

The ability of hypnosis to block very strong pain — even surgical pain — has been studied for over 150 years, and modern neuroscience has finally started to explain *why it can work*.

Hypnosis and Surgery Without Anesthesia

Historical Examples

One of the earliest well-documented examples was by Scottish surgeon James Esdaile in the 1840s in India.

Using hypnotic “mesmerism,” he reportedly performed over 300 surgeries including:

- **amputations**
- **tumor removals**
- **scrotal surgery**

Patients were described as calm and pain-free. Mortality rates were also reported to be lower than typical surgery of that time (possibly due to reduced shock and stress).

Once chemical anesthesia (ether and chloroform) became available, hypnosis largely disappeared from surgery because drugs were faster and more predictable.

Modern Surgical Hypnosis

Today’s Medical Use

Hypnosis is still used today in certain situations such as:

- **dental surgery**
- **burn treatment**
- **childbirth**

- **minor operations**
- **needle procedures**
- **tumor biopsies**

In some cases, hypnosis is combined with light local anesthesia rather than full sedation.

Hospitals in Belgium, France, and parts of the U.S. have published case studies of “hypnosedation.”

Benefits sometimes reported:

- **lower anxiety**
 - **less pain medication**
 - **faster recovery**
 - **fewer complications**
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What Happens in the Brain

Brain imaging (especially fMRI studies at Stanford and Harvard) shows hypnosis alters activity in several key pain networks.

Important brain regions involved:

1. Anterior Cingulate Cortex

Controls how unpleasant pain feels.

Hypnosis can reduce activity here, meaning pain may still exist but doesn't bother the patient.

2. Prefrontal Cortex

Handles attention and expectation.

Hypnotic suggestion can redirect attention away from pain signals.

3. Insula

Processes internal body sensations.

Hypnosis can alter how strongly the brain interprets signals from the body.

4. Somatosensory Cortex

This is where physical pain intensity is perceived.

Some hypnotic suggestions actually reduce activation here — meaning less pain is experienced physically, not just emotionally.

The “Pain Dial” Phenomenon

Researchers sometimes use hypnotic suggestions like:

“Imagine a dial controlling the pain. Turn it down.”

When participants imagine lowering the dial, brain scans show measurable reductions in pain-processing areas.

In highly responsive subjects, pain signals can drop dramatically.

Why This Is Possible

Pain is not simply a signal from injured tissue.

Pain is constructed by the brain using:

- **sensory input**
- **memory**
- **attention**
- **expectation**
- **emotion**

Hypnosis strongly influences attention and expectation, which changes how the brain builds the pain experience.

The Limits

Even the best hypnosis researchers emphasize:

- **It does not cure the underlying injury**

- **It works best for chronic or procedural pain**
- **Not everyone is highly hypnotizable**

But for some individuals, the effect can be remarkably strong.

Something Even More Surprising

Some studies show hypnosis can create temporary numbness stronger than lidocaine in highly hypnotizable individuals.

Researchers call this hypnotic anesthesia.

Patients have tolerated:

- **surgical incisions**
- **dental drilling**
- **burn wound cleaning**

with minimal distress.

A Quiet Trend in Modern Pain Research

Many pain specialists now believe the brain's control over pain is far stronger than previously understood.

New treatments are exploring:

- **hypnosis**
- **virtual-reality distraction**
- **placebo amplification**
- **cognitive pain reprocessing therapy**

All are based on the same idea:

Pain is partly controlled by the brain's interpretation of signals.

Why Pain Can Continue After Healing

The Brain Can Learn Pain

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Pain normally works like this:

- 1. Injury occurs**
- 2. Nerves send signals to the brain**
- 3. Brain produces the pain experience**

But if pain continues long enough, the brain can become trained to keep producing pain signals even after the original injury heals.

This process is sometimes called:

- **Central sensitization**
 - **Pain memory**
 - **Neuroplastic pain**
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What Researchers Now Know

Studies show that in some chronic pain conditions:

- **The original tissue damage is minimal or gone**
- **But the brain's pain network stays activated**

This has been observed in conditions like:

- **chronic back pain**
- **fibromyalgia**
- **migraine**
- **complex regional pain syndrome**
- **phantom limb pain**

In brain scans, pain-processing areas remain active even without clear

injury.

The “Broken Alarm System” Analogy

Pain researchers often explain it like this:

Imagine a home alarm system.

Normal pain:

- **burglar breaks window → alarm sounds**

Chronic pain:

- **alarm keeps ringing even after the window is fixed**

The alarm system itself has become overly sensitive.

What Strengthens the Pain Loop

Several factors can reinforce chronic pain circuits:

- **fear of movement**
- **stress and anxiety**
- **focusing attention on pain**
- **previous severe pain episodes**
- **lack of sleep**
- **depression**

These factors strengthen the brain’s pain pathways, similar to strengthening any learned habit.

Why Brain-Based Therapies Can Work

Because the brain is involved, treatments that retrain brain responses can sometimes reduce pain.

Examples include:

Hypnosis

Can change how the brain processes pain signals.

Cognitive Behavioral Therapy

Changes emotional and thought patterns around pain.

Pain Reprocessing Therapy

Teaches the brain that the body is safe again.

Mindfulness and meditation

Reduce hyper-reactivity in pain networks.

Evidence for Reversing Chronic Pain

Some clinical trials have shown significant improvement.

One well-known study from the University of Colorado used Pain Reprocessing Therapy for chronic back pain.

After treatment:

- **66% of patients reported being pain-free or nearly pain-free**

Brain scans also showed reduced activation in pain-processing regions.

Why This Idea Was Controversial

For many years doctors assumed:

If pain exists, there must be tissue damage.

But modern neuroscience shows pain is an output of the brain, not just a signal from tissue.

This does not mean pain is imaginary.

The pain is very real — but the source can be neural circuitry rather than injury.

Where Hypnosis Fits

Hypnosis is particularly interesting because it can:

- interrupt pain circuits
- change attention to pain
- reduce emotional response to pain
- create new neural patterns

Some therapists combine hypnosis with self-hypnosis training, allowing patients to manage pain episodes themselves.

A Surprising Statistic

Pain researchers estimate that as much as 80–90% of chronic pain may involve central sensitization to some degree.

This doesn't mean the body isn't involved — but the brain's pain network becomes the dominant factor.

One More Remarkable Example

People with phantom limb pain feel pain in a limb that no longer exists.

This shows clearly that pain can be generated entirely by the brain's circuitry.

Hypnosis, mirror therapy, and brain retraining techniques sometimes help reduce it.

If you'd like, I can also show you something extremely interesting and slightly mysterious:

Some researchers believe expectation alone can dramatically amplify or reduce pain — which is why the placebo effect in pain studies can sometimes be as strong as real drugs.

yes

Yes — and the placebo effect in pain research is one of the most fascinating and well-documented phenomena in medicine. It shows very clearly that expectation and belief can measurably change the brain's

pain system.

The Placebo Effect in Pain Research

What a Placebo Really Is

A placebo is a treatment with no direct pharmacological effect, such as:

- **a sugar pill**
- **a saline injection**
- **a fake medical procedure**

Yet many patients report real pain relief.

In chronic pain studies, 30–60% of participants often report improvement from placebos alone.

The Brain Actually Releases Painkillers

Researchers once wondered whether placebo relief was just imagination.

It isn't.

Brain scans and biochemical studies show that placebo responses can trigger the release of natural pain-relieving chemicals, including:

- **endorphins (the body's natural opioids)**
- **dopamine (reward and motivation chemical)**
- **endocannabinoids (similar to cannabis compounds)**

These substances can physically reduce pain signaling in the nervous system.

The Naloxone Experiment

One famous experiment demonstrated this very clearly.

Researchers gave patients a placebo painkiller and many reported relief. Then researchers administered naloxone, a drug that blocks opioid receptors.

Result:

The placebo pain relief disappeared.

This proved that placebo analgesia was being produced by real endorphins acting in the brain.

Expectation Changes Brain Activity

Modern imaging studies (fMRI and PET scans) show placebo treatments can reduce activity in major pain-processing areas:

- **anterior cingulate cortex**
- **insula**
- **thalamus**
- **somatosensory cortex**

These are the same regions affected by real analgesic drugs.

In other words, belief can activate the brain's internal pharmacy.

Even Fake Surgery Can Work

One of the most dramatic examples involved knee surgery studies.

Patients were divided into groups:

- 1. Real surgery**
- 2. Partial surgery**
- 3. Fake surgery (incisions but no repair)**

Many patients in the fake surgery group improved just as much as the real surgery group.

This stunned many surgeons.

Why Expectation Is So Powerful

Pain is strongly influenced by:

- **attention**
- **expectation**
- **emotional context**

If the brain expects relief, it can activate descending pain-inhibition pathways that reduce incoming pain signals from the spinal cord.

Essentially, the brain says:

“This should help — reduce the pain signal.”

Placebo vs Hypnosis

Interestingly, hypnosis may amplify the placebo mechanism.

Hypnosis can strongly influence:

- **expectation**
- **attention**
- **emotional interpretation**

So some researchers think hypnotic analgesia may partly work through enhanced placebo pathways, though it also has additional mechanisms.

The Opposite Effect Also Exists: Nocebo

Just as expectation can reduce pain, negative expectation can increase it.

If a patient believes a treatment will cause pain or side effects, the brain can amplify pain signals.

This is called the nocebo effect.

Why Doctors Study This So Closely

Understanding placebo responses helps scientists learn how the brain regulates pain.

Some researchers believe future treatments may intentionally activate the brain's natural pain-control systems using:

- **psychological techniques**
 - **neurofeedback**
 - **hypnosis**
 - **virtual reality**
 - **brain stimulation**
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A Simple but Powerful Truth

One of the biggest lessons from modern pain science is:

Pain is not just in the body.

It is created by the brain using many signals, including expectations.

That doesn't make pain imaginary — it shows how complex and powerful the brain's control systems are.