

# Why CAN'T you tickle yourself?

**T**ICKLING can give babies their first giggle, lull a trout into a trance and prove erotic enough a distraction to lure a lady away from her good intentions.

Yet it remains a bizarre and baffling phenomenon — loathed or loved — which continues to intrigue the best minds in science.

Earlier this month, research published in the science journal *Consciousness and Cognition* revealed that — contrary to experts' previous understanding, that has stood since Greek philosopher Aristotle laid claim to the subject — it is possible for some people to tickle themselves.

Here we investigate the science behind the sensation.

## WHY ARE WE TICKLISH?

TICKLING happens when the skin's nerve endings are stimulated, sending a message through the nervous system to two separate regions of the brain: the somatosensory cortex, the area primarily responsible for analysing touch, and the anterior cingulate cortex, an area towards the front of the brain that controls emotion. Combined, this creates the tickle sensation.

## TWO TYPES OF TICKLE

THERE are actually two types of tickles: knismesis and gargalesis. The former is associated with low levels of stimulation to sensitive parts of the body, and can be triggered by a light touch or by a light electric current.

Knismesis can also be triggered by crawling insects or parasites, prompting scratching or rubbing at the ticklish spot, thereby removing the pest.

'Fortunately, our brains have evolved to block our response to the sensation when we are able to predict what it will feel like — otherwise something as simple as putting on our socks would turn us into a nervous wreck,' says Dr Emily Grossman, an expert in molecular biology.

Gargalesis refers to harder, laughter-inducing tickling, and involves the repeated application of high pressure to sensitive areas.

## SENSITIVE SPOTS

THE soles of the feet are most people's peak tickle spots because they are filled with highly sensitive nerve receptors. The armpits — another ticklish area — have numerous veins and arteries that make them extra sensitive.

Our most ticklish zones are coincidentally our weakest spots, such as the neck and stomach, and evolutionary biologists believe we laugh when these areas are touched as a defence mechanism to signal submissiveness.

'Research suggests that laughter is an instinctive response to protect us,' says Dr Grossman. 'We're showing we're not a threat. It is a way of diffusing the situation.'

## BABY BANTER

NEUROSCIENTISTS believe tickling to be an important form of pre-verbal communication. It allows babies to create a distinction between themselves and others and can be a bonding activity between parent and child that

It's one of Nature's quirks. And the science behind it has fascinated everyone from Aristotle to Freud

by *Antonia Hoyle*

also helps establish a relationship of trust. 'Tickling can provide a social function to connect us to loved ones,' says Dr Grossman.

'It makes us feel good because physical touch releases happy hormones such as oxytocin and dopamine, as does the laughter that tickling triggers.'

Tickling often continues throughout childhood between siblings, as a way for younger teenagers to assert their dominance over one another and resolve arguments without resorting to violence.

## DEGREES OF TICKLY

EVERYONE with functioning nerve-endings is susceptible to the sensation of being tickled, but, as irritating as it is for anyone who recalls losing out to a sibling in a tickle-off during childhood, some of us are better at sensing when we are about to be tickled than others, prompting the cerebellum — the part of the brain that predicts the sensory consequences of movements — to block the rest of the brain's response to the tickle.

## WHY CAN'T I TICKLE MYSELF?

BECAUSE tickling only works when you aren't expecting it, most people cannot tickle themselves.

'As our hand moves towards our skin the cerebellum can make its own accurate prediction of what it will feel like which blocks the brain's response,' says Dr Grossman.

'Simply watching someone else's hand coming towards us isn't enough to predict how it's going to feel. But if you touch someone's hand as they're about to tickle you it will allow you to block the sensation as if it were your own hand and stop it tickling.'

## ... OR CAN I?

HOWEVER, the scientists whose findings were published in *Consciousness and Cognition* discovered that those displaying schizophrenic tendencies — such as erratic behaviour and the inability to derive pleasure from social experiences — are more likely to be able to tickle themselves.

Researchers at the University of Lille in France selected people with schizophrenic traits to both tickle and tickle themselves.

It emerged they didn't find self-tickling to be any less ticklish than being tickled by a third party.

This is believed to be because the process that tells the brain that the act of self-tickling is voluntary is

impaired in such people, so they are more likely to react as if the tickle was from an external cause or person.

## NO LAUGHING MATTER

WHILE some undoubtedly enjoy the sensation of tickling, the action activates a part of the brain that controls facial movement called the Rolandic operculum, making you laugh even if you're not really having good time at all.

One recent survey found 36 per cent of people actively disliked the sensation of being tickled — and for those who aren't fans it can be frightening and painful — so much so that it was used as a form of torture by Nazi prison guards during World War II.

## TICKLED TO DEATH

'A PHOBIA of tickling is quite rare — but understandable,' says Dr Sandi Mann, senior psychology lecturer at the University of Central Lancashire. 'Sufferers fear the lack of control that comes from being tickled and the inability to articulate their fear because they are struggling to breathe. For them the saying "tickled to death" is a truly scary concept.'

Tickle phobias are likely to be triggered by an event in childhood, from a tickling incident to some sort of boisterous horseplay. Dr Mann says: 'Treatment would involve gradual exposure to tickling to desensitise the sufferer.'

## TICKLE THROUGH TIME

THE phenomenon has long troubled philosophers, and until the 19th century it was widely believed tickling and humour were linked.

Charles Darwin and psychiatrist Ewald Hecker consolidated this

theory with the Darwin-Hecker Hypothesis that stated humans would only laugh when tickled if in a good mood.

## SLAP AND TICKLE

SIGMUND Freud was fascinated by tickling and sex as part of his pleasure-pain principle. He wrote a lot about the 'rhythm' and the 'rises and falls in the quantity of stimulus' in types of tickling.

Sex expert Lucy Jones says the neck, shoulder and back are among the most popular erogenous zones for lovers to tickle one another.

'Not only does tickling release feelgood hormones that help us bond with our partner, it serves as an introduction to a physical relationship; a comforting way of exploring our bodies without being overtly sexual,' she says.

## ANIMAL KINGDOM

ARISTOTLE'S theory that only humans are intelligent enough to respond to tickling is not strictly true: some animals rely on knismesis to help them shake off other animals or insects that are a threat.

Horses shudder to get flies off their backs. Trout, meanwhile, go into a trance when rubbed on their underbelly, as do rabbits when turned on their backs and tickled on their chest.

'It is a stress response among prey species,' explains animal behaviourist Dr Huw Stacey. 'The rabbit is keeping still because it is scared, not because tickling is enjoyable.'

Gargalesis is experienced by chimps, gorillas and orangutans, our closest primate relatives. The only other animal proven to respond to this type of tickling is, bizarrely, the rat. Neuroscientist Jaak Panksepp found the rodents emit high-pitched noises — a laugh — in response to being tickled.



Picture: ROGER HARGREAVES

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