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How the power of touch reduces pain and even fights disease

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When Jim Coan scanned the brains of married women in pain, he spotted changes that may help to shed light on an age-old mystery. As soon as the women touched the hands of their husbands, there was an instant drop in activity in the areas of the brains involved in fear, danger, and threat. The women, who had been exposed to experimental pain while they were scanned, were calmer and less stressed, and a similar, but smaller, effect was triggered by the touch of strangers.

"It's the first study of the brain's reactions to human touch in a threatening situation, and the first to measure how the brain is involved in the health-enhancing properties of close social relationships," said Dr Coan, a neuroscientist at Virginia University.

Touch, a key component of traditional healing, is being increasingly studied in mainstream medicine, with some trials showing symptom benefits in a number of areas, from asthma and high blood pressure to migraine and childhood diabetes. Other research findings hint that not only does touch lower stress levels, but that it can boost the immune system and halt or slow the progress of disease.

The Touch Research Institute at the University of Miami School of Medicine says it has carried out more than 100 studies into touch and found evidence of significant effects, including faster growth in premature babies, reduced pain, decreased autoimmune disease symptoms, lowered glucose levels in children with diabetes, and improved immune systems in people with cancer.

At the Institute for Postgraduate Dental Education in Sweden, a small trial involving 10 patients with fibromyalgia syndrome found that eight benefited from touch therapy. "The results of the pilot study are so encouraging that they warrant an extended study," said the researchers.

Cincinnati Children's Hospital is one of a number of leading health centres in the US that now uses healing touch therapy. "Research has demonstrated that patients who receive healing touch experience accelerated wound healing and relaxation, pain relief and general comfort," said a spokesman.

According to a Stanford University report, several studies are showing significant benefits in wound healing, pain and anxiety. It says touch therapy may also have positive effects on fracture healing and arthritis. But some studies have failed to find an effect for touch, while others have had mixed results. One review of 11 separate studies found that seven showed a beneficial effect, three showed no effect, and one had a negative effect. Two out of four studies found a significant effect, but the others showed that those who did not get the touch therapy progressed better.

Some believe the power of touch is all down to the placebo effect. "If you touch your partner they feel relaxed, but if someone else touches they may not feel as relaxed," said Professor Edzard Ernst, a professor of complementary medicine at the University of Exeter. "That is very much mind over matter. It has nothing to do with the sensations of being touched, it is the expectation and the context of the intervention, rather than the specific effect of that intervention."

While touch is used extensively for stress and anxiety and in palliative care, research is now increasingly focussing on whether it can impede the progress of a number of diseases, including depression and cancer.

At the Cleveland Clinic, in Cleveland, Ohio, a pilot study has begun involving 120 men with localised prostate cancer, to see whether hand-healing through the complementary therapy reiki affects levels of anxiety and progression of the disease. One of the hopes is that the advance of the disease can be halted or slowed.

And at the University of Iowa, a study is looking at the effects of healing touch on 64 women with advanced cervical cancer. Researchers say the aim is to see whether touch can boost the immune system and improve the body's natural defences against the disease.

While research such as this may suggest beneficial effects, the mechanisms that could be involved are far from clear. One of the most common findings from research, including a study at the Institute of Neurological Sciences in Glasgow, is that touch lowers heart rate and blood pressure. But how? Work at Duke University in Durham, North Carolina, may provide an answer. It has shown that touch and massage can cut levels of stress hormones, which have been implicated in increasing the risk of a number of diseases. Touch may also increase levels of melatonin and of the feel-good hormone, serotonin.

Researchers at Ohio State University have found that psychological stress can increase the blood levels of hormones that then interfere with the delivery of cytokines, key immune system elements, to the site of an injury. The result, they say, is a slowing down of the wound healing process.

They also found that wounds took a day longer to heal when the patient had been involved in an argument with a loved one, and that in married couples who did not get on, wound healing took two days longer. "Wounds in the couples who were hostile healed at only 60 per cent of the rate of couples with low levels of hostility," said Dr Janice Kiecolt-Glaser.

That finding, plus those of Dr Coan, may explain why the touch of a loved one can be therapeutic. But they do not explain why the touch of practitioners and strangers can have a similar effect. At DePauw University in Indiana, Dr Matthew Hertenstein may have found an answer. He has discovered that touch communicates emotions. When people were touched by a stranger they could not see, who had been instructed to try to communicate a particular emotion, they were able to tell the emotional state of the other person with great accuracy.

The findings show that people can communicate several distinct emotions through touch alone, including anger, fear, disgust, love, gratitude, and sympathy. Accuracy rates ranged from 48 per cent to 83 per cent, comparable with those found in studies of emotions shown in faces and voices. "The evidence indicates that humans can communicate several distinct emotions through touch," said Dr Hertenstein. "Our study is the first to provide rigorous evidence showing that humans can reliably signal love, gratitude and sympathy with touch. These findings raise the interesting possibility that touch may convey more positive emotions than the face."

What it suggests, too, is that touch is a much more sophisticated tool than previously thought. It could also explain why different trials on the therapeutic effects of touch can get differing results. It may be that touch works, but that it needs the right person, in the right mood, doing the touching.

How hugs can heal

- * Hugging your partner could lower his or her blood pressure.
- * Researchers have found that in younger women, the more hugs they get, the lower their blood pressure.
- * Researchers at the University of North Carolina who investigated 69 pre-menopausal women showed that those who had the most hugs had a reduced heart rate.
- * Exactly what could be responsible is not clear, but the psychiatrists who carried out the work also found that blood levels of the hormone oxytocin were much higher in the women who were hugged the most.
- * Other research finds that oxytocin is released during social contact and that it is associated with social bonding, while a study at Ohio State University shows that when it is put into wounds in animals, the injuries heal much more quickly.
- * Work at the Swedish University of Agricultural Sciences suggests that oxytocin can induce anti-stress-like effects, including reduction in blood pressure and levels of the stress hormone cortisol: "It increases pain thresholds and stimulates various types of positive social interaction, and it promotes growth and healing. Oxytocin can be released by various types of non-noxious sensory stimulation, for example by touch and warmth," they say.