

From The Times

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## Meditation can alter brain structure



Barbara Lantin

Kathy Sykes, a Bristol University professor, has long known that if she does not find at least 30 minutes a day in her frantically overcrowded schedule to lie down and listen to music, she is grumpier, more tired and less able to concentrate.

What Professor Sykes, who holds the chair in the Public Engagement of Science and Engineering at Bristol, did not realise until recently is that she was, in effect, practicing a fairly crude form of meditation. She also didn't know that there was growing evidence to show that this ancient practice can make people healthier and happier. It may even increase life span, alter brain structure and change personality.

Ancient traditional therapies do not always stand up to close scientific scrutiny. But when Professor Sykes put meditation under the metaphorical microscope for the second series of *Alternative Therapies: The Evidence*, which she is presenting on BBC Two on Monday, she was surprised to find that the saffron-robed monks of Kathmandu and the white-coated scientists of Harvard shared more common ground than might have been expected.

"Several people have told me that meditation can affect your emotions," she says, "and one of the areas of the brain that scientists are finding may be affected by meditation is involved in processing emotions, among other things. These are early days and we need more trials, but this is potentially very exciting."

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There are signs that mainstream medicine has already started to sit up and take notice of meditation. Mindfulness-based cognitive therapy (MBCT), which is about 80 per cent meditation, has been approved by the National Institute for Health and Clinical Excellence (NICE) for use with people who have experienced three or more episodes of depression. And MBCT is now offered by some UK primary care trusts.

## Finding a state of calm

About ten million people meditate every day in the West and, while there are many different techniques, the purpose is always to focus the mind - sometimes through the use of a mantra, a sound or the breath - and promote a state of calm.

Although Professor Sykes had always found her own ad hoc methods useful, she noticed a change after her visit to Kathmandu for instruction with Matthieu Ricard, a Buddhist monk who has been meditating for more than 30 years. "It would be absurd to say that I have learnt to meditate when people spend a lifetime doing that, but when I try to meditate now it does have a more powerful effect," she says.

"My dad died from cancer about two months before I made the programme, but I had not cried about him for a while because I was just so busy filming. Matthieu had suggested I try to focus on unconditional love so, the next time I was trying to meditate, I thought about that and inevitably about my love for my dad. Within milliseconds I was bawling my eyes out. It was quite an intense experience and I found it comforting in my grief.

"Not long ago, I was on a crowded train where there was standing-room only going from Paddington to Bristol. I sat cross-legged on the floor to meditate and felt like I was transported to a delightful place. It was glorious to feel it was possible to 'escape' like that."

As a scientist, Professor Sykes wanted to know what was happening to her body to make her feel this way, so she checked into the famous Massachusetts General Hospital, where Dr Herbert Benson, a Harvard Medical School professor, put her through a barrage of tests.

After hooking her up to a range of monitors "like a lab rat", doctors measured her resting pulse, muscle tension, respiration and sweat. They then subjected her to some humiliating mental arithmetic on camera, during which her stress levels and all her readings soared.

But after a short period of meditation, her pulse and breathing dropped below the resting rate. Dr Benson calls this the "relaxation response" and believes it can help with a wide range of conditions, including heart disease, asthma, diabetes and infertility. "To the extent that any disorder is caused or made worse by stress, regular elicitation of the relaxation response will counteract that condition," he says. Meditation changes the brain

For Professor Sykes, the most exciting part of her investigation took place in the laboratories, where scientists are demonstrating that meditation appears to be associated with changes in the brain. These studies suggest that we could all benefit from regular meditation.

MRI scans of long-term meditators have shown greater activity in brain circuits involved in paying attention. When disturbing noises were played to a group of meditators undergoing an MRI scan, they had relatively little effect on the brain areas involved in emotion and decision-making among those with the most experience of meditation.

"Attention can be trained in a way that is not that different to how physical exercise changes the body," says Richard Davidson, a professor of psychology and psychiatry at the Wisconsin School of Medicine and Public Health.

Long-term meditation seems not only to alter brain-wave patterns: early research suggests that it may also result in changes in the actual structure of the cortex, the outer parts of our brains. "We have found that brain regions associated with attention and sensory processing were thicker in meditators

than in the controls,” says Dr Sara Lazar, an assistant in psychology at Massachusetts General Hospital.

“The data give credence to some of the claims of long-term meditators and suggests that meditation can play a role in reducing stress, improving emotion regulation and perhaps slowing the effects of ageing on brains - slowing the normal decrease in mental agility, ability to learn new things and memory that comes with age.”

It is possible, of course, that people with a thicker brain cortex in areas associated with awareness and sensory processing are more likely to meditate. So Dr Lazar is investigating whether changes in brain structure can be detected before and after learning the technique.

All this means that Professor Sykes will be sticking with meditation and thinks the rest of us should try it, too. “I find it incredibly empowering to think that how happy we feel or our ability to focus or concentrate may not be fixed character traits but may be skills that we can train and get better at,” she says. “This must be worth investigating. If evidence is found that meditation can help us all to think better, to be happier and to be more compassionate, that would be amazing.”

- HAVE YOUR SAY

I've been practicing Transcendental Meditation for about 10 years now. Can I say its restructured my brain? Well, when I see people get stressed out over little things that I don't even notice then, yes, I guess my brain has been restructured. It's also worth an excuse to get alone for 20 mins a day

Juan Son, Los Angeles, CA, USA

the studies of meditation began when keith wallace (a post grad student of dr. benson at harvard) studied the breath rate, heart rate, gsr and brain waves on transcendental meditators (tm). his dissertation was published and suddenly meditation went from being philosophy to science.

julian miller, kealia, hawaii

Richard Davidson is the man. On a side note, the alpha waves emitted by long term meditators (usually from somewhere near the left prefrontal cortex) does NOT indicate physical change(s) in the brain. 'Brain waves' are just indications of how much electrical energy the brain is putting out. Peace

dave, UCSD,

I've been studying meditation for over a decade. I started with the Silva method, then tried hypnosis before discovering vipassana and finally just meditating.

I recommend this site: [http://kamalashila.co.uk/Meditation\\_Web/index.html](http://kamalashila.co.uk/Meditation_Web/index.html) for the best introduction to the most effective meditation method.

pradeep, India,

Bruce Lang, in my (short) experience I've learned it's a very good thing to just silently listen to the pain (or, in your case, to the sound), without trying to 'control' it or, in any way, stop it.

I could also recommend some Arnold and Amy Mindell books and/or finding a therapist trained by them.

sergey samokhov, moscow, russia

You don't have to be a Buddhist to go to a meditation centre and learn meditation. Meditation is beneficial but be wary of anyone who wants to charge you money to learn. Have a look at Daniel Goleman's research on Tibetan Monks if you want any more convincing that meditation is good for you! And if you find it hard to do sitting meditation then try a moving meditation like Shaolin Warrior Qi Gong.

James, brighton, UK

mediyayion is a concentration on reality - a state of consciousness where all other activities are at rest - it has similarities to sleep / dreams / unconsciousness and dreams - layers of consciousness can be explored

or reached - given the right conditions of life and the right setting. A good teacher can be valuable  
Donovan is setting up a TM retreat in scotland - and india still has opportunities  
paul, aus,

In my early 20's on the way to my Transcendental Meditation initiation in Brighton I was involved in a car accident. Naturally I got all upset and my blood pressure rose. Later that morning I did my TM initiation and when I came out, the car crash became so insignificant that I realized the TM was doing its job.

Take up TM, its worth the experience and the stress relief is a major benefit.

Les Finch, Beulah, Newcastle Emlyn, Ceredigion

I suffer from pure tone tinnitus in both ears, for 24 hours per day. The whistling sound is extremely stressful and I would like to try meditation to learn to control and manage my condition. Can anyone help?

Bruce Lang, Bristol, England

At last people are beginning to take the benefits of meditation seriously. I have been practising meditation for twenty years and would recommend everyone should learn this life skill to attain a state of ease within. There would be a lot less angst and agro in the world. I use and teach a very simple method based on awareness of breathing which requires no belief system to cloud the technique.

georgina smith, Mansfield, Notts