



Research: A Reality Check

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Summary: Over the past twenty years neuroscientists have studied experienced Tibetan practitioners, and the results are unusual enough to be worth reporting carefully. A 2004 study at Wisconsin found long-term meditators with 10,000 to 50,000 hours of practice producing gamma synchrony at amplitudes not previously reported, present even at rest; a later study of 73 monks found changes reaching past the brain into heart rate and blood proteins; and a 2024 study at Sera Jey — the university whose curriculum Dzongkar Choede follows — found analytical meditation almost invisible to EEG. The literature also disagrees with itself, and the samples are small. Matthieu Ricard, the monk most associated with this work, calls the label the press gave him absurd. The practice does not depend on any of it.

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Read the original page at: <https://dzongplum.netlify.app/en/seven-pillars/meditation/research>

Wisconsin, 2004

In 2004, Antoine Lutz, Richard Davidson and colleagues at the University of Wisconsin-Madison

published a study of long-term Buddhist practitioners — monks with between **10,000 and 50,000 hours** of practice behind them.

Asked to meditate on unconditional compassion, they produced high-amplitude gamma-band

oscillations and phase synchrony across lateral frontoparietal electrodes, at amplitudes that had

not previously been reported in the neuroscience literature. The effect scaled with hours

practised: more practice, more synchrony.

The detail that most impressed the researchers was not what happened during meditation. It was

that the practitioners' ratio of gamma to slow-wave activity was already higher than the

controls' *before* the meditation began. Whatever had changed had not switched on for the

session. It showed at rest.

The Monk with the Sensors

The best known of those participants is **Matthieu Ricard**, and his biography is unusually relevant to a monastery arguing that study and contemplation belong together.

Ricard took a doctorate in molecular genetics at the Pasteur Institute under the Nobel laureate

François Jacob, and then, in 1972, left science for the Himalayas. He has been the Dalai Lama's

French interpreter since 1989. In 2000 he co-founded Karuna-Shechen, which runs humanitarian

projects across Nepal, India and Tibet, and he gives away what his books earn.

Wired with 256 sensors at Wisconsin, he produced gamma activity striking enough that the press

began calling him the happiest man in the world.

> Ricard calls the label absurd, and says it misrepresents both the research and his experience.

He is right, and it is worth being precise about why. A measurement is not a mood. One person is

not a result. And a tradition whose central claim is that grasping at a solid self causes most of

our trouble has little use for a title awarded to an individual — least of all a superlative one.

Sera Jey, 2024

In 2024 researchers brought portable EEG equipment to **Sera Jey Monastic University**

in Bylakuppe — the institution whose

[\[curriculum this monastery follows\]](#) — and recorded

twenty-three monks across thirty-five sessions. Nine were beginners with under a year of

practice, six had between one and ten years, and eight had more than ten years including extended

retreats.

[\[Concentrative meditation\]](#) produced power

changes of up to fifteen decibels in the most experienced monks, with a marked shift in the alpha

peak that the researchers read as active inhibition — the mind holding distraction at

bay.

Analytical meditation produced around two decibels. The researchers concluded that it engages

processes less visible to this kind of analysis. Of the two practices, the one that most resembles ordinary thinking is the one the instruments find hardest to see.

The Wider Picture

Between those two studies sit a number of others. The largest recorded

****73 Tibetan Buddhist monks**** against 30 meditation-naïve controls, taking EEG and ECG together and drawing blood for proteomic analysis. Activity shifted to higher frequencies

during meditation, and — the part that is hard to dismiss — the state-level changes correlated

with lasting differences in heart rate and in levels of the protein neuropilin-1. Whatever is

happening is not confined to the brain.

Other work has found that the difference persists into sleep: experienced meditators show higher

parietal-occipital gamma during dreamless NREM sleep than non-meditators do. And studies of

brain-heart interaction in Tibetan monks have found the neural response to the heartbeat itself

modulated during practice.

Where the Findings Disagree

It would be convenient to report that this literature converges. It does not.

Against the studies showing gamma increasing during meditation, other work on long-term

practitioners has found a consistent and significant **decrease** in relative gamma, and reduced beta and low-gamma power during deeper absorption. The explanation offered is that

results depend on which practice is being done, how deep the state is, which region is measured, and which frequency band is examined.

Which means the popular summary — meditation raises gamma — is too crude to be true.

Different practices do different things.

That is less satisfying than a clean story, and more credible. It also happens to match what the

tradition says: concentrative and

[analytical meditation](/en/seven-pillars/meditation) are not the same activity, and there is no particular reason to expect them to leave the same trace.

What These Studies Do Not Show

In 2018 a large group of contemplative researchers published a critical review of their own

field, arguing that poor measurement, weak methodology and the hyping of unreplicated findings

had outrun the evidence, and that the field needed to take the replication crisis seriously. It

is the most useful thing to read alongside any of the results above.

- **The samples are small.** Twenty-three monks at Sera Jey; fewer in the Wisconsin work. These are not population studies.
- **The participants are unusual.** Tens of thousands of hours of practice tells you little about what someone sitting for twenty minutes a day should expect.
- **Correlates are not causes.** An EEG signature accompanies a practice; it does not explain it, and it does not establish that the practice produced the person.
- **The results do not all agree.** As above: whether gamma rises or falls depends on the practice, the depth, the region and the band.
- **Meditation is not uniformly benign.** Adverse effects exist, are under-reported, and are one of the specific criticisms that review makes of the field.

None of this makes the findings worthless. It makes them what they are: early results, in small

numbers of unusual people, pointing somewhere interesting.

Why the Monastery Reports This Carefully

There is an obvious temptation for a monastery to use this research as advertising. We would

rather not.

The monks here did not take up this practice because of an EEG result, and they would continue if

every one of these studies were retracted tomorrow. The

[nine stages of calm abiding](/en/seven-pillars/meditation) were mapped by people who had only their own attention to observe with, and the map has been useful for a

thousand years without instruments to confirm it.

What the research offers is a shared language: a way for someone who finds the traditional

vocabulary difficult to see that something here is being trained, and trained systematically, over decades. That is worth having.

It is not the reason for the practice.