**CARBS VS. KETO: THE DEBATE OF CARBOHYDRATES IN SPORTS**

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If I had to choose one word to start a conversation amongst a room of shy athletes it would be none other than ‘carbohydrates’. Majority of the people would probably tell you it’s all about timing, type and specific amounts of carbohydrates you consume. On the other hand, a few others may mention their new low carbohydrate, high fat, adequate protein diet. Why is the idea of your body running on other fuel sources such as fats instead carbohydrates becoming so popular and is there any science backed evidence behind this? Let’s investigate this further.

**WHAT ARE CARBOHYDRATES AND WHY ARE THEY NEEDED?**

Firstly, let’s explore why carbohydrates have been the tried and tested fuel source.

In a healthy, balanced diet carbohydrates are the body’s main source of energy. Your body breaks down carbohydrates into glucose which is then absorbed into the bloodstream. Glucose enters the body’s cells where it is utilized for energy for all sorts of activities such as running, walking and even just breathing1. In fact, glucose is practically the sole fuel source for the human brain. The brain requires a constant supply of glucose as it lacks fuel stores2. According to the National Academy of Sciences’ Institute of Medicine, adults should consume a minimum of 130g of carbohydrates per day to produce sufficient amounts of glucose for the brain to function3. Other functions of carbohydrates include1,4,5:

* Storage of energy- when the body needs sufficient energy to carry out its functions, the excess is stored as glycogen
* Building macromolecules- some glucose is converted into essential building blocks of important macromolecules, such as RNA, DNA, and ATP. Glucose is also used to make NADPH for the protection against oxidative stress and numerous chemical reactions in the body
* Sparing protein- when there are insufficient amounts of glucose, protein (primarily from muscle tissue) is broken down to make glucose for the body
* The regulation of blood glucose levels- type and amount of carbohydrates must be considered
* Providing sufficient amounts of fibre in the diet to assist with regular bowel movements, prevent constipation and certain types of fibre reduce cholesterol levels. High fibre diets are also linked to a lower risk of cardiovascular disease, type 2 diabetes and bowel cancer.

Carbohydrates are our body’s main source of fuel and have numerous functions in the body.

**WHAT ARE FATS AND WHY ARE THEY NEEDED?**

​​Fats in the body are made up of a three-molecule structure called triglycerides. Other names for fats include fatty acids or lipids. Essential fatty acids are those that the body cannot make on its own and are required from the foods sources6. Fats have the following functions1,6,7:

* Storage of energy- when more glucose than can be stored as glycogen is consumed, it is converted to fat
* Insulation and protection of organs
* Act as messengers to assist proteins to do their job
* Begin chemical reactions that assist in controlling immune function, growth, reproduction as well as other basic metabolism aspects
* Absorb vitamins A, D, E and K
* Assist in the feeling of fullness
* Essential fats are important for heart health.

Essential fats cannot be made by the body and must be obtained from food sources. Fats are necessary in the diet and play a role in numerous functions of the body.

**MACRONUTRIENTS IN SPORTS**

Now that you have a basic understanding of carbohydrates and fats, let’s look at their role in sports.

Since carbohydrates are the body’s main fuel source, it makes sense why they are key for exercise. Inadequate carbohydrates and stores leads to fatigue, affects your ability to train hard and perform and reduces immune system function. In order to perform at their best, athletes are therefore encouraged to plan their intake of carbohydrates to ensure that their bodies are fuelled accordingly8.

So, where do fats come in? The new trend amongst athletes is the ketogenic diet. This involves consuming a high fat, adequate protein and low carbohydrate diet. In essence the ketogenic diet forces your body to adapt from using carbohydrates as your source of fuel to using fats instead.

In hope of boosting their performance, some athletes have started following the ketogenic diet. However, research shows that athletes who are involved in high intensity, short duration sports may actually see a decrease in their performance. In one such study, depending on the type of exercise, the performance of athletes on the ketogenic diet was 4-15% lower than the high carbohydrate group9. Although this was a small study and participants were only on the two diets for a couple of days, a review of several studies has found similar findings with participants on the ketogenic diet exhibiting fatigue during short duration sports10. Considering these findings, the ketogenic diet may not be the best option for high intensity, short duration sports.

When it comes to endurance sports, the ketogenic diet shows more promising results. Researchers do however caution individuals making the switch that it can take several months on the ketogenic diet for the body to change from using carbohydrates as a main energy source to using fats10. Failing long term adaption to the ketogenic diet, athletes may experience negative side effects such as hypoglycaemia, reduced muscle glycogen and reduced athletic performance11. Although research is limited, current findings suggest that endurance athletes may experience benefits from being on the ketogenic diet after several months on the diet. Research investigating if there are any potential harmful effects of being on the ketogenic diet is still limited.

The ketogenic diet is becoming popular amongst athletes. Research shows that the ketogenic diet may not be the best option for high intensity, short duration sports due to fatigue and reduced performance. More promising results are exhibited with endurance athletes on the ketogenic diet however the long-term side effects are unknown.

**VETO THE KETO**

Let’s face it, unless you are an endurance athlete under close supervision of a doctor, and you’re able to follow a strict eating plan calculated by a registered dietician, the ketogenic diet is not for you. There are many drawbacks to the ketogenic diet as listed below:

1. **Goodbye carbs**

In order for your body to use fats are its main energy source, your carbohydrate intake needs to be kept **very** low- typically 20-50g per day. This means that you have to be extremely strict with your eating or else it won’t work. Even just one cheat meal can push your body out of a state of ketosis which is crucial to see results on the ketogenic diet.

1. **It’s not a one size fits all type of diet**

The ketogenic diet was originally developed as a treatment option for children with epilepsy whose seizures were uncontrollable with anti-epileptic drugs12. Now that researchers are investigating its effectiveness in athletes, there is no clear-cut evidence on the possible side effects. Some athletes feel amazing on the ketogenic diet and others feel horrible. Possible side effects of the ketogenic diet include nausea, vomiting, constipation, irritability, fatigue, hypoglycaemia, increased serum cholesterol or triglycerides, calcium deficiency and renal stones13,14.

1. **Get ready to break that piggy bank**

Following the ketogenic diet is expensive. You may think it’s easy to eat lots of fat. Yay to cream on everything, butter chicken and chicken skin. The reality is that you still have to be wary of the types of fat you are consuming if you don’t want to be ticking timer for cardiovascular disease. Fats such as butter and cream need to be limited. Healthy fats such as nuts, seeds, avocados and other oils containing medium-chain triglycerides (MCTs) such as pure MCT oil, coconut oil and extra virgin olive oil should be included and these are all costly items. If you’re looking for snacks such as bars, one keto bar will cost you no less than R35.00 and the thought of a protein source mixed with loads of fat and the flavour of this masked with some form of sugar or flavourant is not very appealing either. If you go for the cheaper versions these usually contain unhealthy sources of fat.

1. **There’s no turning back**

Once you jump on the ketogenic diet bandwagon you usually have to hold on. You may initially find a drop in your weight when you start the ketogenic diet but this may actually just be water weight15. If you use the ketogenic diet as a quick fix and then go back to normal eating you’re going to gain that weight again.

1. **Take a miss if you can’t tick off the list**

Before you begin the ketogenic diet, you need to ask yourself if it’s a sustainable diet for you, something you can do long term and not just for a one-month quick fix. Make sure you are aware of the associated risks and take the necessary precautions such as regular health checks. Lastly ask yourself why you’re about to change your current diet- remember if you’re not an endurance athlete then the risks of the ketogenic may possibly outweigh the benefits.

Remember that there is no quick fix diet to improve your performance as an athlete. Make sure you consult your coach as well as a healthcare professional before trying out any new diets.

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**REFERENCES:**

1. <http://www.nhs.uk/Livewell/loseweight/Pages/the-truth-about-carbs.aspx>
2. <http://www.ncbi.nlm.nih.gov/books/NBK22436/>
3. <http://www8.nationalacademies.org/onpinews/newsitem.aspx?RecordID=10490>
4. <https://2012books.lardbucket.org/books/an-introduction-to-nutrition/s08-03-the-functions-of-carbohydrates.html>
5. <https://www.ncbi.nlm.nih.gov/pubmed/12828191>
6. <https://publications.nigms.nih.gov/insidelifescience/fats_do.html>
7. <https://www.healtheuniversity.ca/EN/CardiacCollege/Eating/Fats/>
8. <https://www.ausport.gov.au/ais/sports_nutrition/fact_sheets/carbohydrate_how_much>
9. <https://www.minervamedica.it/en/journals/sports-med-physical-fitness/article.php?cod=R40Y9999N00A18040408>
10. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5384055/>
11. <https://www.healthline.com/health-news/keto-diet-may-hurt-your-athletic-performance#5>
12. <https://www.epilepsysociety.org.uk/ketogenic-diet?gclid=CjwKCAjwg_fZBRAoEiwAppvp-Vpq-JnF-C-4yqabrBINzqOt8e_EOntbD13QwzP1Qnzgc2vZqldr8xoCpMIQAvD_BwE#.Wz4aMtIzbIU>
13. <http://www.keilahfoundation.org/wp-content/uploads/2013/11/Henderson-2006.pdf>
14. <https://www.news-medical.net/health/Ketogenic-Diet-Side-Effects.aspx>
15. <https://www.healthline.com/health-news/keto-diet-is-gaining-popularity-but-is-it-safe-121914#5>