



DR PAUL CLAYTON'S

Health Newsletter

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Diet and exercise

The latest on the
'Fat Battle'

Diet and exercise – the latest on the 'Fat Battle'

Do you remember the arguments that raged in the media through the '70s and '80s, about the relative merits (and dangers) of butter vs margarine? First one lot of manufacturers rode into the lists and then another, in a Tweedledum/Tweedledee battle that left us all bored to tears about the issue, and paranoid about dietary fats in general.

That fat battle, together with increasing concerns about overweight, led to a proliferation of reduced fat and zero-fat products, ranging from yoghurts and confectionery to all kinds of snack foods. But what was the **fat** replaced with? Often enough, with **sugar** – just look at what's in a 'low fat' fruit yoghurt. And low fat does not always equal low calorie, or healthier. So what about low carbs?

Although low carb diets such as Atkins arrived in the UK in the '70s, they didn't really take off until the '80s and '90s. They were poorly designed and not very effective, as British Heart Foundation (see below) and other data reveal. Moreover, there was convincing evidence that over time they increased the risk of serious adverse health conditions from kidney damage to colon cancer. Later, healthier versions of these diets emerged which replaced digestible carbs with fermentable carbs (basically switching from grains to legumes), but the gut takes time to adapt to this kind of food and the prevailing winds drove many back to their previous, unhealthy diets.

The bottom line is that these diets and dietary changes didn't work. Ever since the '60s, Britain plc has continued to put on weight. Men gained an average of 17lbs in less than a generation (1986 to 2000), and women put on 12lbs over the same period (BHF '10). The data showed that we were eating more – but critically, at the same time, we were exercising less. As our real economy deflated, we inflated. But now, in every sense, we need to tighten our belts. Leaner and meaner times lie ahead, and while they will take some getting used to, they will do us all good.

We should all be taking more exercise, for a start. We should be cutting down on our calorie intakes too – but where should we cut? Especially now that we know that some fats like omega-3 and MCTs (medium-chain triglycerides) are good for us ... It is becoming clearer now that for many reasons, the calories we should be cutting are those in **sugars** and **refined, digestible carbohydrates**.

In this very important newsletter I discuss the two linked issues of calories and exercise in detail.

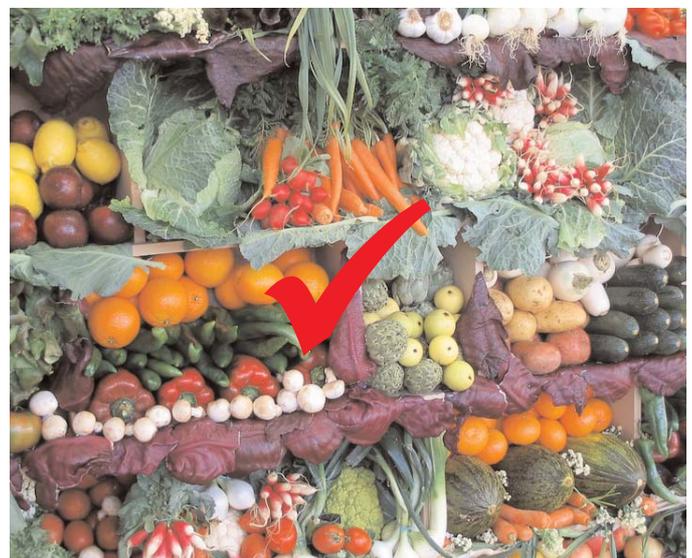
The Paul Clayton Newsletter describes developments in the new field of pharmaco-nutrition, where nature and science are combined to offer non-drug solutions to degenerative disease. The Newsletters are intended to increase knowledge and awareness of health issues and are for information only. No health claims for specific products are made or intended and the information should not be used as a substitute for medical advice.

Death to carbs!

Some interesting research papers show that contrary to the advice of diabetes associations (which are mainly funded by drug companies and which therefore have deeply conflicting loyalties), the best way to reduce the risk of pre-diabetes (Metabolic Syndrome) and type 2 diabetes is to reduce the intake of sugars and refined carbs (ie Volek & Feinman '05, Accurso et al '08).

A low-glycemic diet has also been shown to reduce the risk of complications of diabetes such as macular degeneration, the loss of sight that affects so many diabetics (Kaushik et al '08). A low-glycemic diet lowers the body's production of insulin, and insulin is, among other things, an ageing hormone; diabetes is widely seen as a model of accelerated ageing. A low-carb, low-insulin lifestyle should therefore have other anti-ageing benefits ... and on cue, another excellent review has revealed that the low-glycemic diet protects against a range of diseases including heart disease, gallbladder disease and breast cancer (Barclay et al '08). There is persuasive evidence that improved diet and increased exercise levels confer similar benefits (ie Lutsey et al '07, Knowler et al '05).

Needless to say, these findings have been downplayed by the diabetes industry because they do not constitute a profit opportunity. However, they won't be able to downplay it for much longer, because in the latest chapter of this intriguing story, Cynthia Kenyon, an eminent specialist in ageing at the University of California, has recently (2010 and 2011) published a series of papers which show just how carbs speed up the ageing process.



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Death to carbs!

Inhibiting the insulin/IGF-1 signalling mechanism extends lifespan and delays age-related disease in species throughout the animal kingdom. Professor Kenyon's recent work reveals how this works. She found that turning down the gene that controls insulin switches on another gene which acts like an elixir of life, by enhancing cellular repair processes.

A high-carb, high-glycemic diet forces the body to switch on insulin production; and this in turn turns off the 'elixir' gene. Cellular repair then slows down, and the ageing process speeds up ... (Kenyon '10, Kenyon '11). Conversely, a low-glycemic diet reduces insulin, and thus switches on the elixir gene and boosts the cellular repair mechanisms.

Professor Kenyon's initial work was done in roundworms, where she found that specific genetic manipulation at this insulin/'elixir' gene locus increased life span a staggering 6 times. The genes that control ageing in worms do the same thing in rats and mice and probably in monkeys, and there is evidence that they are active in humans too.

The technical name of the 'elixir' gene which brings all the anti-ageing benefits is DAF16, but it was quickly nicknamed 'Sweet Sixteen' because it turned the worms into teenagers. "It sends out instructions to a whole range of repair and renovation genes," says Professor Kenyon. "The Sweet Sixteen gene also boosts compounds that make sure the skin and muscle-building proteins are working properly, the immune system becomes more active to fight infection and genes that are active in cancer get turned off," she added.

Sugars, and carb-rich foods which break down into sugars in the body, harm us in other, non-genetic ways too. Excessive amounts of sugars in the body cause a kind of molecular damage called glycativ stress, which leads directly to arterial damage, nerve damage and inflammation at sites throughout the body. While a minor degree of glycativ and other types of stress may trigger and enhance repair mechanisms, today's depleted, high-carb diet overloads the body with glycativ and inflammatory stress and drives us towards the grave (ie Bassi et al '02, Bassi et al '05).

In other words, while industry and consumers were agonising over the choice between butter and margarine, it was the high glycemic bread underneath that was killing us all along.

Professor Kenyon has changed her diet as a result of her work with the Sweet Sixteen gene,

as have many other senior academics. Some, such as Professor Stig Bengmark, Emeritus Professor at Lund and University College London, have followed a low carb regime for years; and I can vouch that he looks and is in every sense at least 30 years younger than his actual age.



You won't hear much about this from your GP or nutritionist. After all, it flies in the face of 30 years of health advice to "have a lower fat intake and eat plenty of carbohydrates to keep the body supplied with energy". Received wisdom was hopelessly wrong on this, and it has become clear that official advice has harmed and killed many. It is another black chapter in medico-pharmaceutical history.

The drug companies will inevitably introduce an exciting new range of products designed to target the 'elixir' gene, and these exciting new products will equally inevitably introduce an exciting new range of unexpected adverse effects. Or, you could switch to a low-carb diet.

If you have a sweet tooth, switch from sugar and honey to intensive sweeteners such as **saccharin**, newly declared safe by the EPA; **aspartame**, recently given the definitive all-clear (Magnuson et al '07, Bosetti et al '09); or the new, flavour-enhanced **stevia** products.

If you long for starchy foods, switch from digestible to fermentable carbs. This generally means switching from grains and potatoes to legumes, but there are some other techniques you can use. For example, by cooking, cooling and re-heating foods such as potatoes, you convert the structure of the starch from digestible (bad) to fermentable (good). In this state it no longer adds to blood glucose, and instead develops healthy prebiotic properties.



If you still find yourself craving cake or chips, then – if you must – consume such foods at one meal a day only, and preferably not in the evening. A single burst of insulin won't do as much damage as constant carb snacking, with resultant insulin surges throughout the day.

Which leads us, inevitably, to the other half of the equation – exercise.

Exercised muscles are more insulin-sensitive, which means the body doesn't need to make so much insulin when carbs are consumed. Exercise is always an emotional topic, but there is good news. Some fascinating new work has given us a new insight how to make light work of heavy work, and how to make the work work for you.



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Men - and women - at work

'Lack of activity destroys the good condition of every human being, while movement and methodical physical exercise save it and preserve it.' ~ Plato

Dietary carbohydrates basically provide fuel for exercise, but the excess of carbohydrates in today's diet, combined with too little exercise, is increasingly understood to be a major cause of illness. Many of us are too busy to exercise, or think we are. There are plenty of people who don't like exercise – and for many of us urbanised folks, regular structured physical activity tends to cease after we leave education. It's also the case that we are, thanks to cheap energy and modern technology, the least physically active generation of humans to have slouched around on the face of this planet (Clayton & Rowbotham '09). Luckily, new research indicates that there are ways of enhancing the effects of exercise, so that we should be able to get away with doing less of it. Sound interesting? Then read on

Time and Motion

Research recently carried out at the Catholic University of Leuven, in Belgium, showed that timing is important in determining how healthy your exercise is. Early movers gain a big advantage; it looks very much as if working out before breakfast confers significant health benefits (van Proeyen et al '10). This highly sophisticated trial involved three separate groups, and was designed to see how, in practical terms, we could best start our day.

28 healthy young males were divided into three groups, and studied for a period of 6 weeks. Group A ate a typical high calorie starch-loaded breakfast of 'healthy' breakfast cereals and bread products, and took no exercise. Group B ate the same breakfast and subsequently ran or cycled, with sugar-loaded 'sports drinks' when they got thirsty. Group C exercised in the same way as Group B, but immediately after waking. They drank only water; before heading off to a later, but identical breakfast.

The end-of-trial outcomes showed significant differences. Group A gained an average 6 pounds in weight and developed insulin resistance, the precursor to type 2 diabetes. Group B did better, gaining an average 3 pounds, but they too developed insulin resistance. Group C showed no weight gain, and no insulin resistance.

This study indicates that a high carbohydrate diet increases the risk of developing Type 2 diabetes, even in those who exercise, albeit to a lesser extent. It fits very well with other research that finds that carbohydrate reduction is an effective way of managing insulin resistance and Type 2 diabetes (Accurso et al '05, Volek & Feinman '08). But there is more ...

The Great British Breakfast - eaten BEFORE exercise

The Belgian study also showed that exercising while fasted is a very healthy strategy (van Proeyen et al '11). There are more elements in the fuel / exercise connection which I will return to in a moment, but if working out before breakfast sounds excessively Spartan, there is an alternative to breakfast cereals, many of which are little more than thinly disguised confectionery.

Thanks to a faulty medical model and a massive amount of Big Pharma propaganda, cholesterol was damned and the Great British Breakfast, otherwise known as the Full English, fell out of favour. Today, fewer than one in a hundred work their way through the eggs, sausages and rasher or two of bacon that I was raised on. But now that the cholesterol myth has been debunked (ie Taylor et al '11), it is high time to re-evaluate and rehabilitate the breakfast

that made Britain great.

Whereas a high-carb (and therefore high-glycemic) meal suppresses the muscle-building and conditioning effects of exercise (ie Miller et al '02), a University of Michigan group has just found that a high protein 'meal' taken before exercise has the opposite effect (Hackney et al '10). They showed that 40 grams of whey protein increased resting metabolic rate (ie calorie burning) for a full 24 hours after exercise, and triggered other metabolic changes that would be expected to increase muscle mass.

Whey protein is an acquired taste, and while in the USA there are many body builders and health nuts who consume nothing but pills and powders, I would not recommend this approach to anyone interested in food. The Full English provides a tasty alternative, being



crammed with high quality proteins which include all the key amino acids. I would only stipulate that you avoid toast, jam and cereals, and if you want sweetened coffee or tea, use an intense sweetener.

My own personal experience of this approach is that it is very effective. Many years ago when I was still at school, I was a rower and rugby player but too slim (OK, scrawny) to be more than a second stringer. In the '60s, body building products tasted foul and were hugely expensive, so I made my own by blending powdered milk with apple juice and saccharin. It was drinkable, just. I knew that growth hormone peaked during sleep, so I would work out last thing at night and then knock back a blender-full before retiring. I put on 20 pounds of muscle in a three-month period, and made the first teams.

What to eat AFTER exercise

New science shows that it's a little more complicated than that, because what you eat in the two hours or so after exercise also turns out to be important. Too much carbohydrate after exercise blocks the muscle-building/calorie burning process, because it down-regulates insulin sensitivity. This means that the post-exercise meal should be **low carb**, which enhances insulin sensitivity (Newsom et al '10).

It should also be **protein-rich**, because the amino acids in protein-rich foods assist muscle building by activating the key anabolic switch, mTOR (mammalian target of rapamycin). Amino acids cannot, of course, build muscle on their own. To achieve that, they must be accompanied by the hormones IGF-1 and a modest amount of insulin, and by muscle-loading exercise. Exercise boosts IGF-1, so combining exercise with a high-protein, low carb meal will, by enhancing insulin sensitivity, help you tone or bulk up.

I will touch on just two more related topics before we leave exercise behind; namely how to exercise most effectively, and what supplements enhance the effects of exercise.

The Peak 8 Regime

The **Peak 8** regime is so-called because it involves **8** bouts of high-intensity exercise which raise heart rate to peak anaerobic threshold for 30 seconds. You don't need gym equipment as you can easily perform this by walking or running on flat ground and the pattern is:

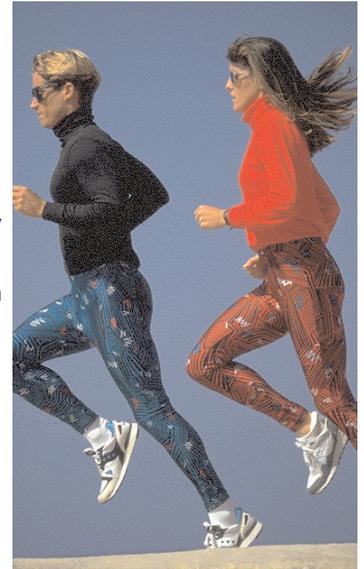
1. Warm up for three minutes.
2. Exercise as hard and fast as you can for 30 seconds. (You should feel like you couldn't possibly go on even another few seconds.)
3. Recover for 90 seconds.
4. Repeat the high intensity exercise and recovery combination **7** more times.

You know you're doing it right when you're exerting yourself to the point of typically gasping for breath, after a short burst of activity.

Whatever activity you choose, by the end of each 30-second period you will want to reach these 'markers':

- a. It will be relatively hard to breathe and talk because you are in oxygen deficit.
- b. You will start to sweat profusely. Typically this occurs in the second or third repetition.
- c. Your body temperature will rise.
- d. Lactic acid increases and you will feel a muscle 'burn'
- e. As with any exercise, drink plenty of water in the recovery periods.

The entire routine lasts no more than 20 minutes; and appears to be highly effective in triggering growth hormone release (Godfrey et al '03). Add this to the diet tips described above, and finally, consider Fenugreek.



Fenugreek

One proprietary extract of fenugreek, called Testofen, has just been through some very interesting trials. Not all of these have been published, but I have read what is in the literature and have also had access to the pre-published papers that are currently undergoing review. Testofen is a standardised extract of a specific strain of fenugreek, grown in carefully controlled conditions. The extract is standardised to a high content (10% by weight) of a group of saponins called furostanol glycosides.



Due to their structure, one would expect the furostanol saponins in Testofen to interact preferentially with testosterone metabolism, and indeed they appear to do so.

Testosterone in the blood is in two forms. A small amount – about 2% of total testosterone – is “free” (this is the biologically active form), while the other

98% is bound to a protein called Sex Hormone Binding Globulin (SHBG). Bound testosterone is inert. One published paper (Aswar et al '10) showed that Testofen has anabolic and androgenic properties, ie. it mimics the effects of testosterone. When the researchers examined their animal model more closely, they found that total testosterone levels were unchanged. The most likely explanation for this was that furostanol was displacing bound testosterone from SHBG, causing an increase in the free / bound ratio and therefore making the testosterone more active.

Follow-up clinical research confirmed this, showing that Testofen increases free testosterone levels, thereby boosting muscle mass, physical performance (Wankhede et al, in press) and libido (Steels et al, in press). As testosterone is critically important to those who wish to build and tone muscle, this evidence persuades me that Testofen could usefully be added to the diet and exercise regime.

We started with a quote from Plato. Let us end with one from that latter-day philosopher, the American comedian Joey Adams:

“If it weren't for the fact that the TV set and the refrigerator are so far apart, some of us wouldn't get any exercise at all.”

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