Advanced Diet Protocols: Part Two

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THE ADVANCED NUTRITION PROTOCOLS

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The Ketogenic Diet

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The Metabolic Restoration Diet

THE ADVANCED NUTRITION PROTOCOLS

THE KETOGENIC DIET

The ketogenic diet falls within the first of our advanced nutrition protocols due to its complex nature and highly debated methodology.

Despite it appearing ‘simple’ on the outside, as essentially it is a diet based solely around the manipulation of carbohydrates, when we understand how it works on a cellular level and investigate the finer details it can become quite advanced.

This has also left the ketogenic diet open to much controversy, and there is much debate about how such a restrictive diet can fit successfully into a balanced, healthy lifestyle.

FUN FACT: There is currently no official definition of the ketogenic diet, due to the lack of agreement over carbohydrate and fat cut-offs. Although, it is generally observed as a diet with carbohydrate intake below 50g a day.

This article will show you how it works, the benefits and negatives of this diet and how you can go about creating such a diet for clients, one that is safe and sustainable. This article is not exhaustive in relation to the level of information available on this diet but is a summary of the most important information surrounding it. It is recommended that you research further the references and further reading list at the end of this article before applying the information. The information shared here is a shortened and condensed version of that reading list.

What Is A Ketogenic Diet?

As already mentioned, a ketogenic diet is based around the manipulation of carbohydrates in someone's diet. The difference between this diet and others that restrict carbohydrates is the fact that it is trying to induce a series of adaptations within the body.

In particular a traditional ketogenic diet is one that heavily restricts daily carbohydrate intake (typically 100g or less per day) which causes ketone bodies to be produced by the liver. The result is a shift in the body's metabolism, as fat utilization becomes a priority over glucose. Therefore, the goal of a ketogenic diet is to restrict the energy intake from carbohydrates in order for the body to run on fat for it's primary source of energy.

Ketogenic diets are not new, and some of the early research conducted on them stems back to the early 1900's. The discovery of ketogenic diets and their benefits appeared to result from initial research based on fasting.

Fasting (going without any food) was initially used by doctors trying to control patients with epilepsy. It was considered a successful way to control seizures, however refraining from food long term is not exactly possible, right? This led to further research as it was later discovered that a very low carbohydrate diet brought similar benefits as seen in those with epilepsy who fasted. This research then led to the release of the first ketogenic diet for the treatment of epilepsy in 1921 by Dr. Wilder. Since then, we have seen various waves of popularity for this dieting approach, but it is firstly considered to be a practical approach to controlling epilepsy seizures without the use of drugs throughout the medical world.

More recently we have seen the increasing use of ketogenic diets by those seeking changes in body composition. This stemmed from those who were experimenting with low-carbohydrate diets for fat loss, however it was not known if this was purely due to a restriction in overall calories or not. This was soon tested by Dr. Atkins who released his ketogenic diet adaptation known as the 'Atkins diet' which prescribed unlimited amounts of protein and fats, while still promising weight loss.

The effectiveness of this diet is now clear and since then we have continued to see multiple protocols based on a ketogenic or cyclical ketogenic diet matched to various populations and goals. Ketogenic and cyclical ketogenic diets have also become popular with athletes and bodybuilders as they too constantly try to push the limits of body composition and health.

How Does It Work?

The basic philosophy of the ketogenic diet is to create a metabolic response in the body, and the process by which this occurs can become quite detailed.

The body uses the 4 following sources of fuel primarily:

- Glucose (carbohydrates)
- Amino acids (protein)
- Free fatty acids (fats)
- Ketones (from fats)

The first three are obtained by our diet, and in times of a calorie deficit the body can also seek out additional resources of these from various places within the body for energy. Under these normal conditions, ketones do not play a major role in energy provision, but during a ketogenic diet their role is greatly heightened.

This basis of a ketogenic diet is to use ketones as the primary source of energy for the body, thus creating a metabolic shift from glucose. This why carbohydrates must be significantly limited in order to engage this process. This metabolic shift occurs when the body becomes depleted of glucose in its muscle and liver cells. The body can only store limited amounts of glucose, so it can only act as a short-term energy source. Once this occurs, the long- term energy source, fat, is called into play.

FUN FACT: 'Metabolic switching' is less black and white as it sounds. All energy systems are usually active to varying degrees. This is based on the nutrient availability and activity status of the individual. For example, during an overnight fast, ketosis will increase as liver glycogen (stored carbohydrate) is depleted. When we adopt a ketogenic diet, ketosis is simply ramped up as the dominant energy-provider.

In summary, a tissue in the body will use the fuel source that has the greatest concentration in the blood stream. When we reduce carbohydrates, glucose levels are reduced in the blood stream and fats will become the dominant fuel source due to higher concentration in the blood stream.

It should also be noted that this is not a permanent situation, so if carbohydrates levels are increased and become the primary factor in the blood stream, glucose is instantly used as the fuel source.

We also highlighted at the start that amino acids could be used for energy. When glucose is depleted as in a ketogenic diet, the body can also deaminate amino acids and convert them to glucose for the provision of energy (the process is known as gluconeogenesis; 'gluco' – glucose, 'neo' – new, 'genesis' – creation). Amino acids are stored in muscle tissue, which means there is potential for muscle breakdown on this diet. However, this is only an issue during the initial phases of the diet, until the body becomes fat-adapted. It is therefore recommended to consume a high-protein diet during this time to supply sufficient amounts of amino acids for energy.

Once glucose is depleted and adequate amino acids are being consumed, most of the body's tissues will use free fatty acids as their primary fuel source. The only exception to this is the brain, and this is when ketones come into action to meet the energy demand from this important organ. During times of restricted carbohydrates, the body adapts by producing ketones to ensure a fat-derived fuel is available for the brain.

Other organs and tissues can use these too, but further adaptation by the body occurs so that free fatty acids become an exclusive energy source and so ketones are reserved by the brain.

Hormone Levels

What we first looked at is how the body will adapt based on the nutrients and substances that we provide to it via our diet. This is what I consider the first level of understanding these processes, and the effect this has on us from a hormonal perspective is the second level. Having a good knowledge of this and the part they all play help us to further understand the processes involved in a ketogenic diet.

The reason why the ketogenic diet works, is in large part due to the downstream effects of hormonal changes e.g. reduction in circulating insulin.

Insulin is a peptide that is released from the pancreas to shuttle the increased levels of blood glucose to muscle, liver and fat cells in response to an intake of carbohydrates. The key role of insulin is to manage blood sugar levels to ensure they remain in a safe and narrow margin (80-120mg/dl) in the body. Carbohydrates are the primary stimulant of insulin due to their high glucose content. Protein and fats can also spike insulin levels, but normally not as much as carbohydrates. When insulin levels are kept low, such as within a ketogenic diet, another hormone called glucagon is released to manage low levels of blood glucose in the body. Consider it the opposite of insulin.

Glucagon is also a peptide hormone released from the pancreas during times of low blood glucose levels. The important point to note is when insulin levels reduce and glucagon levels rise, the body will break down stored fuels for energy. Triglycerides stored in body fat are broken down to free fatty acids, and protein may be broken down into amino acids. Also, glycogen stored in the liver may be broken down into glucose. Therefore, glucagon's main role is to release the same energy stores that insulin transports for storage. Insulin is therefore considered anabolic and glucagon catabolic.

Of course, there are a number of other hormonal reactions that we see from consuming food or from not eating at all. For the basis of this article, and to avoid a short chemistry lesson, insulin and glucagon are the major players in the ketogenic diet. The body's ability to store and break down nutrients, it is not only based on whether glucose is being consumed in the diet, but a large consideration is also the level of glycogen stored in the liver.

When glycogen levels in the liver are topped up the body is more likely to store the incoming nutrients from the diet as fat. This is still considered an anabolic state, as seen with high insulin levels. When glycogen levels in the liver are depleted the liver will then start breaking stored nutrients into energy. This is considered a catabolic state, as seen with high glucagon levels. When we combine low insulin levels (thus high glucagon)

and depleted glycogen levels in the liver, we see a response from the body known as ketogenesis. This is the creation of ketone bodies ('keto' – ketones, 'genesis' – creation).

Ketone And Ketogenesis

There are three ketones known as ketone bodies. These are:

1. Acetoacetate (AcAc)
2. Beta-hydroxybutyrate (BHB)
3. Acetone

AcAc and BHB are produced from the consideration of acetyl – CoA, a product of incomplete breakdown of free fatty acids in the liver. Roughly one-third of AcAc is converted to acetone, which is excreted in the breath and urine.

In regard to someone following a ketogenic diet, the key role that these 3 ketone bodies play is to replace glucose as the primary energy source for the brain. This process requires a shift in metabolism and is also known as fat adaptation. This is the body's response to the lack of glucose in the body, so it can survive. Our brain cannot use fatty acids for energy, which is why ketones must be produced.

What is also seen in the first few weeks of such a diet is all body tissues using these ketones for energy too, as it serves as such a quick energy source. With further fat adaptation from these tissues, they slowly shift to free fatty acids. This usually occurs after 3 weeks on the diet.

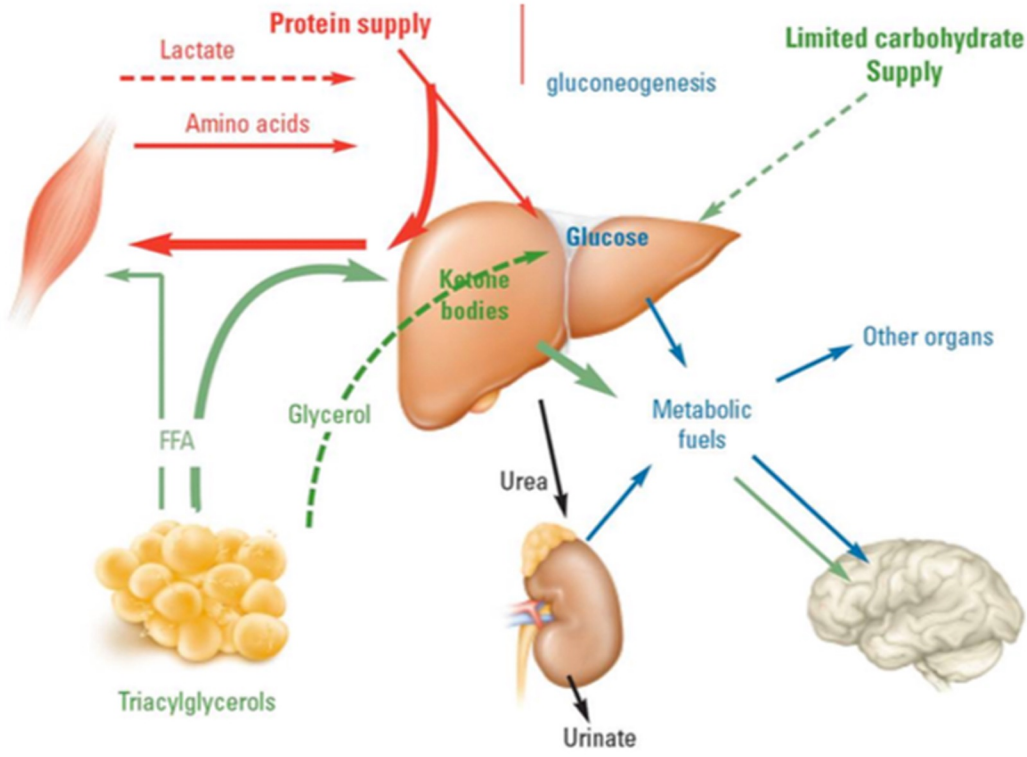
As previously mentioned ketogenesis is the creations of these 3 ketone bodies when certain conditions are met and a hormonal response occurs as a result. This process is known to have a 'lipolytic effect' in the body, meaning it has a fat mobilizing effect, which is also known as 'lipolysis'.

Lipolysis occurs in the liver and fat cells. The liver's role is to regulate blood glucose levels in the body, so when carbohydrates are cut from the diet, its response is to break down glycogen reserves to replace this. Once these reserves are broken down ketogenesis is up regulated.

The rate at which the ketones bodies are produced appears to be related to the availability of free fatty acids in the body, and the liver becomes most efficient at this around 3 days into the diet. It typically then produces 115-180 grams of ketones per day.

Ketogenesis also occurs in the fat cells, and thus occurs when triglycerides (TG) are broken down into free fatty acids. These can be used as a direct energy source, and any reserves are passed onto the liver for ketone production. You should now see how this whole process is linked and essentially serves as a survival mechanism for the body during times of depleted glycogen.

The following information can be summarised in the below diagram:



The Adaptation Process

The following information summarizes the body's responses and adaptations during the initial stages of a ketogenic diet. The process can be quite detailed and advanced, so those seeking more information should check the further reading section.

The first 24 hours:

- The body is still using energy from previous meals;
- Roughly 50% of the body's energy is from FFA after 10 hours without carbohydrates;
- Insulin and glucose are decreasing, but glucagon and GH are increasing.

24-48 hours:

- The body starts to rely on FFA and the breakdown of liver glycogen for its energy requirements;
- Liver glycogen is typically gone within 12-18 hours;
- Increased use of amino acids, indicating increased protein breakdown;
- The body's use of glucose and protein is slowing down.

2-7 days+

- Measurements of fuel use show that approximately 90% of the body's total fuel requirements are being met by FFA and ketones by the third day;
- The body is also increasing its own production of glucose to combat this during the initial week. This is known as gluconeogenesis (the making of new glucose);
- Around the third or fourth day the body is in a state of ketosis; By the second week the body down regulates gluconeogenesis as it adapts to ketogenesis;
- The liver produces ketones at its maximum rate by day three;
- Most tissues except the brain stop using ketones for fuel after the third week – instead they use free fatty acids;

- It can take the brain a number of days in ketosis before it uses ketones for fuel;
- Decreased amino acid breakdown due to decreased glucose requirements, nitrogen excretion and a more anabolic environment within the body;
- After three weeks, the body may derive 93% of its fuel from FFA.

The Drawbacks Of A Ketogenic Diet

PROTEIN BREAKDOWN

A diet with carbohydrates has always been considered to be 'anabolic', mainly due to its effect on insulin, which essentially helps things grow. Therefore, a diet without carbohydrates is considered 'catabolic', meaning things won't grow easily. This style of dieting is hence not ideal for those seeking significant changes in muscle growth or recovery.

There is also concern that particularly during the initial phases of the diet (the adaptation phase) that high level of protein breakdown can occur. This could therefore lead to a loss of muscle mass. However, it has been shown that a protein intake of 1.5-1.75 grams protein per kilogram of lean body mass would spare most of the nitrogen loss. Protein breakdown occurs as the body's demand for glucose for energy goes up, but with time this demand decreases and protein breakdown is not as much of a concern.

During the initial days of a ketogenic diet, it is suggested that protein intake should be quite high e.g. 0.7 – 1.0 g/lb bodyweight. As you progress, this intake can be reduced, although for muscle gain, a higher protein intake is always important.

The opposite to this can also occur, as a ketogenic diet can become protein sparing once fully adapted. This is based on the reduced demand for glucose by the body. It is therefore suggested that for those who lose lean body mass during calorie-restricted periods, a ketogenic diet may be a good option.

SATURATED FAT INTAKE

As we have done for every single protocol or diet we have covered so far, the question must be asked, does a ketogenic diet reduce body fat and improve body composition over traditional dieting models?

Many people believe that a ketogenic diet is superior for fat loss rather than a non-ketogenic diet. This isn't strictly true and there is very little research to even show this is the case.

What we do know is that ketogenic diets can be more effective at quick weight loss – there is a difference. Ketones are diuretic and many people can see initial weight loss of 5 pounds or more from water losses. Also, glycogen is stored along with water in a ratio of three grams of water for every gram of stored carbohydrates. With a reduction in stored glycogen in the body, water is lost and further weight reduction occurs.

Essentially, as with any diet or protocol, true fat loss is dictated by the amount of calories consumed and there is no metabolic advantage to a ketogenic diet to bypass this. If a ketogenic diet improves a person's dietary compliance to help with their fat loss goals, then it is a suitable diet for them.

The Benefits Of A Ketogenic Diet

FAT LOSS

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APPETITE CONTROL

A diet low in carbohydrates yet moderate in protein and fat tends to create higher levels of satiety in people, mainly due to the slow digestion rate. This tends to then lead to eating fewer calories in general, thus seeing improved fat loss. There is no research to suggest ketogenic diets suppress appetite in any other way.

CHOLESTEROL

The main driver behind high cholesterol levels and the associated cardio vascular diseases is mainly due to the consumption of refined carbohydrates and fats. Reducing these, like on a ketogenic diet, people tend to see a reduction in blood triglycerides. With the focus on a moderate intake of healthy fats, an increase in HDL (the good stuff) cholesterol levels and decrease in LDL (the bad stuff) levels are reported.

PERFORMANCE LEVELS

Due to the lack of glucose in the body high activity or exercise may not be sustainable on a ketogenic diet. Those who are active or exercising frequently should not follow a typical ketogenic diet as performance may decrease due to lack of energy. The same applies for those who require a lot of mental energy or concentration daily; this diet may not be suitable.

DEFICIENCIES

As the ketogenic diet essentially eliminates carbohydrates from the diet, there is always room for potential deficiencies to creep in. Some ketogenic diets place focus on reducing vegetables, thus creating a reduction of micronutrients in the diet. It is therefore beneficial to follow a ketogenic diet in the short term and implement a multivitamin and mineral supplement during this time.

As carbohydrates, particularly of the starch family are high in fibre, so ketogenic dieters can suffer from constipation. It may be beneficial to supplement with a high fibre foods during this diet.

Due to the reduced water storage within the body from a low carbohydrate diet, there is also potential for electrolyte imbalances; mainly sodium, magnesium and potassium. For those suffering fatigue on a ketogenic diet, electrolyte supplementation may be beneficial.

Setting Up A Ketogenic Diet

When setting up a ketogenic diet for yourself, it's important to understand how various macronutrients and foods can affect or influence the ketogenic state. Your goal is to always create and be in a pro-ketogenic state and thus minimizing nutrients that will be anti-ketogenic.

Hopefully the previous chapters of this article have highlighted the fundamental nutrient requirements to make this so, but below is a summary of the key nutrients and the considerations you must think about.

PROTEIN

Protein is known to be pro and anti ketogenic. Protein can actually raise insulin levels, however this is not to the same effect as carbohydrates. Nonetheless, this will inhibit ketogenesis, so total amounts of protein must be considered – too much and it will stop ketosis.

We have already established that protein will be required in the diet to stop amino acids being used from muscle tissue, and it has also been shown to stimulate glucagon release.

FAT

Fat is considered to be highly ketogenic with only around 10% of intake appearing in the bloodstream as glucose.

Fat is therefore an ideal macronutrient in a ketogenic diet, however it must be noted that the amount of fat ingested will relate to the amount of fat lost.

CARBOHYDRATES

All carbohydrates appear in the bloodstream as glucose, thus making it 100% anti-ketogenic.

A daily intake of more than 100g of carbohydrates is not ketogenic. This is because the brain requires up to 100g of glucose per day, so any more from carbohydrates means ketones are not required for energy.

Therefore, a ketogenic diet is one that has less than 100g of carbohydrates per day.

Once fat adapted (usually after 3 weeks), the brain's requirement for glucose is approx. 40g per day, so daily carbohydrates must be reduced to stay in ketosis.

ALCOHOL

Alcohol is considered to have no effect on ketosis, but it has been shown

to limit free fatty acids production in the liver and it does contain calories (7 kcal/g) thus reducing fat loss.

There is also evidence to suggest that high alcohol intake while being in a ketogenic state can lead to 'alcohol ketoacidosis'. This is when dangerous levels of ketones enter the bloodstream, but can be counteracted by the ingestion of carbohydrates.

WATER

Overall, water intake had no direct effect on ketosis, and a high water intake is recommended to counteract the natural dehydrating effects of ketosis.

CAFFEINE

Caffeine should have no direct effect on ketosis, but some have reported it could raise insulin levels indirectly. This may be of more importance for someone who is in the initial phases of ketosis.

FIBRE

Humans do not have the ability to fully digest fibre, meaning we do not get any calories from it, but it is a carbohydrate.

Therefore you should subtract fibre content from the total daily carbohydrate intake. However, a high fibre diet still may negatively affect ketosis, so it should be monitored.

APPLICATION

Despite the ketogenic diet being an advanced protocol, the actual application to apply it is simple.

It is possible to follow a ketogenic diet without tracking calories and macronutrients. Many ketogenic diets simply suggest reducing carbohydrates intake and eating as much protein and fats as required. This appears to work well.

To date it has been highlighted that carbohydrates must be below 100g for ketosis to occur, but many find this is still too many. In general, 30g or less is the ideal daily ceiling.

It is possible to take this diet a step further and track every single nutrient. This is advised for those who want faster results and to ensure they are reaching the calorie requirements necessary for their goals.

This would follow the same procedure as normal macronutrient plan creation, but limitation would be put on carbohydrates. Therefore higher percentage of protein and fats would make up the calorie intake.

Summary

This article has provided you with a brief overview of the ketogenic diet, including how it works and how to apply it successfully. The following references and further reading are encouraged for those who wish to explore more into this advanced nutrition protocol.

THE ADVANCED NUTRITION PROTOCOLS

METABOLIC RESTORATION

The term ‘metabolism’ is being used a lot recently by the health and fitness conscious. People are becoming increasingly aware that all their training and nutrition efforts will impact changes not only on the outside but the inside too!

There also appear to be two ‘campuses’ when it comes to our metabolism and the response to different diets, with respect to body composition and health. One side strongly believes that metabolism is the key focal point to a great body and healthy lifestyle. The other believes this to be nonsense, and that good body and health is down to calorie control and macronutrient consideration.

Personally, like the research, I am in the middle of these two campuses, as anyone that claims calories do not matter is missing the bigger picture, and the same goes for those who claim calories are all that matter. Yes, calories and an energy balance are the main mechanism driving weight loss/gain, but there are a range of secondary and tertiary factors that influence energy balance. You can’t tell someone with an eating disorder that ”It’s just calories in vs. out bruh”, could you?

The purpose of this article is to present you with an alternative ‘diet’ which can help you achieve their desired body composition and lifestyle, along with all the necessary steps of how to effectively apply it.

Traditional dieting protocols follow the very basic template of - reduce calories > lose weight > balance the metabolic rate.

In this article, we will look at reversing this process, to create a new dieting formula: balance the metabolism > reduce calories > lose weight > refeed to restore metabolic rate.

What Is Metabolism?

Metabolism can be defined as the sum of the physical and chemical processes that occur in our cells to produce energy.

Essentially, all the catabolic and anabolic reactions in our bodies make up our metabolism. So, when we talk about metabolic repair, what we really mean is fixing our body as a whole unit.

When talking about body composition, we need to look at the energetic aspect of our metabolism (energy burned in a day as calories). This is the amount of energy we use for daily function and is referred to as our metabolic rate. So, remember, metabolic rate = just energy, metabolism = much more than just calories burned.

Our metabolic rate is made up of four different factors, which all need be well defined and understood before progressing into a reverse dieting protocol.

BASAL METABOLIC RATE (BMR) – This is the energy we need to simply fuel our organs and basic physiology. In otherwords, the number of calories you would burn if you were to lie down, completely still for an entire day. This is not to be confused with your resting metabolic rate (RMR) which is your daily expenditure when factoring in movement and activity status.

THERMIC EFFECT OF FOOD (TEF) – This is the amount of energy it costs to break down, digest and absorb food and nutrients in the body. Protein costs the most energy to break down, with approximately 20% of the calories from the nutrient being used to digest it.

NON-EXERCISE ACTIVITY THERMOGENESIS (NEAT) – This is one of the most overlooked yet important factors in determining our metabolic rate. This comprises all activity that is not purposeful exercise (e.g. running, lifting weights, playing a sport). This activity includes sitting upright, standing, walking, fidgeting, chewing and much more.

RESTING METABOLIC RATE (RMR) - As briefly mentioned above, this is the combined energy it takes for all of the above functions. This is what is referred to as "Maintenance calories" in nutrition programs.

EAT – This is the purposeful activity that you participate in which includes cardiovascular exercise, weightlifting, playing sports, etc.

This can vary day to day, but should be factored into your daily energy needs.

What Is Reverse Dieting?

Reverse dieting is an approach that was pioneered by Layne Norton and has been widely accepted in nutrition communities as a possible method of restoring the significant downregulation of one's metabolic rate after dieting. However, it is important to understand that it **is suitable only for those that have adopted severe diets** and experienced significant weight loss accompanied by a loss of energy, fatigue and more.

It is an approach that was first popularized by Norton for bodybuilding athletes that were preparing for competitions. During competition prep, they would need to cut calories severely to shed that last small percentage of body fat. This has been widely shown to spark a downregulation of the body's output, but also several hormonal changes occur along with other adverse reactions e.g., reduced libido.

Now, because of the reduced output by the body, these individuals actually require much less energy on a daily basis. This can lead to significant weight and fat gain, once they begin to return to their normal diet. Sounds familiar right? Maybe not to the same extent as with bodybuilding athletes, but everyday individuals who have adopted aggressive Calorie-restricted diets will experience this phenomenon to a degree.

So, Norton put forward a reverse dieting protocol for incrementally increasing energy in the diet while reducing physical activity, which if done correctly would help to restore the metabolic rate, while also increasing body fat levels of these competitors. For these athletes, they had reached such a low level of body weight and fat, that some weight gain is desired.

Of course, in everyday individuals, the goal is for minimal fat gain while restoring their metabolic rate to somewhere close to their previous baseline. There are a variety of proposed ways to do this by different sources, but the fundamental steps include –

1. Track your intake – It is first imperative to figure out the energy you're currently consuming, and the only way to do this is to use a method of food tracking. For 1-2 days eat your habitual diet (the one you've been using for fat loss), and track it using a food diary, or more preferably an app e.g. MyFitnessPal

2. Figure out your optimal maintenance needs – This is a very important step. By maintenance here, I mean the energy you need that is based on your weight, height and activity status (don't factor in the fact that you may have experienced some downregulation here)

3. Calculate the difference – So, if you are following a fat-loss diet, you will be consuming less energy than your maintenance needs. Based on the degree of the deficit, it is now time to strategize how you will start to build back up to this maintenance. Because, chances are, if yu have been following a fat loss diet for some time, your maintenance needs are even lower.

4. Calculate macronutrient ratios – This is another crucial step. If you are following a fat loss diet, you should already be prioritizing protein with an intake of between 0.6 – 0.8 g/lb (1.6 – 1.8 g/kg) of IDEAL body weight. You should not be basing this off your intake, and so it should stay relatively constant throughout the process.

Next are carbohydrates, which are arguably the most important. Research has shown that by making up the calorie deficit from carbohydrates, assuming protein intake is sufficient, several key hormone levels can be increased such as leptin, thyroid hormone.

Fat should make up the remainder of your energy needs, when protein and carbohydrate intake have been calculated. Fat can also be important for those following low-fat diets, as it is a crucial component for hormone production e.g., estrogen in women

To calculate your optimal needs, check out this free calculator by Legion.

5. Plan the progression – This is where you have flexibility to adjust the approach to your preferences and lifestyle. In short, you need to define the time period and weekly calorie increases that you will use going forward. This should be a slight and gradual increase of 50 – 100 kcals/day every 1-2 weeks until you reach maintenance. NOTE: This does not mean increase intake by an additional 50-100 kCals every day. Set a daily increased target which you will follow for 1-2 weeks.

6. Return to Baseline – You have reached maintenance, and successfully avoided excessive fat gain throughout the process. You may have gained 1-2lbs, but this is acceptable, as you have most likely brought your metabolic rate somewhere close to your baseline.

If you have achieved your desired weight at this point, then you can continue to consume your maintenance needs until you either want to reduce fat mass further or begin to experience weight gain. If the latter occurs, you may have overestimated your maintenance needs to begin with, or your metabolic rate is still not fully restored to baseline.

If you have a goal of further weight/fat loss, than you can implement a moderate caloric deficit once again. However, you want to avoid an aggressive deficit once again, as it may lead

to a similar metabolic downregulation as occurred previously.

Layne Norton has previously said “Diet on as many calories as possible!”

What are diet breaks?

In recent years, ”cheat days” have become widely popular where individuals who have been following a calorie restricted diet will eat unrestricted for a day and can sometimes consume 3 – 5 times their maintenance needs.

The proposed rationale for cheat days, is to provide such a large amount of energy in 24-hour period, that our metabolic rate has no choice but to increase considerably. We, of course, know from quite a bit of evidence that this is no way true and cheat meals/days can do a lot more harm than good.

For example, take an individual with a maintenance of 2,400 kCals/day. They have a cheat day, consuming 6,000 kCals through various processed foods and snacks. Their metabolic rate only increases by 50-100 kCals/day but they have consumed 3,600 more kCals than they needed!

Diet breaks are a more evidence-based, and practical strategy for those who are regularly following a calorie-restricted diet. This is known as a diet break and involves an individual returning to their maintenance calories for a period fo 1-2 weeks, depending on the length of their diet.

The reason for this is similar to the previous ‘Reverse Dieting’ method where you are refeeding the body so as to prevent a slight downregulation of the metabolic rate that can occur in response to continuous dieting. However, once again, this should not be considered for those that are simply following a moderate calorie deficit (5 – 10% of energy intake).

ADVANCED DIET PROTOCOLS PART II
WORKBOOK

Q1. DESCRIBE WHAT A KETOGENIC DIET IS?

Insert text here

Q2. THE BODY USES WHICH 4 SOURCES OF ENERGY FOR FUEL?

Insert text here

Q3. DESCRIBE THE METABOLIC PROCESSES THAT OCCUR SO THAT FREE FATTY ACIDS BECOME AN EXCLUSIVELY ENERGY SOURCE TO THE BODY?

Insert text here

Q4. WHAT IS 'INSULIN'?

Insert text here

Q5. WHAT IS 'GLUCAGON'?

Insert text here

Q6. WHAT IS 'KETOGENESIS'?

Insert text here

Q7. WHAT IS 'LIPOLYSIS'?

Insert text here

Q8. DESCRIBE THE ADAPTATION PROCESSES AND BODY'S RESPONSE DURING THE INITIAL STAGES OF A KETOGENIC DIET?

Insert text here

Q9. WHAT ARE THE BENEFITS TO A KETOGENIC DIET?

Insert text here

Q10. WHAT ARE THE NEGATIVES TO A KETOGENIC DIET?

Insert text here

Q11. WHAT IS THE ELIMINATION DIET?

Insert text here

Q12. WHAT IS A FOOD ALLERGY?

Insert text here

Q13. WHAT IS A FOOD SENSITIVITY?

Insert text here

Q14. WHAT IS A FOOD INTOLERANCE?

Insert text here

Q15. WHAT ARE THE MOST COMMON 4 FOODS TO CAUSE DIGESTIVE ISSUE PROBLEMS?

Insert text here

Q16. DESCRIBE THE TWO MAIN PHASES THAT COMPRISE OF THE ELIMINATION DIET.

Insert text here

Q17. IN REFERENCE TO HUMAN HEALTH, WHAT DOES DEXOTIFICATION MEAN?

Insert text here

Q18. WHAT IS A TOXIN?

Insert text here

Q19. WHEN DOES TOXICITY OCCUR?

Insert text here

Q20. WHAT IS THE FUNCTION OF THE LIVER IN THE DEXOTIFICATION PROCESS OF THE BODY?

Insert text here

Q21. WHAT IS THE PURPOSE OF PHASE 1 AND PHASE 2 DETOX PATHWAYS OF THE LIVER?

Insert text here

Q22. WHAT IS METABOLISM?

Insert text here

Q23. WHAT DOES THE TERM 'ADAPTIVE THERMOGENESIS' MEAN?

Insert text here

Q24. WHAT ARE THE COMMON METABOLIC DISORDERS THAT WILL REQUIRE MEDICALTREATMENT AND MEDICATION?

Insert text here

Q25. WHAT ARE THE KEY 5 PHASES TO CONSIDER WHEN SETTING UP A METABOLIC REPAIR DIET?

Insert text here

THE ADVANCED NUTRITION PROTOCOLS
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