dieting?

In the first main referenced study, the sample size was fairly small (10) and the notoriously inaccurate method of total bioelectrical impedance was used to assess body composition (3).

In the second main referenced study, there are a number of major flaws:

- **Calorie intake was self reported which can lead to inaccuracies (4).**
- **Protein intake was very low (75–90 grams per day) considering the average weight of a soldier was approx. 215lbs.**
- **This has been suggested to be insufficient to maintain muscle mass. The soldiers in the study were not exercising, which is a major component with the CBL protocol.**

There are many more studies on the flipside to show little to no benefit of CBL to normal calorie restriction.

One such study found that calorie intake in the morning or evening didn't affect weight loss or body composition parameters (5).

One study demonstrated that those who normally ate breakfast lost more weight by skipping it, while those who didn't normally eat breakfast lost more by eating it (6).

One study shows that nutrient timing has little result on overall results and it is a matter of how much you have eaten over the course of the day (7).

Another study has highlighted that managing insulin levels throughout the day is not the key to maximum fat loss (8).

Summary

Carbohydrate back loading has risen to popularity over recent years. It has been sold to us on the basis that we can build muscle and lose fat simultaneously, while eating the foods we love and no requirement for either calorie or macronutrient control.

Sadly this isn't the case, but what we do know is that it can serve as another protocol to break the traditional dieting mold and deliver some results in the process.

Many people have found this protocol fits well with their current routines and it can serve as a long term eating system for those interested in body composition without any adverse side effects on metabolism or health.



THE MODERN NUTRITION PROTOCOLS

carbohydrate CYCLING

Carbohydrate cycling (carb-cycling), is the approach when a low-carbohydrate diet is paired with planned periods of moderate to high-carbohydrate consumption.

This nutrition strategy has become a hot topic over the last number of years. carbohydrate cycling, like many of the modern protocols, goes against the traditional nutrition and dieting advice.

Tradition tells us that we can only build muscle or lose fat, and never at the same time. This is because we must maintain a calorie deficit to lose fat and a calorie surplus to build muscle.

Then carb-cycling came along and was sold to us as the ultimate method for rapid fat loss while building muscle.

When done right, carb-cycling can provide both weight-loss and performance benefits, but when done wrong it can lead to low-energy levels, increased hunger and weight gain.

What Is Carb-Cycling?

Carb-cycling, is characterized by –

- Throughout the week, you rotate high carb, moderate carbohydrate and low/no carbohydrate days;
- All days require adequate protein intake; and
- Your fat intake is inversely related to your carbohydrate intake.

How Does Carb-Cycling Work?

Carb-cycling works by providing your body with the fuel it needs to increase your metabolic capacity and workload via carbohydrates and optimize fat loss via a reduced carbohydrate diet. It is seen as 'the best of both worlds'.

There are a number of protocols that have been designed to manipulate the general set up of a carb-cycling diet, but many will use all three types throughout the week. These are generally rotated daily, or cycled, but the most common set up is based on daily activity levels.

THE TYPICAL RECOMMENDATIONS ARE:

1. On days of high activity, you should consume moderate to high-amounts of carbohydrates.
2. On days of moderate to no activity you should consume moderate to no amounts of carbohydrates.

A typical weekly breakdown would look like this:

Monday: Heavy weight training day > High carbohydrate

Tuesday: Interval training day > Moderate carbohydrates

Wednesday: Rest day > Low carbohydrates

Thursday: Heavy weight training day > High carbohydrates

Friday: Interval training day > Moderate carbohydrates

Saturday: Heavy weight training day > High carbohydrates

Sunday: Rest day > Low carb

Various carbohydrate cycling diets show differences in the detail, but overall it is nothing more than eating more carbohydrates on some days and eating fewer carbohydrates on other days.

The heavy focus is placed on carbohydrates manipulation as it is considered to have the most influential effect on body composition and how you look, feel and perform.

MODERATE TO HIGH carbohydrate DAYS:

- **Make you feel good and energized;**
- **Replenish glycogen stores that fuel muscle; and**
- **Stimulate an insulin response to create an anabolic environment for muscle retention and growth.**

LOW TO NO carbohydrate DAYS:

- **Improve insulin sensitivity, making your body respond better to carbohydrates;**
- **Promote fat loss by tricking your body into burning fat for fuel; improved fat oxidization via reduced insulin levels; and**
- **Improve fat burning by reducing overall daily calories into a calorie deficit.**

Setting Up A Carb-Cycling Diet

Most protocols do not require any tracking or the use of calculators for carbohydrate cycling, as it is believed that this will naturally take care of itself throughout the basic manipulation of the carbohydrates.

The more advanced carbohydrate cycling protocols will look at tracking calories and monitoring the macronutrient split for each of the different days. Although these will all vary depending on your reading source, the general set up looks like this:

HIGH carbohydrate DAYS

- Carbohydrates will be set between 2-2.5 grams per pound bodyweight;
- Protein intake will be set at 1 gram per pound bodyweight; and
- Fat will be set at 0-0.15 grams per pound bodyweight.

MODERATE carbohydrate DAYS

- Carbohydrates will be set about 1.5 grams per pound bodyweight;
- Protein intake will be between 1-1.2 grams per pound bodyweight; &
- Fat intake will be set around 0.2 grams per pound bodyweight.

LOW carbohydrate DAYS

- Carbohydrates will be set around 0.5 grams per pound bodyweight;
- Protein intake will usually increase to about 1.5 grams per pound bodyweight; and
- Fat intake will be set around 0.35 grams per pound bodyweight.

NO carbohydrate DAYS

- Carbohydrates will be set to 30 grams or less per day;
- Protein will be around 1.5 grams per pound bodyweight; and
- Fat intake may be increased to 0.5-0.8 grams per pound bodyweight.

Once daily calories and macronutrient targets have been established, it is a case of suggesting ideal foods or meals to help the person reach their recommended numbers.

A Simple High carbohydrate Day May Look Like This

MEAL 1: BREAKFAST

2 whole eggs scrambled in coconut oil

Gluten free porridge with honey and fresh berries
Serving of protein powder with greens powder

MEAL 2: LUNCH

Homemade turkey burgers with serving of rice
3 rice cakes and a banana

MEAL 3: SNACK

Small baked potato topped with tuna and side salad

MEAL 4: WORKOUT NUTRITION

Post workout shake: serving of protein powder blended with fresh berries,
rice milk and large ripe banana

MEAL 5: EVENING MEAL

Large chicken breast stuffed with sun-dried tomatoes wrapped in Parma
ham, served with white jasmine rice Snack of choice

A Simple Low carbohydrate Day May Look Like This

MEAL 1: BREAKFAST

4 whole eggs scrambled in coconut oil with spinach
Serving protein powder with greens powder

MEAL 2: LUNCH

Homemade turkey burgers with large side salad
Large handful of roasted mixed nuts

MEAL 3: SNACK

Small sweet potato topped with tuna and cheese

MEAL 4: EVENING MEAL

Large chicken breast wrapped stuffed with olives wrapped in Parma ham,
served with roasted seasonal vegetables topped with olive oil
This would be a non-weight-training day.

The Benefits Of carbohydrate Cycling

A carbohydrate cycling protocol is usually one that promotes a high protein
diet while rotating carbohydrates and fats based on your activity levels.

It is therefore effective at 'balancing' a person's diet to ensure they consume sufficient amounts of all three macronutrients. We know that by improving a person's macro- and micronutrient profile, we should see positive changes in body composition and health.

carbohydrate cycling protocols, despite being simple, can become quite restrictive e.g. "if you eat high carbohydrate you must go low-fat, if you eat low-carbohydrate you should go high fats". The benefit to this is that it is an effective way to ensure people are in a calorie deficit, whether it's daily, weekly or even monthly, this will result in weight loss.

This is why this protocol is typically suggested for, and used by, those with an intermediate to advanced nutrition knowledge level who are seeking fat loss results.

Another benefit is that people can see results without needing to track calories or daily macronutrient numbers, providing they stick to the basic principles and guidelines. This is an effective 'loose' style of dieting that many people find they prefer to follow.

It also serves as a good tool for people to learn more about how certain macronutrients affect them because of the large variations between the high, medium, low and potentially no carbohydrate days. Following this protocol can help people find their 'ideal' macronutrient split quite quickly.

Many people will find they look, feel and perform better on one of the days over the others and this usually suggests they are better suited to this macronutrient breakdown. If this is the case, from experience it's best to ditch the carbohydrate cycling protocol and adapt the preferred macronutrient breakdown daily. After all, don't we want to feel and perform awesome every single day?

The Negatives To carbohydrate Cycling

Enthusiasts of carbohydrate cycling (usually the ones selling a book) state that it does increase fat burning more than traditional dieting (calorie control) by combining the benefits of high and low carbohydrate days to ensure metabolic capacity and accelerated fat loss.

There is a lot of anecdotal evidence to show this protocol can get people very lean quickly, but we must look at the research to understand how this occurs and if it is any better than other approaches.

A key component of carbohydrate cycling is that due to its low-carbohydrate approach, we will see greater fat loss as a result. A study was conducted to test if this would be the case for a ketogenic-based diet vs. a traditional diet. (1)

In this study, 20 overweight adults were randomly assigned to one of two diets:

1. A ketogenic diet (low carbohydrate), which consisted of 60% calories from fat, 35% from protein and only 5% from carbohydrates.
2. A traditional diet which consisted of 30% calories from fat, 30% from protein and 40% from carbohydrates.

At this point it is important to remember the 3 key reasons why we should use carbohydrate cycling techniques:

1. To burn more body fat;
2. To improve insulin sensitivity (nutrient portioning); and
3. Keep metabolic capacity when dieting.

Based on this the findings from the study were:

1. No significant difference in weight loss between groups;
2. Insulin sensitivity was improved in both groups (it is therefore a caloric deficit that improves this); and
3. Hunger, energy and cravings ratings went up for both groups, suggesting no metabolic benefit to the low carbohydrate approach.

It therefore appears that the micromanaging details of many carbohydrate cycling protocols will not result in enhanced benefits over traditional calorie-controlled diets. (2)(3)

From my own experience this appears to be the case too. I have been able to get myself and clients equally lean without the need to use a carbohydrate cycling protocol. On paper it makes sense, but there is little research to

support it and it appears to be making the whole process more complicated than it needs to be.

As already mentioned, carbohydrate cycling protocols can also be even more restrictive than traditional approaches. Having a low or no carbohydrate day is difficult and can leave many people with increased cravings, thus leading to reduced dietary compliance.

Remember, the best diet is one that you can stick to.

The low carbohydrate days can also prove difficult for those conducting high intensity training 4+ times a week. This pushes training days onto low/no carbohydrate days which can reduce performance. Furthermore, some people find they cannot replenish glycogen levels sufficiently in the short high carbohydrate opportunity. A more traditional approach would suit these people.

Summary

carbohydrate cycling can be a good protocol for those who want an easy and simple set of guidelines to follow when seeking body composition changes.

Also, it can quickly help people understand what their body wants in terms of macronutrient breakdown and what they do best on. Aside from this, little evidence exists to suggest it will change body composition any quicker than traditional methods.

Lastly, taking everything into consideration, it can become quite a difficult protocol to follow.

THE MODERN NUTRITION PROTOCOLS

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