

Ride like a caveman

By [Joe Beer](#) | Wednesday, October 10, 2007 11.00pm

It's easy to forget that humans are still, in evolutionary terms, hunter-gatherers. The weekly drive to Tesco, however, isn't quite what evolution had in mind, nor did it plan on high calorie intakes with very little exercise.



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It's no surprise then that obesity and type 2 diabetes are on the rise among western populations. But exercise, like daily commutes, long weekend treks and racing can help keep your body working like a healthy Stone Age man's, as it was designed to.

Thrifty genes

A paper published three years ago (see reference [1]) by two authors who live amid populations where obesity levels are upwards of 25 per cent throws light on how we need to beat the chronic disease that is spreading dangerously fast through the western world. In 1990, only four states in the USA had obesity rates above 20 per cent. 15 years later only four are below 20 per cent and three have populations where over a third is obese [2].

The UK is not much better; since 1980 levels of obesity have increased four fold, with a serious rise in child obesity [3]. This paints a dire picture of what the World Health Organisation calls 'globesity', and it seems that if we are to offset the 30 or so health conditions caused by inactivity [1], we must know why exercise is so good for us.

The mismatch between our Stone Age man genes and both the inactivity and abundant food supply of modern societies is the cause of such ill health

Enter 'thrifty genes'... Chakravarthy and Booth [1] suggest it is the mismatch between our Stone Age man genes and both the inactivity and abundant food supply of modern

societies that is the cause of such ill health. This is not surprising; however, the blending of knowledge about metabolic processes during exercise and how these may be controlled by genes thousands of years old is a new slant.

Biology basics

When you exercise you use energy from two stores: glycogen in the muscles and liver, plus fatty acids from within the muscle and stored on the body. This triggers certain enzymes to then use food stuffs you eat to restock these depots.

But few people know that even if you take no food after exercise, your body can still restore some glycogen back into tired muscles. Similarly, you can exercise for several hours without food. Both these mechanisms are required for survival. So, low carbohydrate intake during certain training phases (called the depletion phase in original carb-loading studies) and fasted sessions (no food intake) both work to enhance an already genetically wired survival mechanism.

Ride your genes into action

The human body is designed to exercise. We now must be given daily aerobic tasks to simulate hunter-gatherer activities

FASTED RIDES Early morning rides with no food beforehand and water only (or maybe an electrolyte drink without carbohydrate, eg Nuun) for 30 to 150 minutes.

Advantages: Your body uses the fat droplets stored in the muscle fibres, it regulates blood sugar and stores fuel after the ride efficiently. (After 2 hours, light headedness may impede safety, so take a power gel in case.)

VARIABLE PACED RIDE Throw in harder efforts from 8 second sprints to long, hard hill climbs to use more calories and kickstart your glycogen-lactate engine.

Advantages: This uses and also subsequently stores more glycogen; it's good for getting rid of aggression in a positive manner and it fires up hormonal **events** that low level riding does not trigger. This is a good ride to follow with a high carb meal.

DIETARY RESTRICTION By reducing food (calorie) intake by 10-20 per cent for a short period you can ensure your genes remain thrifty. Though we aren't used to this,

it is well within our capacity and you can continue with modest training.

Advantages: The genes (and the mind) adapt to less food intake, requiring the body to use its long term fat reserves. Do not go below 1,500 calories for extended periods, though, without medical advice and supervision.

On your bike!

Obesity and many chronic health conditions arise when there are metabolic derangements [1] as a result of the metabolic processes, honed for thousands of years, stalling. The thrifty genes need to be brought into action by exercise, or the whole system malfunctions. The human body is designed to exercise. Where once we exercised to seek food (or to avoid becoming a predator's food) we now must be given daily aerobic tasks to simulate such hunter-gatherer activities. Your caveman genes need pushing into action.

The authors suggest the answer to preventing the stall in the feast-famine and activity cycle in modern Western society is by reintroduction of physical activity [1]. Riding at modest levels of 60 to 80 per cent maximum heart rate will use both fats and carbohydrate stores. The fitter you are the more calories you use, so consistency and a long term view really do help make you healthier.

A high mileage rider can still be unhealthy inside if nutrient quality is not given proper attention

If you do various types of riding and vary your diet you can keep genetic pathways working and your body in good condition. Remember that riding is a long term lifestyle choice for a healthier life - exercise does not stop just because you break the hour or complete the Etape.

Ride-eat balance

By riding regularly throughout your life you use the genes handed down by generations of homo sapiens. But food intake and quality still needs to be correctly managed - a high mileage rider can still be unhealthy inside if nutrient quality is not

given proper attention.

As with past generations, we must have times of slightly less food, not always eating the calories that are presented to us. Though the research is very much in its infancy, dietary restriction could in fact extend human lifespan.

Your caveman genes are ready to go riding... what are you waiting for?

REFERENCES [1] Chakravarthy, MV & Booth, FW (2004) Eating, exercise, and thrifty: genotypes: connecting the dots toward an evolutionary understanding of modern chronic diseases. *J Appl Physiol* 96 (1): 3-10

[2] Overweight and obesity: obesity trends: US Obesity Trends 1985-2005. Centers for Disease Control and Prevention. See www.cdc.gov/nccdphp/dnpa/obesity/trend/maps/ (free PowerPoint presentation can be downloaded)

[3] Obesity - third report of session 2003-04. Volume 1. House of Commons Health Committee. See www.parliament.the-stationery-office.co.uk/pa/cm200304/cmselect/cmhealth/23/23.pdf

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