

# Test tells if coma patients will wake up

**Oliver Moody** Science Correspondent

Scientists could predict which patients will regain consciousness after a coma using a new test that measures the “dance” of energy in their heads.

The researchers believe that the brain may “ignite” back into life when it begins to crunch enough sugar to power higher-level responses to the world around it.

The study also offers a rare insight into the nature of awareness itself, suggesting that it depends heavily on a minimum threshold of energy thrumming throughout the brain.

One of the greatest difficulties in

treating people who have suffered severe brain injuries is telling the difference between a vegetative state and minimal consciousness.

Neuroscientists in Denmark and Belgium have now found that they can not only distinguish between these two states, but also more reliably work out which patients are likely to wake up over the next few months.

They used a type of brain scan known as positron emission tomography to measure the flaring of glucose metabolism in 131 patients with “disorders of consciousness” and 28 healthy people. It turned out that when patients were in a vegetative state — properly known as

unresponsive wakefulness syndrome — they were much more likely to recover if the scan detected more than 42 per cent of the energy expected to be seen in a fully functioning brain.

Over the 12 months after the initial tests, more than eight out of ten patients whose energy levels were above this borderline went on to regain consciousness.

“The method is objective and computationally simple and provides easily interpretable results,” the scientists wrote in the journal *Current Biology*.

Johan Stender, a neuroscience researcher at the University of Copenhagen and the paper’s lead author, said

there was a distinct line between awareness and unconsciousness that could be tracked with the scanner. Much, however, remains to be discovered about how this works.

“The discovery of a clear metabolic boundary between the conscious and unconscious states could imply that the brain undergoes a fundamental state change at a certain level of energy turnover, in the sense that consciousness ‘ignites’ as brain activity reaches a certain threshold,” Dr Stender said.

The scans successfully mapped out the awareness of each patient, or the chance of regaining consciousness within a year, in 94 per cent of cases.