



# PROFESSOR TRIM'S WAISTLINE

THE PROFESSOR'S FEATURES

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## Could obesity be in the air...

*...or the water? If even animals are getting fatter, does that mean it's not down to food and exercise?*



Just when you thought it was safe to stop pigging out and start exercising, comes a blow from left field: The finding by a group of highly respected obesity researchers that it's not just humans, but a number of other different species of mammals that have been getting fat in the last 50 years. This has led to the suggestion that obesity may be caused by a little more than just too much food and too little exercise – it could be in the air, or the water.

Now regular readers of this esteemed publication will be aware that the Professor has advocated a 'big picture' view of how we develop obesity – that it's the environment stupid, not just an individual's will-power. But this recent finding, which has to be taken seriously because of the quality of the researchers and publication source (*Proceedings of the Royal Society of Biology*), has really put the cat (and the dogs and monkeys) amongst the pigeons.

The researchers took 24 different samples of mammals from a range of different sources, where records of body weight had been kept over time. Some of these were feral (as in rats caught in New York streets), and others from laboratory testing (mice, rats and monkeys). They found that when comparing mammals that were aged at an equivalent to human middle age, 11 of the 24 samples had increased their average weight over the last 50 years. In other words, other animals,

and not just humans, seem to be in the middle of an obesity epidemic.

However, before you throw away the eating plan and cut-off your gym membership, walk slowly with the Professor through this and some similar recent studies to see how the findings stack up.

## Media and 'real' reports

In the first place, it's important to differentiate between media reports of these studies and the researchers own interpretations. While media reports hint at a new 'obesity virus' and hence nothing you can do to stop putting on weight, the scientists behind the finding are more cautious.

In the fat mammals study (Ref 1) for example, the researchers conclude: "... *our findings in ...animals add to the increasing evidence that other potential risk factors, which may work through diet and physical activity or through other means (e.g. nutrient-partitioning, metabolic efficiency) should be incorporated into public health research and environmental medicine.* So food and inactivity haven't been ruled out – just the way in which this is obtained.

The researchers also suggest that multiple answers may be needed to explain their findings: Feral rats for example have gotten fatter over time because they have more fatty human waste to fatten up on; domestic dogs and cats have undoubtedly been over-pampered by their equally pampered human masters (incidentally, the first obesity drug for dogs has just been released in the US – that's the start of bigger things we predict!).

The hardest group to explain are the laboratory animals that have been housed under similar conditions for many years, and have had free access to food. Surely, one would suppose, they would be eating and moving the same as their earlier forebears?

Perhaps, but changes in animal husbandry have meant that

laboratories are now much cleaner places than they have been in the past. As a result, micro-organisms with which animals (and humans) have evolved (often called our 'little friends') have been knocked out and the implications of this on body weight are not clear.

## Could it be a virus?

This suggestion has been around since the mid 1990s when it was found that a virus since called AD36 seemed to be more common in fat people. When this was isolated and injected into animals, it had an effect on body weight. Unfortunately, for ethical reasons, it can't be tested on humans.

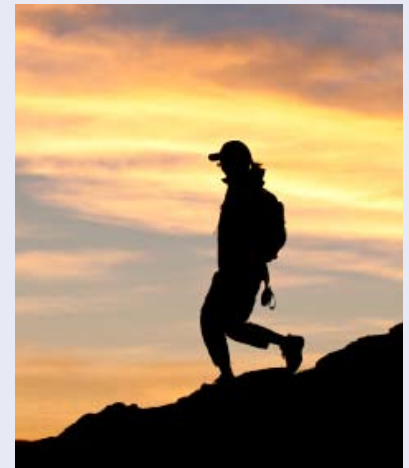
The virus idea rears its head unusually frequently (probably because many people would love to think that it's not their behaviour that's the cause of the problem). Just two years ago, the *New England Journal of Medicine* reported a complex mathematical modelling study that showed that obesity is related to the social network one inhabits, irrespective of how geographically widespread this may be (somehow a virus was thought to jump through telephone lines!)

Advertisers on the other hand, have a simple explanation for this – it's called 'social proof'. Social proof means if somebody whom I admire does something (ie. gets fat), it's OK for me to do the same – no need for a viral explanation.

In summary, while it's interesting and engages inquisitive minds to come up with fanciful reasons, obesity still boils down to the same thing – too many kilojoules in and not enough out. It's how this happens that is the interesting part.

### FOR REFERENCE:

1. Kilimetiidis YC and others. *Canaries in the coal mine: a cross-species analysis of the plurality of obesity epidemics. Proceedings of the Royal Society Biology.* Published online, 24 November 2010.



## JOIN THE PROFESSOR'S BID TO WALK THE COAST OF NEW SOUTH WALES – AND SAVE THE WORLD

While the second part of this epic proposal may take a little longer than the former, the first part is underway- starting from the Queensland border. For a donation towards carbon credits that will go solely to the Norfolk Island Carbon and Health Evaluation (NICHE) program investigating obesity and carbon reduction, you can join in at any stage for a 1-3 day section in your area. For upcoming stages and dates see [www.niche.nlk.nf](http://www.niche.nlk.nf) (active from mid January 2011). This is a great way to experience one of the most spectacular 1800km stretches of coastline in the world – before the developers and governments trash it – and contribute to a world first health and environmental research project. Check the web-site for details and progress – and be there, or be round!

2. Christakis NA, Fowler JH. The spread of obesity in a large social network over 32 years. *New England Journal of Medicine* 2007, 357(4):370-9.



**A TIME FOR CHANGE**  
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*The following are some highlights from the presentations at the Australian and New Zealand Obesity Society meeting in Sydney, October 2010.*

## Ketone bodies are now a good sign

Long-term obesity specialist Professor Joe Poietto from Melbourne's Austin Hospital has shown scientifically, what body-builders have known for years – that ketone bodies from the metabolism of fat can help reduce hunger.

Ketones arise in the early stages of a low carbohydrate diet because of the lack of sugars for energy, ketones being the only alternative for energy into the brain at this stage. If done correctly, a low energy diet, induced by meal replacements and low carbohydrate intake can lead to a quick weight loss, which is now a key goal in weight loss programs (see page 5). But hunger can be a real problem – and difficult to overcome in the first few days.

Dr Priya Simuthran, one of Dr Poietto's students, has demonstrated that ketones block a gut hormone called ghrelin, which is known to stimulate hunger, hence providing a physiological mechanism for their role in short term weight loss. With the proper level of re-feeding after significant weight loss, long-term effects of ketones are not a problem. Short-term hunger can be satiated by increasing protein (but cutting out carbohydrate), hence allowing the build up of ketones and improved weight loss.

## How fat can we get?

This has been the question asked by Dr Helen Walls a Deakin University researcher, who has used recent figures on overweight and obesity to project into the future. Dr Walls claims that on this basis almost one-third of 25-29 year olds, a cohort of whom are of normal weight today, will be obese by 2025. The percentage in the population who are of normal weight will decline from around 41% of the population now to 28% in 2025 and at that time one in three people will be obese! (the current figure is now 1 in 5).

Get out your fat suits folks – because if you're thin, you'll be in the minority and won't have anyone to dance with at parties!

## Race and body shape

Jacqui Hughes, a Torres Strait Islander from Darwin doing her PhD on measuring obesity and chronic disease in remote Aborigines reported on what we all probably knew – that Aborigines in their 'natural' environment in the bush are perfectly healthy, with an even lower level of internal or 'visceral' fat (VAT) than their white counterparts. As soon as they move to urban or regional areas dominated by white food supplies however, their visceral fat rises dramatically and surpasses that of their white counterparts, indicating a greater degree of health risk amongst these people in a white environment.

Ms Hughes has also shown that BMI and some other measures of fat in Aborigines are not valid as they typically have longer legs, a shorter trunk and, in the case of women, smaller hips, giving them a naturally long and lean shape.

## Intermittent dieters may do better

Dr Neil King, an exercise physiologist from the University of Queensland with an interest in the psychology of hunger and appetite and the effects of exercise on this, has shown that individuals given an intermittent reduction of food intake (ie two weeks restricted, followed by two weeks normal food intake), do better in overall weight loss over the long term than those put on a diet with half the restriction, but continuously.

This suggests that the latter type of approach is one that can't be maintained and that individuals get tired of it. On the other hand the intermittent type approach may be more similar to that with which humans have evolved.

## THE PROFESSOR'S TIPS FOR STAYING STABLE – AT LEAST WEIGHTWISE – THROUGH THE FESTIVE PERIOD

### **Use the 'stop light' principle**

If you accidentally drive through a red light, it shouldn't make you want to drive through every subsequent one. In the same way, if you have a bad 'fat' day, it shouldn't be cause for giving up. At the most you'll gain grams over a day, not kilograms, so get over it – and try not to keep driving through stoplights.

### **Eat filling foods**

Foods that reduce hunger are more likely to result in less total food being eaten. In general, high protein foods and high fibre foods fit this bill. The best types of protein are dairy foods (low fat, of course) consisting of whey and seafoods. Fibre is high in fruits and vegetables, but if you have a thing against these, try a fibre supplement like psyllium spread throughout the day.

### **Make up for indulgences**

A long-standing GutBuster principle was to try to walk a kilometer for every beer/alcoholic drink you consume. And despite the resounding boasts, no-one has yet had to walk from Sydney to Perth. At least make up for too much eating with a little more physical activity.

### **Plan ahead**

Without forward planning (preferably the day before), things are likely to just 'happen' – and fat is likely to just 'happen' not long after that. You'll plan your holiday, so why not your 'lollyday' as well?

### **Use a meal replacement – before a meal!**

Today's meal replacements, generally in a milk-shake like form, are designed to reduce genuine feelings of hunger. While this might not have an impact on what you take in if there is a psychological reason for this, it should help to stop you pigging out where genuine hunger is the driver before you go out to indulge.

### **Never go out hungry**

This is a bit like being over-sexed when you were on the prowl as a young man. If this is your physical state, you're bound to blow it – so to speak. Going to a feast hungry is like jumping overboard with an anchor chain attached.

### **Have small, frequent meals**

In line with the 'never-go-hungry' principle, it's a good idea to never go longer than about 4 hours without something (healthy) to eat. This will mean you don't get ravenous and pig out as soon as the trough is full – which it always is at this time of year.

### **Become friends with a mild feeling of hunger**

Having said the above, a mild level of hunger (say a 4 on scale of 1-8) is not such a bad thing. As you might have noticed, you're always likely to be more energized just before a big meal than just after, so take advantage of this and make a mild feeling of hunger your friend. That way you'll also learn to tolerate this better.

## The Professor's Gender Test

Without the benefit of the French language it's often hard to tell whether things are male or female. The Professor gives some examples here:

**Freezer bags:** Male, because they hold everything in, but you can see right through them.

**Copiers:** Female, because once turned off, it takes a while to warm them up again. It's an effective reproductive device if the right buttons are pushed, but can wreak havoc if the wrong buttons are pushed.

**Tyres:** Male, because they go bald and are often over-inflated.

**Hot air balloon:** Male, because to get it to go anywhere, you have to light a fire under it, and of course, there's the hot air part.

**Sponges:** Female because they're soft, squeezable and retain water.

**Web page:** Female, because it's always getting hit on.

**Subway:** Male, because it uses the same old lines to pick people up.

**Hourglass:** Female, because over time, the weight shifts to the bottom.

**Hammer:** Male, because it hasn't changed much over the last 500 years but it's handy to have around.

**Remote control:** Female. It gives a man pleasure, he'd be lost without it, and while he doesn't always know the right buttons to push, he keeps trying to find the right one.

### Interval training and weight loss

Iranian Veterinary scientist, Dr Meyrad Hadami who is completing a PhD in exercise science at the University of NSW (just to round off his qualifications), is the main researcher behind the notion of intermittent bursts of interval training for weight loss.



A University of NSW team hit the headlines some time ago in suggesting that a regime on an exercise bike involving 8 seconds of intense peddling at 60% of capacity followed by 12 seconds low paced recovery, over 20 minutes, leads to greater fat loss than other combinations of intermittent exercise. Despite the de-motivational aspects of this in a big person, it may be of particular use in helping individuals 'break through' a plateau in weight loss, which is otherwise hard to break. Watch this space for more about this.

### Is it all in the brain anyway?

Dr Zane Andrews, from Monash University, spelt out the complexity of the brain in regulating what we eat, in a sophisticated presentation. Dr Andrews studies the effect

of hormones in the gut on hormones in the brain and how these influence hunger and eating levels. He claims these physiological mechanisms are so powerful in influencing an individual's need to eat that they are unlikely to be overcome by dieting or voluntary activities.

A receptor in the brain labelled NPY/AgRP is so important that if the gene for this is 'ablated' (knocked out) in rats, the animal dies. On the other hand, if the receptors for another hormone (POMC) are ablated, the animal becomes obese (but stays alive). Dr Andrews suggests that ideal weight is a fine balance between these receptors and hormones such as ghrelin and leptin that are made in the body, but send signals to the brain.

These systems are so complicated however that, like the complicated engineering on an aeroplane, there are failsafe mechanisms if something goes wrong. (Indeed the Professor's mechanisms started working at this point when his brain began to hurt from the complexity of all this). Take home message: a hormone like ghrelin, which makes us hungry, can be increased by a high fat diet – so avoid same with a passion!

### More Chinese diabetes even than predicted

Professor Sir Peter Gluckman, New Zealand's chief scientist claimed that China has revised its estimate of the number of type 2 diabetics from 50 million to 100 million – with a stroke of the insulin pen. The rate of growth in type 2 diabetes in China is running roughly similar to the rate of economic growth – at around about 10%. It makes you wonder which one is going to win.

### Rapid may be better than gradual weight loss

University of Melbourne PhD student Katrina Purcell, received world-wide attention at the International Obesity Conference in Stockholm in July when she showed that a rapid weight loss following an energy restriction program works better than a gradual loss. Ms Purcell followed that up in Sydney with more data to show that a weight loss of 1.5kg per week, over nine months through the use of meal replacements and other techniques, actually resulted in greater compliance and benefit than a more gradual 0.5kg weight loss per week.

The rapid weight loss group lost 13.6% of their weight compared to only 7% in the gradual group and there were far fewer drop-outs. This seems to put the final sealer on

suggestions going back to the 1990s that a rapid weight loss should not be encouraged because it leads to a greater weight regain over the longer term. A rapid early loss seems to work better because it has a greater impact on motivation to want to keep going.

### Surgery: The more we know, the less we know

Melbourne obesity expert Dr John Dixon, one of the most renowned researchers in obesity surgery in the world admits he is baffled by how surgery like laproscopic banding, for which Australian surgeons have been pioneers, works. “We know it’s not because it restricts food coming in,” he says, “and that it probably has a lot to do with appetitive hormones that send signals to the brain to say ‘I’m full – no hunger’. But we don’t know how this works, because all the hormones that we’ve measured indicate that there should still be hunger.” The tactile stimulation of the band on the stomach seems to have some effect, but just what is not quite clear.

### Atherosclerosis in kids

Professor David Celemaiija is one of the world’s leading atheroma specialists, with a vast array of experience in understanding the development and measurement of atherosclerosis – or the process leading to the blockage of arteries. More recently he has been looking at the development of this in children as young as nine years old, and found that early build ups do occur, as a result of incorrect diet.

More stunningly however, he has gone back even further and shown that it can develop in the foetus of a mother who has an habitual diet high in cholesterol. The good news is that the process may be reversible later in life, but Dr Celemaiije suggests we might need to start screening children early in life to at least get families motivated to change their lifestyles for the good of their offspring.

Dr Celemaiije says there are two factors that are important in the arteries: 1) the structure and 2) the function. The first, which shows the thickening of arteries and hence potential for later problems, is measured simply by an ultra-sound process called CMIT (coronary media intima thickness) by simply passing a device over the arteries (mainly the brachial artery in the neck) and recording images on a machine. The second function, is measured by blocking an artery with a blood pressure cuff,

then releasing this and measuring the flow of blood through the artery (called Flow Mediated Dilation).

A healthy artery should dilate by up to 10% quickly to allow the extra flow of blood to take place. The dilation is caused by a chemical called nitrous oxide (NO) produced by the artery wall.

### Soft drinks in children

Adelaide physician and epidemiologist Professor Peter Clifton, who was engaged to carry out a survey of sugared drink consumption in teenagers in South Australia, reported some interesting findings: In the first place the most common sugared drink is fruit juice (drunk regularly by 37% of the sample). Sugar sweetened soft drinks are consumed by 25% of 14-16 year olds who have one and a half cans at a time. Even 2-3 year olds are having such drinks, but surprisingly, there was no difference in consumption between those who were overweight and those of normal weight.

TV viewing appears to be a big influence on soft drink consumption though with 62% of the heavy TV viewers regularly consuming soft drink. If sweetened drinks make up 20% of total energy intake in Australian children, this is an obvious way for parents to help their offspring keep their weight more normal.

### Will the last anti-obesity drug please stand up

Medications for weight loss are becoming less common than a banker’s ethics. From a glut of prospective ‘magic pills’ in the 1990s, we’re now down to a single drug with the sole indication of weight loss – phentermine (duramine). Although it’s been around for over half a century and gone in and out of favour, phentermine has lasted the distance while all around it have gone the way of the Dodo – the last being sibutramine (Reductil) manufactured by Abbott Laboratories, which was withdrawn in October 2010 because of potential heart problems.

Professor Ian Caterson, a long-term clinical trials expert on obesity drugs, claims regulators may be a little heavy-handed in dealing with obesity medications as compared to other types, showing that the problems with Sibutramine appear to be very limited when compared with eg. antibiotics. According to Caterson, all is not lost, the future may be in combining some drugs developed for other purposes, but which seem to have a good weight loss effect when used in combination ie. phentermine and topiramate.

### The psychology of obesity

Although psychology can play a major part in obesity, there has been a notable absence of qualified psychologists working in this field to date. One of these, Sydney clinician, Emma Dove, reinforced the fact that the biggest single psychological component in helping people lose weight and maintain weight loss is self monitoring – of food, physical activity etc. This is particularly so in those who are regarded as ‘restrained eaters’ (those who really hold themselves back even in the presence of tasty food), as these people tend to get even more benefit from the feedback gained from writing down what they do.

Ms Dove also suggested that people should be advised that urges (ie. to eat, drink etc) do usually dissipate over time – particularly if these are related to ‘non-genuine’ hunger) and to try and sit and tolerate urges until the feeling goes away.

### Genes or environment? You decide.

In the final presentation of the conference a debate was conducted between Professor Boyd Swinburn, a known advocate of the effects of the environment on obesity, and Professor Joe Poietto, a known believer in genes as the primary determinant of obesity and sceptic on whether public health approaches can ever help this.

Professor Poietto admitted that his work is based on very obese people, for whom no amount of lifestyle change seems to be effective. Professor Swinburn on the other hand presented mathematical modelling to show that the biggest benefits in decreasing levels of overweight (although perhaps not extreme obesity) in the community are 1) Placing a ban on junk food ads to kids, 2) Creating a tax on junk foods, and 3) A system of ‘traffic light’ labelling on foods (ie. green is healthy, amber OK, red to be avoided).

Although the evidence is overwhelmingly in favour of these tactics in being able to have an effect, Swinburn claims they are being opposed by huge investments in lobbying from the Food Industry. All the more reason for public funding of political campaigns as a weight loss measure!

### Keeping diabetics thin

We know that type 2 diabetes is partly inherited. Whether it is actually manifest in the offspring however, depends on what they do to prevent this (i.e remaining active and having a good diet seems to be able to prevent the

process). Professor Lesley Campbell and her team from the Garvin Institute in Sydney however have shown that this is made more difficult in the offspring of diabetics because of chemicals in the blood (particularly ghrelin), which increase hunger levels and therefore create a greater tendency to over-eat in these people.

The message from this is that those with Type 2 diabetes in the family should be especially conscious of food intake leading to overweight, and should try to keep weight in check by regular exercise, which can help moderate hunger, as well as maintain insulin sensitivity, thus preventing a shift to diabetes.

### Not just mum. Dad could be the problem as well.

Professor Margaret Morris from the university of NSW School of Pharmacology was widely reported in the popular media following her study published in *Nature*, the world’s leading scientific magazine, which showed that female rats who are fat and fed fatty foods in pregnancy have pups that are also fat and crave fatty foods. This is even more so if they are reared in a reduced sized litter (ie. from 12 pups down to 4) and therefore allowed greater access to mother’s fatty milk.

In an accompanying paper, professor Morris’ team showed for the first time that father’s weight and lifestyle habits can also affect the body weight of their children – at least in rats! Fat fathers tend to somehow change the gene expression in the offspring – even if the mum is of a normal weight. If this is proven in humans, look-out Homer Simpson and Peter Griffin!

### Obesity surgery for kids?

Professor Louise Bauer, who, as a paediatrician, has specialised in obesity in children, is one member of a surgical task force that has come up with guidelines for obesity surgery in children. The guidelines include the following:

- the cut-off age for surgery should be 15 years;
- children must have a BMI of >40 or >35 with other dangerous co-morbidities to be eligible;
- they must also have attempted to lose weight after at least 6 months involvement in a multi-disciplinary weight loss program;
- they should have no untreated or untreatable psychiatric disorder, and
- genetic problems like Prader-Willy syndrome patients should be excluded.



## TRIM'S TABLE TALK

### SEAFOOD CITRUS SALAD

(serves 4)

16 scallops  
 12 green prawns, medium-large  
 spinach leaves (washed and destalked)  
 1 lemon juice  
 2 lime juice  
 sweet chilli sauce  
 2 teaspoons lime rind (finely grated)  
 1 teaspoons lemon rind  
 16 semi drained Roma tomatoes  
 1 avocado, cut into medium size chunks  
 2 teaspoons canola oil  
 100g water chestnuts sliced thinly  
 2tbs shallots  
 1/2 teaspoons ginger powder  
 2tbs coriander chopped roughly, 4 sprigs for decoration

1. Wash lemon and limes
2. Finely grate the rind of the lemon and limes to obtain two teaspoons of lime rind and 1 teaspoon of lemon rind.
3. Add rind, lemon and lime juice, sweet chilli sauce, coriander into a bowel to create the marinade.
4. Wash scallops.
5. De-shell and wash prawns.
6. Place scallops and prawns into the marinade and marinate for 15 minutes.



# The Importance of Sleep

You've probably heard that if you live to 80, you'll spend 27 years of your life sleeping.

But that's probably not true, particularly in this day and age. A more accurate statement might be "...If you live to 80 you'll spend 27 years of your life IN BED.

So bed-time might be no indication of sleep. And it's adequacy of sleep, rather than time spent prostrate that has now been shown to be so important for a healthy life. Here are some dot points to bring this home:

- 17 hours of sleep deprivation is the equivalent on skills loss (eg. driving) of a blood alcohol content of 0.05%; 24 hours to 0.1%;
- Sleep debt can double the chance of injury in shift workers;
- Up to 80% of the population suffer from inadequate sleep at some time; and 30-50% suffer at any give time;
- Sleep deficiency has been related to a range of chronic diseases including type 2 diabetes.

Sleep deprivation is also associated with obesity, although the cause here is not clear. Is it that there is more time to eat and drink if one is awake longer? For a significant proportion of the population however, other causal factors are implied. In certain cases, at the severe end of the scale, specialist advice and treatment is necessary. In less severe cases some simple behavioural tips can be given ie.

- Lose weight: Where sleep apnea causes frequent awakenings, weight loss is likely to be a more permanent solution even than a CPAP device;
- Get a sleep study done: Home devices, such as the 'Flow Whiz' developed by the Woolcock Institute in Sydney, allow for cheap and effective diagnosis;
- Practice effective sleep hygiene: This includes winding down, not exercising for at least one hour before sleep, avoiding stimulants like tea or coffee, and perhaps having a warm bath or shower before retiring;
- Don't overheat in bed. Blankets that can be peeled off individually are more preferable to doonas, under which heat loss is difficult;
- Have a strategy for getting back to sleep: Thought stopping, or replacing thoughts with a 'black screen' in the mind if waking early, can help an individual to get back to sleep.

The words of Bon Jovi: "...I'll live while I'm alive, and sleep when I'm dead," might resonate with many today. Trouble is, this might occur sooner than expected without good quality sleep.

## TRIM'S TUMMY TICKLERS



"... and these brave boys were the only survivors of that terrible day - the Bastille Day Banquet of '44."