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**BBC**

**Pain reduced by changing what you look at**

By Rebecca Morelle Science reporter, BBC News

What you look at can influence how much pain you feel, a study has revealed.

Contrary to many people's compulsion to look away during a painful event such as an injection, scientists found that looking at your body - in this case the hand - reduces the pain experienced.

The team also showed that magnifying the hand to make it appear larger cut pain levels further still.

The study, published in Psychological Science, is shedding light on how the brain processes pain.

The researchers say that gaining a better understanding of this could lead to new treatments.

**Look away?**

The University College London (UCL) and University of Milan-Bicocca research, which was funded by the Biotechnology and Biological Sciences Research Council (BBSRC), was carried out with the help of 18 volunteers.

The scientists applied a heat probe to each participant's hand, gradually increasing the temperature.

As soon as this began to feel painful, the probe was removed and the temperature was recorded.

Patrick Haggard, professor of cognitive neuroscience from UCL, explained: "This gives us a measure of the pain threshold, and it is a safe and reliable way of testing when the brain pathways that underline pain become active."

The scientists then used a set of mirrors to manipulate what the volunteers saw.

The team found that volunteers could tolerate on average 3C more heat when they were looking at their hand in the mirror, compared with when their hand was obscured by a block of wood.

Professor Haggard said: "You always advise children not to look when they are having an injection or a blood sample taken, but we have found that looking at the body is analgesic - just looking at the body reduces pain levels.

"So my advice would be to look at your arm, but try to avoid seeing the needle - if that's "possible. "

**Brain pain**

In another experiment, the researchers used convex mirrors to enlarge the appearance of the participant's hand.

They found that doing so meant the volunteers were able to tolerate higher temperatures.

Conversely, when the team made the volunteers' hands look smaller, their pain threshold decreased.

The studies are helping to show how pain is processed in the brain

The researchers said the fact that pain levels were directly proportional to the size the body was viewed at was helping them to better understand the neurological basis of pain.

Professor Haggard said: "We know quite a lot about the pathways that carry pain signals from the body to the brain, but we know rather less about how the brain processes these signals once they arrive.

"Our interest has been in the relationship between the experience of pain and the representation that your brain makes of your own body.

"And we've shown there is an interesting interaction between the brain's visual networks and the brain's pain networks."

The researchers hope that understanding more about the science underpinning pain could one day help to lead to new treatments for chronic conditions.

Dr Flavia Mancini, lead author of the paper, said: "Psychological therapies for pain usually focus on the source of pain, for example by changing expectations or attention.

"However, thinking beyond the pain stimulus, to our body itself, may lead to novel clinical treatments."

Increasingly there is an interest in what the brain does to pain signals”

End Quote Dr Paul Nandi UCL Hospitals

And doctors say this is vital.

Dr Paul Nandi, a consultant in pain medicine at UCL Hospitals' Pain Management Centre, said: "Pain is an enormous problem in the National Health Service and in society generally.

"We do not have precise figures, but it affects several million people in the UK, and it has a huge impact on quality of life.

"It also produces a huge economic burden - if you look at chronic back pain alone, it is estimated that it costs £16bn per annum.

"But this is still widely under-appreciated, and hasn't received the same attention and resources as other areas perceived as 'exciting' in the medical profession."

However, he said that studies like this could help to drive more research.

Dr Nandi explained: "A lot of research in the past few years has focussed on identifying targets in the nervous systems that can be used for treatments.

"But increasingly there is an interest in what the brain does to pain signals, and I think this will be a very exciting field for research in the next few years."