

Fat-burning drug may get you through a marathon

Tom Whipple Science Editor

Marathon runners call it "hitting the wall", the point at which you can go on no longer and your body gives up. To avoid it requires months of endurance training, pounding the streets in all weathers and slowly building up your stamina. Or, you can take a pill and just watch daytime TV.

That is the promise offered by a study into the metabolic processes involved in delivering energy to muscles. It found one particular protein to be crucial and what is more, when a drug was used to activate this protein, it seemed to produce impressive endurance boosts.

Mice given the drug were able to exercise on a treadmill for 270 minutes before experiencing the rodent version of hitting the wall, compared with 160 minutes for those not given a dose.

The scientists, writing in the journal *Cell Metabolism*, believe that by activating the protein, muscles use fat for energy in preference to sugar, and so avoid the precipitous drop in blood sugar that means the brain can no longer work properly.

"Hitting the wall happens when your brain can no longer get enough glucose. At that point, you're toast," said Ronald Evans, director of the Gene Expression Laboratory at the Salk Institute in California. "We previously believed that training improves endurance because it allows the muscles to more effectively burn fat as an energy source."

While the finding might one day help endurance athletes, the scientists involved said they hoped the same mechanism could be harnessed to help humans who are unable to exercise because they are too frail, old or unhealthy.

In the mice, the drug also seemed to induce some of the other benefits usually gained through exercise, such as making them appear less susceptible to diabetes.

"What we illustrate in this paper is that if you want to move the wall, there is more than one way to do so," said Professor Evans.

"The standard method is to train; you will improve a bit with each run. But we've shown improvement can happen without expending the energy that otherwise would be needed to get to this point."