

# GARY FETTKE

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ORTHOPAEDIC SURGEON

# THE NEW JOINT

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## Fructose Metabolism and Obesity and Modern Disease plus .....

Fructose is fruit sugar and is one half of the 'toxic' material we call sugar.

From an evolutionary and survival aspect, fructose metabolism is very useful. In times of plenty when fruit was seasonally available (late summer) we could eat as much fruit (fructose) as we could find, it would keep us hungry, keep us eating and then conveniently metabolise it into fat for the leaner winter months.

The trouble nowadays is that fruit, and worse, sugar and high fructose corn syrup are available all year round. The latter 2 have been added to nearly everything we eat - and we love the sweet taste. We are designed to seek the 'sugar hit' all the time. Unfortunately we then directly store it as fat – every day of the week!

Fructose intake has become an increasing component of the Western diet over the last 100 years and with it the increasing problem of obesity and a raft of diseases.

It is nearly impossible to avoid sugar in your diet but with a little effort you can avoid the majority of fructose intake. With that decrease you will start avoiding the 'sugar bounce' throughout the day, not feel hungry and start controlling your diet and then your weight. Importantly, you will stop taking in unnecessary calories.

### Sources of Fructose

Sugar - 50% Fructose and 50% Glucose (ALL sugars including honey).

Whole Fruit - large quantities but generally with fibre which slows uptake.

High Fructose Corn Syrup (HFCS) - 55% Fructose and 45% Glucose. Used largely in North America as cheaper to produce.

### Metabolism Summary

Fructose is selectively taken up by the gut and there are almost limitless proteins (GLUT 5) to allow it. These proteins are produced on an increasing rate depending on how long the fructose is made available. There appears to be no negative feedback. It is then metabolised by the liver in to free fatty acids which then go on to fat storage. Along the way it creates 'small' LDL (Low Density Lipoproteins) Cholesterol particles which are the harmful ones that get in to the blood vessel walls and cause atherosclerosis , increasing the rates of Cardiovascular Disease (CVD), Strokes and Dementia (Alzheimer's).

Normal carbohydrate ingestion stimulates the secretion of insulin (immediate) and then leptin from fat cells (few hours to days) which takes away the hunger sensation and keeps it at bay. High levels of circulating free fatty acids appear to block the action of insulin and leptin in particular. This means you stay hungry despite the calories coming in.

There is a very strong association between fructose intake – obesity, Type 2 Diabetes, hypertension, some common cancers as well as arthritis. Fructose consumption in the levels taken today is implicated in decreasing immunity and increasing anxiety as well as depression. **Fructose in the doses we are ingesting in current society is toxic!**

### Food

Once you exclude fructose then EAT ONLY WHEN YOU ARE HUNGRY and eat only until you have had enough to be satisfied.

You still need to watch the overall calories (kilojoules-kJ) taken in but now you will not be taking in the unnecessary ones. Try [www.myfitnesspal.com](http://www.myfitnesspal.com) or phone app Myfitnesspal – both free and easy to use. Otherwise get a calorie counter book.

Have the majority of your calories at the beginning of each day - then you can burn them off. Have a good breakfast, lighter lunch, and very light dinner.

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A large glass of WATER 30 minutes before each meal will distend the stomach so you will feel less hungry by the actual meal time. Having a GLASS OF MILK at the same time will give you enough glucose to kick in the insulin effect, even before you start the meal.

Next time you're hungry, have a large glass of water. A lot of times when you are thirsty, the brain registers that as hunger. Chew each mouthful – take your time to eat.

## GOOD FOODS – No /Very Low Fructose Foods

Meat, poultry and fish

Vegetables have all the nutrients of fruit.

Nuts

Milk and dairy products (Flavoured milk products have sugar added!)

Eggs

Grain Bread, grain products and brown rice – keep the portions small on carbs.

Beer has no fructose (but still has calories)

Wine is actually low in Fructose but like beer has a lot of calories and the alcohol has an effect on the liver. Red wine is about 0.3% and white wine 0.6 - 1.2% depending on its sweetness.

These foods mean calories ingested equal calories recognised by the hunger control system. Have as much food as required to take away the hunger but not more. You still need to count the overall caloric intake.

## THE NO FRUCTOSE CONCEPT

**DO NOT EAT OR DRINK SUGAR  
CUT DOWN THE PORTION SIZES  
EAT ONLY WHEN YOU ARE HUNGRY**

NO DRIED FRUIT

NO FRUIT JUICE

NO SOFT DRINK or FLAVOURED MILK

NO CHOCOLATE

NO LOLLIES, JAM, CAKE OR ICE CREAM

NO SAUCES

IF IT TASTES SWEET – AVOID IT!

Limit yourself to a maximum of 1 serving of fresh local seasonal fruit. It still has fibre content and slows the uptake of fructose.

### How to tell if fructose is in the food – Check the label.

If it has sugar in it then that sugar is at least 50% fructose (unless it is a milk product). This includes all honey. Natural sugar is still fructose. There is no difference between white, raw, brown and caster sugar.

Fructose in the product means calories ingested equal calories NOT recognised by the hunger control system and these go through to fat production.

Very quickly you will lose the ups and downs of hunger. If you are desperate for a sweet hit, try the diet drinks (for a short time) or a glass of milk as needed and keep the water intake up.

If fructose is part of your food intake now then you will be feeling hungry despite taking in calories. There is a simple turnaround to easy weight control by elimination or at least limiting your fructose intake to less than 10 grams per day.

1 teaspoon sugar weighs 4 grams => 2 grams fructose.

If a product states it has 10 grams sugar per 100 grams food then that is 5 grams of fructose. Start calculating.

This summary just touches on the subject.

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There is a lot more to read. Try some of the following.

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You Tube 'Sugar: The Bitter Truth' by Dr Robert Lustig  
'Sweet Poison' and 'Sweet Poison Quit Plan' by David Gillespie.  
'I Quit Sugar' by Sarah Wilson. Lots of 'quitting' tips and recipes.  
Try [www.myfitnesspal.com](http://www.myfitnesspal.com) or phone app 'My Fitness Pal'.  
Try the phone app 'Food Switch' for better options whilst you shop.

If you lose weight with this concept, then please donate \$10 per kg lost to a charity of your choice ☺

## What about Fats and Oils?

To address the blood vessel wall inflammation in every part of your body, then in addition to cutting back on Fructose -  
Minimise Polyunsaturated Fats and Oils  
Change from the Margarine, Canola, Sunflower, Vegetable and Seed Oils.  
Better to have Butter, Olive or Coconut Oil, and Lard.  
Really look hard at those labels. Virtually all Food Products use Seed Oils in their production.  
You still need to watch the calories!

## What about Exercise?

Diet is more important than exercise to lose weight. Simple as that. You cannot outrun a bad diet!

To burn off calories with exercise you need to do a lot of activity to get through a small amount of calories. The big trick of losing weight is probably 90% taking in less fuel and 10% doing more activity. Exercise is an aid and has some other health benefits but is not going to be the big driver of weight loss.

Just keep moving – walk, shuffle, jiggle those legs. That's my trick. Doing bursts of intense exercise can help but often hurts. There is benefit to building up some muscle and aerobic fitness for long term health – but it is not a quick fix for weight loss. 30 minutes of aerobic activity per day minimum.

## What about Refined Flours and Fibre?

The refined flours are a big part of the overall issue and are worth considering as you progress away from Sugar. The more processed the product, the less nutrient value, the lower fibre and in the case of refined flours they have a higher glycaemic index and therefore insulin response.  
Fibre in whole food tends to slow the absorption of food, makes you feel 'full' and has gut flora benefits.  
I have moved towards the whole grain options in bread and brown rice. Still try and keep the portions low.

Good luck and don't be afraid to ask questions.

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