



APPLIED FITNESS

THE APPLIED FITNESS CARBOHYDRATE GUIDE:

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**I HOPE YOU ENJOY THIS SHORT BOOK AND
IT HELPS YOU UNDERSTAND CARBS SO
YOU EDUCATE PEOPLE WHEN THEY TELL
YOU CARBS ARE EVIL.**

THANK YOU FOR READING!

CARBOHYDRATES, EVERYTHING YOU NEED TO KNOW:

**WHAT IS A CARBOHYDRATE, TYPES, EFFECTS ON THE
BODY AND PERFORMANCE, COMMON MYTHS!**

WHAT ARE CARBS?

We all know these as crisps, chocolate, pasta and rice, it's something most main stream diets will cut out or limit, we all know that carbs are bad, and carbs make you fat? But do we?

What do you know about carbs? What do you think they can help with? Our concept of food is all mangled, it's all now for taste, yes you have to enjoy your food but there has to be some give and take, if I ate my favourite tasting food (steak and cheese pie) I would have some serious health issues I don't really like sprouts but they are absolutely packed full of nutrients, by all means enjoy your food but health is always greater than taste, so find a balance and increase your protein.

So let's get into the nitty gritty and learn some stuff about carbs and stuff.

They are Fibers; insoluble fiber, this acts like a broom in the gut, we can't digest them so they just pull some the crap out of the gut.

Soluble fibers - these are fermented in the gut by your bacteria and turned into short chain fatty acids. These can have great health benefits.

Digestible carbohydrates - these are monosaccharides which are glucose (blood sugar), fructose (fruit sugar), galactose.

Disaccharides which are two of the above - table sugar - glucose and fructose,

Lactose - glucose and galactose,
Maltose (used to make beer) - glucose and glucose.

And the one everyone is scared of high fructose corn syrup(HFCS), it's basically the same as sucrose - you shouldn't be scared of them, the reason they are deemed bad is because they're put predominantly in high calorie foods and it's the high CALORIES in those foods that make people overweight.

All the above is collectively called simple carbs.

Glycogen which is found in the muscles and Liver, also small amounts have been found in the brain and in fat cells, it comes from starch, (complex carbs) glycogen is a long chain of glucose.

Maltodextrin (mostly found in sports drinks) are medium chains of glucose, are more commonly called resistant starch.

What is a complex and simple carb:

Simple:

sugar
Sweets
Sports drinks
Fruit
Sugar from dairy

Complex:

Potato
Sweet potato
Oats
Pasta
Rice

Complex carbs have a higher fibre content than simple carbs fruit being an exception to this 'rule'

Carb timing for most people doesn't make the slightest difference, I will speak more about this when we go into the performance and recovery section.

It's important to get a mixture of these carb types for a health and gut health/function perspective, there isn't much research in gut health and microbiome yet however, having a different source of veg, different colours, different levels of fermentation in the gut, can only help grow and maintain your gut function unless of course you have gut health issues like IBS, crohns etc which is way outside the scope of this and I would recommend going to see you doctor and if you haven't already, do your research into low FODMAP diets, but again ask your doctor about it! Please don't take advice from someone on the internet unless they are qualified to give it out.

To give a quick summary about what we have discussed above:

	Common Name	What it Is	Where It's Found
<u>Monosaccharides</u>			
Glucose	Blood sugar		Bloodstream, various foods
Fructose	Fruit sugar		Fruit
Galactose	Milk sugar		Dairy
Dextrose		D-glucose	Specialty nutrition products
<u>Oligosaccharides</u>			
Sucrose	Table sugar	Glucose + Fructose	Just about everywhere
Lactose	Milk sugar	Glucose + Galactose	Dairy
Maltose	N/A	Glucose + Glucose	Malt Beverages/Beer
HFCS	High fructose corn syrup	Glucose + Fructose	Commercial foods such as soda
<u>Polysaccharides</u>			
Starch	Starch	Amylose/A mylopectin	Starches
Resistant Starch	Resistant Starch	Resistant Starch	Small amounts in foods, specialty products

Fibers	Fiber	Cellulose, etc.	Vegetables, Grains, Fruits
Glycogen	Glycogen	Long chains of glucose	Skeletal muscle, liver

Reheating certain types of complex carbs turns the starch into resistance starch (resistant to digestion) some studies have found up to double the amount that's is naturally found, in legumes for example It went from 4.16% up to 8.16% - which means you don't absorb as much starch (calories) from that food. This doesn't mean every meal should be reheated, as you could lose some protein but It does mean you may need to adjust your calories slightly to accommodate.

EFFECTS ON THE BODY:

The only carbs you can absorb through the gut glucose, galactose and fructose. They are the only ones that hit a vein called the portal vein on the way to the liver, where those 3 are processed.

The others which are sucrose, lactose and galactose are broken down into their monosaccharides glucose and fructose, maltodextrin, starches are broken down into their single molecular glucose.

From the liver, glucose generally goes directly into the bloodstream as that's the source most things use and prefer, fructose can either be converted into glucose where again it will be sent and stored as muscle glycogen, the body stores about 300-400grams, however Carb loading and keto diets will

increase or decrease this amount respectively, it could also be turned into liver glycogen (which is stored in the liver approx. 50-100grams) or converted into lactate, please note that more than 50grams of lactose can be converted into fatty acid however this is very unlikely unless you eat A LOT of fruit, and I don't think anyone reading this is eating double maybe triple figures of apples and pears.

Basically this means that whatever carb you eat it will mostly get turned into glucose, fructose and galactose and even then it's only glucose that makes it back out the liver and into the blood, this does not mean all your carbs can come from snickers and bounty's - still eat a variety of fruit and veg to get more than enough vitamins and minerals, be smart with your food choices but does it mean you can be more free with your diet? bloody hell yes, if you're eating enough vitamins and minerals does that mean you can fit in some of the good stuff you love eating? yes, as long as you are still in a calorie deficit or at calorie maintenance you will still lose weight or stay at the same weight.

The only difference then between the different carbohydrate types is the speed they are digested and the added health bonuses of vitamins and minerals.

There are two other Digestive carbohydrates we will talk about oligosaccharides and polysaccharides, we will tackle Polysaccharides first.

Polysaccharides - Poly means 'many' and as we know saccharides means 'sugar' - this chain of carbohydrates is hundreds sometimes thousands of glucose molecules long, for us this almost always means starch - amylose (a straight chain of glucose) or amylopectin (a branched tree like chain of glucose molecules).

Amylose starts digestion in the mouth and if you don't believe me pop a piece of bread in your mouth and chew a tiny bit to start it breaking down just let it sit there, you will then start to taste a very sweet taste which is the Alpha-amylase breaking down the starch into free-glucose.

But I hear you cry, if glucose is stored in the muscle and animal meat is muscle then why doesn't my juicy steaks have any carbs? then this is mother nature's way of making sure the animal can decompose, so if you want glucose in your meat go and grab your sharpest knife hunting gear and probably some Imodium, because the second you kill the animal the body will start to breakdown and will get rid of as much of the glucose as it can as quickly as it can.

EFFECTS ON TRAINING AND RECOVERY -

We will talk about the effects on training first and then recovery after as I think it should lead on quite nicely.

There was at least one study I know of that showed just by swirling a carbohydrate-based drink in your mouth and spitting it out increased performance by

1.7s and also changed cyclist's muscle recruitment in the last 20% of a time trial significantly.

when you train at any point of the day, no matter what diet type you use then your muscles will probably be full of glycogen, they have a fuel source there, ready to go, your body doesn't have to digest anything and then send it, your mitochondria (put very simply - it's like a train that shuttles energy and oxygen) can pick it up to be used, for this reason, carb loading (where you eat at least 70% of your diet for maybe 2/3 days of the week of carbs, for example on a 3000 calorie daily limit 525g of carbs would have to be eaten! 525grams!) is very popular as your muscle have more than enough to burn and utilise faster than any other energy type, this is also the reason glucose gels are very popular, because a lot will get shuttled straight in to your blood when its on your tongue and then it probably wouldn't last another 2 minutes in your digestive system before it's all mostly in your muscles and ready to go or on its way to them!

Other reasons carbs are a great fuel source are because they can boost peak muscle output which means your muscle can generate more force, more force means more weight, more weight means stronger (not necessarily more gains) which if your training properly with progressive overload then means more muscle gain... Yay gainz Brah!

They (as long as they are stored as glycogen) also allow your muscle to last longer, and the more glycogen you have stored in your muscle cells the

longer you can train for, up to 20% in some cases, this goes back to marathon runners etc and is the reason they Carb load... again means more Gainz!

Everyone knows carbs are preferred by the body but then when you ask why, all I heard when researching for this book was because they're broken down easier, which is true but that doesn't explain why the body prefers carbs most of the time and it's because you get a lot more bang for your buck, I have spoken about glycogen stores but not what happens after, when your muscle needs to be used or repair, it calls its delivery service - Mitochondria, to grab glycogen and put it through a process called glycolysis which then turns glycogen into ATP(Adenosine Triphosphate) which your muscle then uses for energy, furthermore when this happens about 30MMOL (Millimoles per litre) ATP gets converted from glycogen but whopping 200MMOL gets converted from fat, the caveat to this is it takes much longer and you have to use more energy to make energy, and the body is incredibly efficient/ lazy so it will happily get the instant hit of jet fuel rather than pay a bomb in shipping on some high quality diesel, ketosis knocks out virtually all carbs from your diet, which is like upgrading to amazon prime free shipping but only being able to order 1/3 of the stuff from the website and 3/4 of that you don't really want but have to buy and use.

RECOVERY:

Gone are the days of having to drop your weights at the end of a session and drink your protein shake and packet of skittles because you have 10minutes before you lose all your progress, you now have a 4hour window that slowly drops off for the next 24hrs, so that anabolic window doesn't really matter anymore, but hey if you want them skittles, as long as you are controlling your calorie.... Enjoy!!

Unless you are training twice a day, you don't need to worry about carbohydrate timing, or any timing really, as long as you're hitting your dietary needs over the day then you're probably going to do just fine, it might not be optimal, but if you want to be optimal then this book really isn't for, you need a team of geneticists, dietitians, doctors, physiotherapists, biomechanicians, psychologists, sport scientists, urologists, haematologists all these people will make you optimal so either get your wallet/purse out and get spending or join an Olympic team - nice and easy right? NOPE! so please stop searching trying to get so specific and search for something you like, you can be consistent at and that will get you results, because that will be your optimal, experiment and have fun with!

Slight tangent then but these things have to be said sometimes.

So just to summarise recovery, if your training twice a day or your workouts are absolutely brutal, I'm talking going to absolute failure not perceived failure

on every set then carb timing will matter for you but if you train 3 or 4 times a week and it's for hour or less then have some carbs whenever you want, made from whatever you want, just keep in mind your health!

Common Myths:

Carbs make you fat - NO, carbs do not make you fat, A calorie surplus makes you fat! there is a process called de novo lipogenesis which is responsible for turning carbs into fatty adipose tissue (in very simplified terms) and that will only turn approximately 3% of carbs eaten into free fatty acids (NOTE: free and not stored) BUT that doesn't matter at all if you are in a calorie deficit or maintenance levels as that fatty acid will just be used to keep the equilibrium in the body.

Carbs will give me an Insulin spike -
Yeah it will, but insulin is spiked when you eat protein in-fact the biggest spikes can be seen when you eat whey protein, insulin isn't a bad thing, it's a master hormone which has great anabolic (muscle building) effects and also great fat burning properties, don't be scared of insulin, it's amazing!

Carbs stop you losing weight - No calories stop you losing weight, you can lose weight on eating just table sugar, is that healthy? nope! but would you lose WEIGHT yes, because you're in a calorie deficit but I 1000% am NOT recommending you try it as its absolutely ridiculous and you could get very ill but

then again you would go into a greater calorie deficit thus greater weight loss!

Carbs cause inflammation – yes and no, yes carbs can cause inflammation if your allergic to whatever is in it, for example lactose, yeah you will cause inflammation because your body will try and destroy/get rid of that trigger as soon as possible, it's part of your immune system, and chronic inflammation is very dangerous it's been linked with all kinds of stuff but if you aren't allergic to anything and aren't in a caloric surplus(getting fat) then no you probably don't have anything to worry about, but if you're worried about it, eliminate all carb sources and reintroduce them 1 by 1 and if you get an adverse effect from a source then leave it out your diet and speak to your doctor.

Fruit is full of sugar and sugar causes cancer – NO NO NO!!!! no..... as you should now have learnt everything gets turned into the same stuff, fruit is delicious and full of vitamins so eat the fruit, just be aware of the CALORIES in fruit

All carbs get turned into the same stuff anyway so who cares – Yes, yes, they do however, quality still counts organic is king! you need vitamins and minerals to live and be healthy! So, have a variety of non-starchy veg, like spinach, kale, broccoli, beetroot, asparagus etc at every meal and some fruit, and then whatever calories are left then and only then you get to have a treat, but your health HAS to be your priority!

Carbs after 6pm - I don't know who came up with this but it's ridiculous, they say that carbs after 6pm make you fat because you aren't moving so they get stored as fat, this is just not true, carbs at night will make you sleep better so the day after everything will be running on 100% because you have had the chance to fully recover, also the main point is your body doesn't just stop working when you're asleep, the carbs would be metabolised and used to repair/grow/replenish glycogen stores. Carbs aren't special in any way in-terms of calories they follow the same laws as other calories.

THE END



THANK YOU SO MUCH FOR READING THIS, I REALLY HOPE YOU HAVE LEARNT SOMETHING AND FEEL CONFIDENT IN EATING CARBS AND UNDERSTANDING THEIR USE AS A FUEL, PLEASE USE MY LINKS ABOVE TO CONTACT ME IF YOU HAVE ANY QUESTIONS, I'M ALWAYS HAPPY TO OFFER MY ADVICE OR ANSWER ANY QUESTIONS!

THANK YOU SO MUCH AGAIN

**BEST WISHES
DAN GRIMES**

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