**Evidence for the effectiveness of hypnosis in the management of pain**

**Hypnosis** has been defined as “A social interaction in which one person, designated the subject, responds to suggestions offered by another person, designated the hypnotist, for experiences involving alterations in perception, memory and voluntary action” Kilstrom (1985)1

Hypnosis has been used to treat every type of pain condition over centuries and across cultures (Pintar & Lynn, 20082) and can be an extremely effective treatment for both acute and chronic pain. It is one of the most well researched areas in clinical hypnosis.

Hypnotic approaches for acute pain relief typically take three forms:

* Direct suggestion for symptom change
* Dissociative approaches – which encourage the patient to mentally 'go elsewhere' and leave the pain behind
* Resource utilisation - a more Ericksonian approach in which the patient uses their internal creativity and imagination

Management of chronic pain may include all the above but also often needs to address co-morbidities such as depression or psychosomatic symptomatology.

**Hypnotic analgesia is dependent upon suggestion**

A key fact is that the induction of hypnosis by itself does not generate significant pain relief. It is the suggestion inside a hypnotic framework, or at least the expectation of pain relief which leads to reduction of pain. A number of studies have specifically assessed pain relief following a hypnotic induction, or the induction of hypnosis + specific suggestions ([Knox et al, 1974](http://hypnosisandsuggestion.nfshost.com/hypnosis-research-papers.html#Knox1974)3; [Zachariae et al, 1998](http://hypnosisandsuggestion.nfshost.com/hypnosis-research-papers.html" \l "Zachariae1998" \o "Reference:Zachariae (1998))4). The induction of hypnosis alone is not generally sufficient to achieve significant pain relief.

**The Role of Suggestions in Hypnosis for Chronic Pain: A Review of the Literature (2010) Dillworth T, & Jensen MP *The open pain journal* 3; 1; 39-51**

Several controlled trials have demonstrated that hypnosis is an efficacious treatment for chronic pain. However, less attention has been given to the specific procedures and suggestions used in hypnotic treatments in research. The goal of this review was to address the issue of differences in the content of hypnotic suggestions, including pain management suggestions, non-pain related suggestions, and posthypnotic suggestions, in the context of published clinical trials of hypnosis for chronic pain management. This review focused on the types of suggestions used in twenty-five studies comparing hypnosis to active treatments (e.g., relaxation, biofeedback), non-treatment control groups (e.g., standard care/wait-list control, supportive attention), or both in adult populations with various chronic pain conditions. Overall, these studies found hypnosis to be more effective than non-treatment control groups and similarly effective when compared to active treatments on pain-related outcomes when either pain-related suggestions or non-pain related suggestions were used. However, for studies that included both pain-specific and non-pain related suggestions, hypnosis was found to be superior to active treatments on a variety of pain-related outcomes

**Hypnotic analgesia is not dependent upon endorphins**

One early explanation for hypnotic analgesia was that it could be dependent upon the body's natural painkilling system - the endogenous opiate system. This was tested experimentally by [Goldstein & Hilgard5 in 1975](http://hypnosisandsuggestion.nfshost.com/hypnosis-research-papers.html#Goldstein1975). They administered the drug Naloxone, which blocks the effects of opiates, to participants experiencing hypnotic analgesia. They found that hypnotic analgesia was not significantly affected by this inhibition of the opiate system, indicating that another mechanism must be responsible. Weitzenhoffer also pointed out that endogenous opiates are an unlikely source of hypnotic analgesia because of the latter's quick reversibility, and specificity (i.e. hypnotic analgesia can be directed at one location, leaving another unaffected).

**Hypnotic analgesia is not dependent upon relaxation**

Since many hypnotic inductions contain elements of relaxation it has been proposed that any pain relieving properties of hypnotic suggestion could be due primarily to a relaxation response. However, this hypothesis has been tested experimentally. [Miller and colleagues (1991)](http://hypnosisandsuggestion.nfshost.com/hypnosis-research-papers.html#Miller1991)6 gave analgesia suggestions to two groups of participants: the first group were hypnotised using a traditional relaxation induction, the second group were hypnotised using an active-alert induction whist riding a stationary exercise bicycle. They found that the amount of pain relief experienced by each group was equivalent, contradicting the idea that hypnotic analgesia is simply the result of relaxation.

**Effect of hypnosis on oral function and psychological factors in temporomandibular disorders patients (2009) Abrahamsen R, Zachariae R, Svensson P. *J Oral Rehabil*. 36(8):556-7**

Forty women suffering from temporomandibular disorders were randomized to four individual, one-hour sessions of either hypnotic intervention or a control condition of simple relaxation. The hypnosis group showed a significant reduction in their pain scores compared to the controls.

**Effect of hypnotic suggestion on fibromyalgic pain: Comparison between hypnosis and relaxation (2007) Antoni Castel, Magdalena Perez, Jose Sala, Anna Padrol, Maria Rull *European Journal of Pain* 11 463–468**

Forty-five patients with fibromyalgia were randomly assigned to: (a) hypnosis with relaxation suggestions; (b) hypnosis with analgesia suggestions; (c) relaxation. Findings indicate that analgesic suggestion can decrease pain intensity and the sensation of pain in patients with fibromyalgia. There was a greater decrease in pain intensity with the group that had analgesic suggestions than in the group with suggestions of relaxation.

**A comparison of self-hypnosis versus progressive muscle relaxation in patients with multiple sclerosis and chronic pain (2009) Jensen M, Barber J, Romano J, Molton I, Raichle K, Osborne T, Engel J, Stoelb B, Kraft G, Patterson D. *The International journal of clinical and experimental hypnosis* 57; 2; 198-221**

Twenty-two patients with multiple sclerosis (MS) and chronic pain we recruited into a quasi-experimental trial comparing the effects of self-hypnosis training (HYP) with progressive muscle relaxation (PMR) on pain intensity and pain interference; 8 received HYP and the remaining 14 participants were randomly assigned to receive either HYP or PMR. HYP-condition participants reported significantly greater pre- to postsession as well as pre- to posttreatment decreases in pain and pain interference than PMR-condition participants, and gains were maintained at 3-month follow-up. Most of the participants in both conditions reported that they continued to use the skills they learned in treatment and experienced pain relief when they did so. General hypnotizability was not significantly related to treatment outcome, but treatment-outcome expectancy assessed before and after the first session was.

**Hypnotic analgesia does not seem to be dependent upon imagery**

Despite imagery often forming a key component when hypnosis is used clinically, one study has directly tested the additive benefits of imagery to hypnotic analgesia suggestions. [Hargadon and colleagues (1995)](http://hypnosisandsuggestion.nfshost.com/hypnosis-research-papers.html#Hargadon1995)7 tested 66 high hypnotisables in three conditions: baseline, hypnotic analgesia with imagery encouraged, and hypnotic analgesia with imagery proscribed. Pain was rated as significantly less in the two hypnotic analgesia conditions compared to baseline, and there were no significant differences between the two treatment conditions. In contrast to this evidence, many clinicians report that the use of imagery in hypnosis is particularly useful in helping clients to engage with treatment. The experimental laboratory condition is, however, very different from the clinical situation and these findings were restricted to a highly hypnotisable population rather than a mixture of hypnotisability as is found in the clinical context.

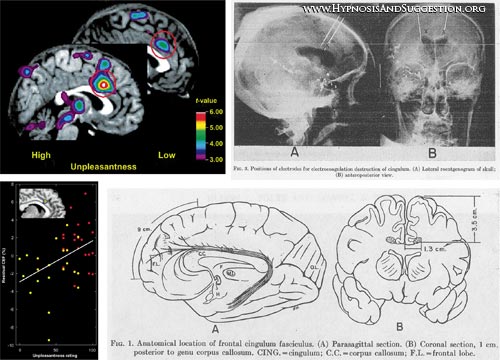
**What hypnosis can tell us about pain itself**

As well as telling us more about hypnosis and suggestion a number of studies have had a feed-back effect and told us more about the nature of the pain system in humans.

**Modulation of pain unpleasantness independent of sensory components**

In [1997 Rainville](http://hypnosisandsuggestion.nfshost.com/hypnosis-research-papers.html#Rainville1997) and colleagues8 published a landmark study which investigated the neural correlates of pain in humans. Using positron emission tomography (PET) they measured brain activity in a group of highly hypnotisable subjects while they had their hand immersed in either neutral (35ºc) or painfully hot (47ºc) water. Hypnotic suggestions were given for participants to experience increased and decreased pain unpleasantness and verbal pain reports were taken.

The figure below shows the area of the anterior cingulate cortex found by Rainville to have activity which correlated with the reported unpleasantness of the pain. Interestingly, as early as 1962 this area of the brain had been thought to be involved in the perception of pain unpleasantness.

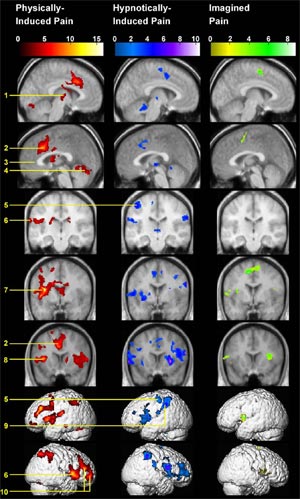


**Figure: Colour images show the area of anterior cingulate cortex (ACC) whose activity correlated with perceived unpleasantness in [Rainville et al (1997)](http://hypnosisandsuggestion.nfshost.com/hypnosis-research-papers.html" \l "Rainville1997). Black and White images from [Folz & White (1962)](http://hypnosisandsuggestion.nfshost.com/hypnosis-research-papers.html" \l "Folz1962) showing probe positioning to produce lesions in the same region of the ACC which produced reductions in perception of pain unpleasantness.**

**Using hypnosis to generate pain in the absence of a noxious stimulus**

In a study investigating functional pain (pain without an obvious physical cause) [Derbyshire and colleagues (2004)](http://hypnosisandsuggestion.nfshost.com/hypnosis-research-papers.html#Derbyshire2004)9 published a study investigating brain activity in highly hypnotisable participants while they experienced physically-induced (PI), hypnotically-induced (HI), or imagined pain. Participants were pre-selected for their ability to hallucinate a sensation of pain. In both the PI and HI pain conditions participants were led to expect that an electrical heat probe attached to their hand would heat up to become painfully hot. However, painful heat was only delivered in the PI condition. In the HI condition, the probe was not switched on, but participants reported feeling varying strengths of pain.

In both the PI and HI conditions significant activations were reported in key areas of the pain network, including the thalamus, insula, anterior cingulate cortex, and prefrontal cortex. Additionally, activation was observed in the HI condition in the primary somatosensory cortex. Imagination of pain only resulted in minimal activation of the pain network. These results indicate that it is possible to experience pain in the absence of direct stimulation, and provide some evidence for direct cortical involvement in some clinical functional pain disorders. Similar results were reported in 2005 by [Raij and colleagues](http://hypnosisandsuggestion.nfshost.com/hypnosis-research-papers.html" \l "Raij2005" \o "Reference: Raij et al (2005))10.



**Figure: Pain activations reported by Derbyshire et al (2004) in response to physically-induced (red), hypnotically-induced (blue), and imagined (green) pain.**

If brain can create sensation of pain with hypnosis, then the brain should be able to create a sensation of relaxation and comfort with hypnosis.

Unlike pharmacological treatments for pain, hypnosis has no negative side effects. Positive secondary benefits, such as improved well-being and sense of control, have been found in many studies.

**Hypnotic approaches for chronic pain management: clinical implications of recent research findings. (2014) Jensen, M. P., Patterson, D. R. *American Psychologist* 69(2), 167-177**

This useful article reviews much of the current literature on the use of hypnosis in pain management. Many clinical trials have shown that hypnosis is effective for reducing chronic pain, although outcomes vary between individuals. The findings from these clinical trials also show that hypnotic treatments have a number of positive effects beyond pain control. Neurophysiological studies reveal that hypnotic analgesia has clear effects on brain and spinal-cord functioning that differ as a function of the specific hypnotic suggestions made, providing further evidence for the specific effects of hypnosis.

They write “Findings from controlled trials indicate that hypnosis is effective for reducing chronic pain intensity on average, but that there is also substantial individual variation in outcome. Importantly, hypnosis for chronic pain has few negative side effects. In fact, with hypnotic treatment most patients report positive side effects, such as an improved sense of well-being, a greater sense of control, improved sleep, and increase satisfaction with life, independent of whether they report reductions in pain."

**Meta-analyses**

There have been a number of meta-analyses of hypnosis for pain control.

**The Effectiveness of Suggestive Techniques in Reducing Postoperative Side Effects: A Meta-Analysis of Randomized Controlled Trials. (2014) Kekecs, Z., Nagy, T., Varga, K*. Anesthesia & Analgesia*, 119(6), 1407-1419.**

Kekecs et al looked at 26 studies and concluded that suggestive techniques might be useful tools to alleviate postoperative anxiety and pain; however, strength of the evidence is weak because of possible bias in the reviewed articles. For clinical purposes, they advised the use of hypnosis with live presentation to reduce postoperative anxiety and pain, until convincing evidence is uncovered for the effectiveness of therapeutic suggestions and recorded presentation. Pain management with adjunct suggestive interventions is mostly encouraged in minor rather than major surgeries.

**A meta-analysis of hypnosis for chronic pain problems: a comparison between hypnosis, standard care, and other psychological interventions. (2014) Adachi T1, Fujino H, Nakae A, Mashimo T, Sasaki J. *International Journal of Clinical and Experimental Hypnosis* 62 (1) 1-28.**

Adachi et alconducted a meta-analysis in 2014 to assess the efficacy of hypnosis for managing chronic pain. When compared with standard care, hypnosis provided moderate treatment benefit. Hypnosis also showed a moderate superior effect as compared to other psychological interventions for a non-headache group. The results suggest that hypnosis is efficacious for managing chronic pain.

**The effectiveness of adjunctive hypnosis with surgical patients: A meta-analysis. (2002) Montgomery, G. H., David, D., Winkel, G., Siverstein, J. H., Bovbjerg, D. H. *Anesthesia and Analgesia* 94(6), 1639-1645.**

Montgomery et al conducted a meta-analysis that examined the results of 20 published controlled studies examining the use of hypnosis as an adjunct with surgical patients. In these studies, hypnosis was typically administered to patients in the form of a relaxing induction phase followed by suggestions for the control of side effect profiles (e.g. pain, nausea, distress). Only studies in which patients were randomised to either a hypnosis or control group (no-treatment, routine care, or attention control group) were included. The results revealed that patients in the hypnosis treatment groups had better outcomes than 89% of the patients in the control groups. It was found that adjunctive hypnosis helped the majority of patients reduce adverse consequences of surgical interventions.

**A meta-analysis of hypnotically induced analgesia: how effective is hypnosis? Montgomery G, DuHamel,K, Redd W (2000) *International Journal of Clinical and Experimental Hypnosis* 48(2), 138-53**

Montgomery et al conducted a meta-analysis examining the effectiveness of hypnosis in pain management. It compared studies that evaluated hypnotic pain reduction in healthy volunteers vs. those using patient samples, looks at the relationship between hypno-analgesic effects and participants' hypnotic suggestibility, and determines the effectiveness of hypnotic suggestion for pain relief relative to other nonhypnotic psychological interventions. Examination of 18 studies revealed a moderate to large hypno-analgesic effect, supporting the efficacy of hypnotic techniques for pain management. The results also indicated that hypnotic suggestion was equally effective in reducing both clinical and experimental pain.

**Randomized controlled trials and other studies**

[**The efficacy of hypnotic analgesia in adults: a review of the literature.**](http://www.ncbi.nlm.nih.gov/sites/entrez?cmd=retrieve&db=PubMed&tool=UWMedicine&dopt=Abstract&list_uids=20161034) **(2009) Stoelb B, Molton I, Jensen M, Patterson D *Contemporary Hypnosis* 26; 1; 24-39**

This article both summarizes the previous reviews of randomized, controlled trials of hypnotic analgesia for the treatment of chronic and acute pain in adults, and reviews similar trials which have recently been published in the scientific literature. The results indicate that for both chronic and acute pain conditions: (1) hypnotic analgesia consistently results in greater decreases in a variety of pain outcomes compared to no treatment/standard care; (2) hypnosis frequently out-performs non-hypnotic interventions (e.g. education, supportive therapy) in terms of reductions in pain-related outcomes; and (3) hypnosis performs similarly to treatments that contain hypnotic elements (such as progressive muscle relaxation), but is not surpassed in efficacy by these alternative treatments

**Hypnotherapy for the Management of Chronic Pain (2007) Gary Elkins, Mark P. Jensen, and David R. Patterson *International Journal of Clinical and Experimental Hypnosis* 55(3): 275–287**

This article reviewed thirteen controlled prospective trials of hypnosis for the treatment of chronic pain, excluding studies of headaches, that compared outcomes from hypnosis to either baseline data or a control condition. The findings indicate that hypnosis interventions consistently produce significant decreases in pain associated with a variety of chronic-pain problems. Also, hypnosis was generally found to be more effective than nonhypnotic interventions such as attention, physical therapy, and education. Most of the hypnosis interventions for chronic pain include instructions in self-hypnosis.

**Physical therapy under hypnosis for the treatment of patients with type 1 complex regional pain syndrome of the hand and wrist: Retrospective study of 20 cases (2017) J. Lebon, M. Rongiéres, C. Apredoaei, S. Declaux, P. Mansat *Hand Surgery and Rehabilitation*, in press**

Type 1 complex regional painful syndrome (CRPS-1) has a complex physiopathology. The aim of this study was to evaluate the effectiveness of physical therapy under hypnotherapy to treat this condition. Twenty patients with CRPS-1 at the wrist and hand were evaluated retrospectively: 13 women and 7 men with an average age of 56 years (34–75). Thirteen patients were in the inflammatory phase and 7 in the dystrophic phase. The main endpoints were pain (VAS, analgesic use), stiffness (wrist and finger range of motion), and strength (pinch and grasp). Secondary endpoints were functional scores (QuickDASH, PWRE), patient satisfaction, return to work, and side effects. Results were satisfactory in all cases after 5.4 sessions on average. VAS decreased by 4 points, PWRE-pain by 4.1 points, and analgesic use was limited to paracetamol upon request. Finger and wrist range of motion increased and the QuickDASH decreased by 34 points, PRWE-function by 3.8 points, pinch strength increased 4 points, and grasp strength by 10 points. Return to work was possible in 80% of the cases. All patients were satisfied or very satisfied with the treatment. Physical therapy under hypnosis appears to be an effective treatment for CRPS-1 at the wrist and hand no matter the aetiology.

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# Pain modulation as a function of hypnotizability: Diffuse noxious inhibitory control induced by cold pressor test vs explicit suggestions of analgesia (2017) Fabrizia Fidanzaa, Maurizio Varaninib, Antonella Ciaramellac, Giancarlo Carlid, Enrica L. Santarcangelo *Physiology & Behavior* 171, 135-141*.*

The aim of the present study was to compare the effects of explicit suggestions of analgesia and of the activation of the Diffuse Noxious Inhibitory Control (DNIC) by cold pressor test on pain perception and heart rate in healthy participants with high (highs, N = 18), low (lows, N = 18) and intermediate scores of hypnotizability (mediums, N = 15) out of hypnosis. Pain reports and the stimulus-locked heart rate changes induced by electrical nociceptive stimulation of the left hand were studied in the absence of concomitant stimuli (Control), during suggestions of analgesia (SUGG, glove analgesia) and during cold pressor test used as a conditioning stimulus to the right hand (DNIC, water temperature = 10–12 °C) in the REAL session. Participants were submitted also to a SHAM session in which the DNIC water temperature was 30 °C and the suggestions for analgesia were substituted with weather forecast information. Both suggestions and DNIC reduced pain significantly in all subjects; however, the percentage of reduction was significantly larger in highs (pain intensity = 55% of the control condition) than in mediums (70%) and lows (80%) independently of the REAL/SHAM session and of the specific pain manipulation. Heart rate was not modulated consistently with pain experience. Findings indicate that both suggestions and DNIC influence pain experience as a function of hypnotizability and suggest that both sensory and cognitive mechanisms co-operate in DNIC induced analgesia

**A randomized controlled trial of hypnosis compared with biofeedback for adults with chronic low back pain. (2014) Tan, G., Rintala, D. H., Jensen, M. P., Fukui, T., Smith, D., & Williams, W. (2014). European Journal of Pain 19 (2) 271-80**

Tan et al randomised 100 veterans with chronic low back pain into 4 treatment groups: 1) 8 session of hypnosis, 2) 8 sessions of hypnosis + recordings, 3) 2 sessions of hypnosis + recordings, 4) 8 sessions of biofeedback. Participants in all conditions reported significant reductions in pain, but improvements were greater in the hypnosis groups, and treatment gains were maintained over 3 months. There were no differences between the hypnosis groups, indicating that even very short hypnosis interventions can be effective in relieving pain.

[**Virtual reality hypnosis pain control in the treatment of multiple fractures: a case series.**](http://www.ncbi.nlm.nih.gov/sites/entrez?cmd=retrieve&db=PubMed&tool=UWMedicine&dopt=Abstract&list_uids=22443021) **(2012) Teeley A, Soltani M, Wiechman S, Jensen M, Sharar S, Patterson D *The American Journal of Clinical Hypnosis* 54; 3; 184-94**

VRH treatment was administered on 2 consecutive days, and pain and anxiety were assessed each day before and after VRH treatment as well as on Day 3, which was 24 hours after the second treatment session. Pain reduction from baseline to Day 3 was from 70% to 30%, despite opioid analgesic use remaining stable. The subjective pain reduction reported by patients was encouraging, and the results of this case series suggest the importance of further study of VRH with larger samples using randomized controlled trials

[**Hypnosis for symptom management in women with breast cancer: a pilot study.**](http://www.ncbi.nlm.nih.gov/sites/entrez?cmd=retrieve&db=PubMed&tool=UWMedicine&dopt=Abstract&list_uids=22443523) **(2012) Jensen M, Gralow J, Braden A, Gertz K, Fann J, Syrjala K *The International Journal of Clinical and Experimental Hypnosis* 60; 2; 135-59**

Eight women who were in treatment for breast cancer (n = 4) or breast cancer survivors (n = 4), presenting with 1 or more of 4 symptoms (chronic pain, fatigue, hot flashes, and sleep difficulties), were given 4 to 5 sessions of self-hypnosis training for symptom management. Analyses revealed (a) significant pre- to posttreatment decreases in pain intensity, fatigue, and sleep problems and (b) that pain intensity continued to decrease from posttreatment to 6-month follow-up.

[**Effects of self-hypnosis training and cognitive restructuring on daily pain intensity and catastrophizing in individuals with multiple sclerosis and chronic pain.**](http://www.ncbi.nlm.nih.gov/sites/entrez?cmd=retrieve&db=PubMed&tool=UWMedicine&dopt=Abstract&list_uids=21104484) **(2011) Jensen M, Ehde D, Gertz K, Stoelb B, Dillworth T, Hirsh A, Molton I, Kraft G**. ***The International Journal of Clinical and Experimental Hypnosis* 59; 1; 45-63**

Fifteen adults with multiple sclerosis were given 16 sessions of treatment for chronic pain that included 4 sessions each of 4 different treatment modules: (a) an education control intervention; (b) self-hypnosis training (HYP); (c) cognitive restructuring (CR); and (d) a combined hypnosis-cognitive restructuring intervention (CR-HYP). The findings supported the greater beneficial effects of HYP, relative to CR, on average pain intensity. The CR-HYP treatment appeared to have beneficial effects greater than the effects of CR and HYP alone. Future research examining the efficacy of an intervention that combines CR and HYP is warranted.

**Virtual reality hypnosis for pain associated with recovery from physical trauma. (2010) Patterson DR, Jensen MP, Wiechman SA, Sharar SR *The International Journal of Clinical and Experimental Hypnosis* 58; 3; 288-300**

The authors report a randomized, controlled study of 21 hospitalized trauma patients to assess the analgesic efficacy of virtual reality hypnosis (VRH)-hypnotic induction and analgesic suggestion delivered by customized virtual reality (VR) hardware/software. Subjective pain ratings were obtained immediately and 8 hours after VRH (used as an adjunct to standard analgesic care) and compared to both adjunctive VR without hypnosis and standard care alone. VRH patients reported less pain intensity and less pain unpleasantness compared to control groups

**Effects of self-hypnosis training and EMG biofeedback relaxation training on chronic pain in persons with spinal-cord injury. (2009) Jensen M, Barber J, Romano J, Hanley M, Raichle K, Molton I, Engel J, Osborne T, Stoelb B, Cardenas D, Patterson D. *The International Journal of Clinical and Experimental Hypnosis* 57; 3; 239-68**

Thirty-seven adults with spinal-cord injury and chronic pain were randomly assigned to receive 10 sessions of self-hypnosis (HYP) or EMG biofeedback relaxation (BIO) training for pain management. Participants in both treatment conditions reported substantial, but similar, decreases in pain intensity from before to after the treatment sessions. However, participants in the HYP condition, but not the BIO condition, reported statistically significant decreases in daily average pain pre- to posttreatment. These pre- to posttreatment decreases in pain reported by the HYP participants were maintained at 3-month follow-up

**Hypnosis in the management of persistent idiopathic orofacial pain – Clinical and psychosocial findings (2008) R Abrahamsen, L Baad-Hansen, P Svensson *Pain* 136 44–52**

Forty-one PIOP were randomized to active hypnotic intervention or simple relaxation as control,

for five individual 1-h sessions. Hypnosis seems to offer clinically relevant pain relief in PIOP, particularly in highly susceptible patients. However, stress coping skills and unresolved psychological problems need to be included in a comprehensive management plan in order also to address psychological symptoms and quality of life.

**Hypnotic analgesia for combat-related spinal cord injury pain: a case study. (2009) Stoelb BL, Jensen MP, Tackett MJ *The American Journal of Clinical Hypnosis* 51; 3; 273-80**

There is a mounting evidence base for the use of hypnosis in the peri and intra-surgical situation

**Cost analysis of adjunct hypnosis with sedation during outpatient interventional radiologic procedures (2002) Lang, E. V., Rosen, M. P. *Radiology*, 222 375-82.**

In 2002 Lang and Rosen conducted a prospective randomized study in which patients undergoing vascular and renal interventional procedures underwent either standard sedation (n = 79) or sedation with adjunct hypnosis (n = 82). According to data from this experience, the cost associated with standard sedation during a procedure was $638, compared with $300 for sedation with adjunct hypnosis, which resulted in a savings of $338 per case with hypnosis. Although hypnosis was known to reduce room time, hypnosis remained more cost-effective even if it added an additional 58.2 minutes to the room time.

This demonstrated the cost effectiveness of a simple hypnotic intervention.

Professor Lang’s studies demonstrate the effectiveness of a scripted intervention, other studies show an even greater effect with more tailored interventions.

**Table summarising the use of hypnosis in surgery**  (after Vanhaudenhuyse Hypnosis and Surgery)

|  |  |  |  |
| --- | --- | --- | --- |
|  | PROCEDURE | STUDY  CHARACTERISTICS | N |
| Defechereux et al 2000 | Thyroid | Prospective - Randomized | 40 |
| Lang et al 2000 | Vascular/renal | Prospective - Randomized | 241 |
| Schupp et al 2005 | Vascular/renal | Prospective - Randomized | 120 |
| Lang et al 2006 | Breast biopsy | Prospective - Randomized | 236 |
| Colombani et al 2008 | Colectomy | Case report | 1 |
| Musellec et al 2010 | Implant sterilization | Prospective | 24 |
| Abdeshahi et al 2013 | Third molars | Prospective | 24 |
| Facco et al 2013 | Skin tumour | Case report | 1 |
| Shenefelt et al 2013 | Dermatology | Prospective - Randomized | 39 |
| Tefikow et al 2013 | Surgical/medical | Meta - analysis | 2597 |
| Werner et al 2013 | Birth delivery | Prospective – Randomized | 1217 |
| Hizli et al 2015 | Prostate needle biopsy | Prospective – Randomized | 64 |
| Zemmoura et al 2016 | Low – grade glioma | Retrospective | 37 |

# Hypnopraxia, a new hypnotic technique for hypnoanesthesia (2017) Nicolas Droueta & Guy Chedeau Journal of Clinical Anesthesia 37 14–16

Various hypnotic techniques are used in anaesthesia, either on their own or as adjuncts. A new hypnotic technique, hypnopraxia, was tested in 5 patients undergoing various procedures (4 colonoscopies, 1 inguinal hernia repair, and 1 transobturator tape procedure). The patients were accompanied throughout the procedure by an anaesthetist trained in hypnoanaesthesia and hypnopraxia. Initially developed for use in hypnotherapy, the accompaniment with hypnopraxia relied on the closeness of the link between the anaesthetist and the patient. This was constantly built in the present moment, here and now, by giving back to the patient what the anaesthetist observed of the manifestations of the patient's unconscious mind (the patient's speech and choice of words, facial micro-expressions, involuntary bodily movements, and emotions). The anaesthetist's verbal accompaniment was therefore determined by the patient. No other anaesthetic technique was needed during the colonoscopies. For the 2 surgical procedures, some Sufentanil was given and local anaesthetic was applied by the surgeon. All 5 patients were well satisfied after the procedure. They were especially pleased at having been able to go through their procedure without needing any drug anesthesia, and at being in charge throughout.

**Adjunctive non-pharmacological analgesia for invasive medical procedures: a randomised trial. (2000) Lang, E. V., Benotsch, E. G., Fick, L. J., Lutgendorf, S., Berbaum, M. L., Berbaum, K. S., Logan, H., Spiegel, D. *The Lancet,* 355, 1486-1490.**

241 patients were randomised to receive intraoperatively standard care (n=79), structured attention (n=80), or self-hypnotic relaxation (n=82). Structured attention and self-hypnotic relaxation proved beneficial during invasive medical procedures. Hypnosis had more pronounced effects on pain and anxiety reduction, and is superior, in that it also improved haemodynamic stability. Procedure times were significantly shorter in the hypnosis group (61 min) than in the standard group (78 min, p=0.0016) with procedure duration of the attention group in between (67 min).

**Hypnosedation, a new method of anesthesia for cervical endocrine surgery. Prospective randomized**

**study. (2000) Defechereux, T., Degauque, C., Fumal, I., Faymonville, M.E., Joris, J., Hamoir, E., Meurisse, M. *Ann. Chir.* 125, 539–546.**

Twenty patients operated under hypnoanesthesia were compared to 20 patients operated under conventional anesthesia Significant differences in terms of inflammatory response and hemodynamic parameters were observed in favor of hypnoanesthesia. Patients of the hypnoanesthesia group had significantly less postoperative pain. Postoperative fatigue syndrome and convalescence were also significantly improved in these patients.

**Hypnosedation: a valuable alternative to traditional anaesthetic techniques. (1999) Faymonville, M.E., Meurisse, M., Fissette, J. *Acta Chirurgica Belgica*. 99, 141–146.**

This paper reviews the clinical experience of using hypnosis with conscious sedation and local anaesthesia (ie hypnosedation) successfully with 1650 patients.

**Hypnoanesthesia for endocrine cervical surgery: A statement of practice. (1999) Defechereux, T., Meurisse, M., Hamoir, E., Gollogly, L., Joris, J., Faymonville, M.E., *J. Altern. Complement Med.* 5, 509–520.**

Between April 1994 and June 1997, 197 thyroidectomies and 21 cervical explorations for hyperparathyroidism were performed under hypnoanesthesia (HYP). Operative data and postoperative course were compared to a clinically similar, contemporary population of patients (n = 119) who were operated on under general anesthesia (GA). All patients having HYP reported a pleasant experience and had significantly less postoperative pain and analgesic use. Hospital stay was also significantly shorter, providing a substantial reduction in the costs of medical care. The postoperative convalescence was significantly improved after HYP and a full return to social or professional activity was significantly quicker.

**Surgery under hypnosedation. A new therapeutic approach to hyperparathyroidism. (1998) Defechereux, T., Faymonville, M.E., Joris, J., Hamoir, E., Moscato, A., Meurisse, M., *Ann. Chir*. 52, 439–443.**

21 patients underwent a cervicotomy under hypnosedation for primary hyperparathyroidism (HPT). No conversion to general anaesthesia was needed.

**Hypnosis and its application in surgery. (1998) Faymonville, M.E., Defechereux, T., Joris, J., Adant, J.P., Hamoir, E., Meurisse, M., *Rev.Med. Liege* 53, 414–418**

Since 1992, hypnosis has been used routinely in more than 1400 patients undergoing surgery. Hypnosis used as an adjunct to conscious sedation and local anesthesia was associated with improved intraoperative patient comfort, and with reduced anxiety, pain, intraoperative requirements for anxiolytic and analgesic drugs, optimal surgical conditions and faster recovery of the patient.

**Psychological approaches during conscious sedation. Hypnosis versus stress reducing strategies: a prospective randomized study. (1997) Faymonville, M. E., Mambourg, P. H., Joris, J., Vrijens, B., Fissette, J. Albert, A., Lamy, M. *Pain,* 73, 361-367.**

Sixty patients scheduled for elective plastic surgery under local anesthesia and intravenous sedation (midazolam and alfentanil upon request) were included in the study. They were randomly allocated to either stress reducing strategies (CONT) or hypnosis (HYP) during the entire surgical procedure. Peri- and postoperative anxiety and pain were significantly lower in the HYP group as well as a significant reduction in intraoperative requirements for midazolam and alfentanil. Vital signs were significantly more stable in the HYP group and patient satisfaction scores was significantly higher.

**Hypnosis as adjunct therapy in conscious sedation for plastic surgery (1995) Faymonville, M.E., Fissette, J., Mambourg, P.H., Roediger, L., Joris, J., Lamy, M., 1995. *Reg. Anesth.* 20, 145–151.**

This retrospective study included 337 patients undergoing minor and major plastic surgical procedures under local anesthesia and conscious intravenous sedation. Patients were divided into three groups depending on the sedation technique: intravenous sedation (n = 137); hypnosis (n = 172), during which patients achieved a hypnotic trance level with age regression; and relaxation (n = 28). Intraoperative anxiety reported by patients in the hypnosis group (0.7 +/- 0.11) and in the relaxation group (2.08 +/- 0.4) was significantly (P < .001) less than in the intravenous sedation group (5.6 +/- 1.6). Pain scores during surgery were significantly greater in the intravenous sedation group (4.9 +/- 0.6) than in the hypnosis group (1.36 +/- 0.12; P < .001) and the relaxation group (1.82 +/- 0.6; P < .01). Furthermore, midazolam requirements were significantly lower in the hypnosis group (P < .001) and in the relaxation group (P < .01) as compared with the intravenous sedation group. Postoperative nausea and vomiting were reported by 1.2% of patients in the hypnosis group, 12.8% in the relaxation group and 26.7% in the intravenous sedation group. Greater patient satisfaction with the anaesthetic procedure and greater surgical comfort were also reported in the hypnosis group.

The following studies throw light on the nature and mechanisms of hypnotic analgesia

**Hypnosis and clinical pain (2003) Patterson, D. R., Jensen, M. P. *Psychological Bulletin*, Vol. 129, pp. 495-521**

Patterson and Jensen discuss how studies on the mechanisms of laboratory pain reduction show central nervous system activity during hypnotic procedures that offer possible physiological mechanisms of hypnotic analgesia. Randomized controlled studies with clinical populations indicate that hypnosis has a reliable and significant impact on acute procedural pain and chronic pain conditions.

**Pain and non-pain processing during hypnosis: A thalium-YAG event-related fMRI study. (2009)** **Vanhaudenhuyse, A., Boly, M., Balteau, E., Schnakers, C., Moonen, G., Luxen, A., Lamy, M., Degueldre, C., Brichant, J. F., Maquet, P., Laureys, S., Faymonville, M. E. *NeuroImage*, 47, 1047-1054.**

Using a parametric single-trial thulium-YAG laser fMRI paradigm, Vanhaudenhuyse et al assessed changes in brain activation and connectivity related to the hypnotic state as compared to normal wakefulness in 13 healthy volunteers.

**Functional Neuroanatomy of hypnotic state (1999) P Maquet, M E Faymonville, C Degueldre. G Defiore, G Franck, A Luxen, M Lamy *Biological Psychiatry* 45 (3) 327-333**

This study compared the differences in cerebral blood flow in subjects who were asked to relive a pleasant autobiographical experience whilst in hypnosis or in the normal ‘wakeful’ state.

**Functional anatomy of hypnotic analgesia: a PET study of patients with fibromyalgia*.* (1998)Wik, G., Fischer, H., Bragee, B., Finer, B., Fredrikson, M. *European Journal of Pain*, 3, 7-12.**

This study examined regional cerebral blood flow with positron emission tomography in patients with fibromyalgia, during hypnotically-induced analgesia and resting wakefulness. The patients experienced less pain during hypnosis than at rest. The observed blood-flow pattern supports notions of a multifactorial nature of hypnotic analgesia, with an interplay between cortical and subcortical brain dynamics.

**Faymonville, M. E., Laureys, S., Degueldre, C., Fiore, G. D., Luxen, A., Franck, G., Lamy, M., Maquet, P. (2000). Neural mechanisms of antinociceptive effects of hypnosis. *Anesthesiology*, 92, 1257-1267**

and

**Increased cerebral functional connectivity underlying the antinociceptive effects of hypnosis. (2003) Faymonville, M. E., Roediger, L., Fiore, G. D., Delgueldre, C., Phillips, C., Lamy, M., Luxen, A., Maquet, P., Laureys, S. *Cognitive Brain Research* 17, 255-262.**

As well as assessing changes in cerebral functional connectivity related to the hypnotic state (compared with simple distraction and the resting state) hypnosis was shown to reduce pain perception by 50%. Pain perception during rest and mental imagery was not significantly different.

**Key points from the well-controlled trials of the past 20 years, relative to standard care:**

1. Hypnosis is more effective for reducing daily chronic pain, benefits remain up to a year

**Jensen M, Barber J, Hanley M, Engel J, Romano J, Cardenas D, Kraft G, Hoffman A, Patterson D. (2008) Long-term outcome of hypnotic-analgesia treatment for chronic pain in persons with disabilities.** ***International Journal of Clinical and Experimental Hypnosis* 56(2):156-69**

26 participants in a case series of hypnotic analgesia for chronic pain were examined to determine the long-term effects of hypnosis treatment. Statistically significant decreases in average daily pain intensity, relative to pre-treatment values, were observed at posttreatment and at 3- and 9-month follow-up. The percent of participants who reported clinically meaningful decreases in pain were 27%, 19%, 19%, and 23%, at the 3-, 6-, 9-, and 12-month follow-up points, respectively. Moreover, at 12-months posttreatment, 81% of the sample reported that they still used the self-hypnosis skills learned in treatment

1. Hypnosis has been found to be either as or more effective than other pain treatments.

**Hypnotic approaches for chronic pain management: clinical implications of recent research findings (2014) Jensen, M. P., Patterson, D. R. *American Psychologist* 69(2), 167-177** See page 4

**A Nonrandomized Comparison Study of Self-Hypnosis, Yoga, and Cognitive-Behavioral Therapy to Reduce Emotional Distress in Breast Cancer Patients (2017) Bragard I, Etienne AM, Faymonville ME, Coucke P, Lifrange E, Schroeder H, Wagener A, Dupuis G, Jerusalem G. *International Journal of Clinical and Experimental Hypnosis* 65(2):189-209**

The authors asked breast cancer patients to participate in 1 of 3 mind-body interventions (cognitive-behavioural therapy (CBT), yoga, or self-hypnosis) to explore their feasibility, ease of compliance, and impact on the participants' distress, quality of life (QoL), sleep, and mental adjustment. Ninety-nine patients completed an intervention (CBT: n = 10; yoga: n = 21; and self-hypnosis: n = 68). Results showed high feasibility and high compliance. After the interventions, there was no significant effect in the CBT group but significant positive effects on distress in the yoga and self-hypnosis groups, and, also, on QoL, sleep, and mental adjustment in the self-hypnosis group.

**Differential effectiveness of psychological interventions for reducing osteoarthritis pain: a comparison of Erickson hypnosis and Jacobson relaxation (2002) M-C Gay, P Philippot and O Lumine *European Journal of Pain* 6: 1-16**

Participants reporting pain from hip or knee osteoarthritis were randomly assigned to one of the following conditions: (a) hypnosis (i.e. standardized eight-session hypnosis treatment); (b) relaxation (i.e. standardized eight sessions of Jacobson's relaxation treatment); (c) control (i.e. waiting list). Overall, results show that the two experimental groups had a lower level of subjective pain than the control group and that the level of subjective pain decreased with time. The beneficial effects of treatment appeared more rapidly for the hypnosis group. Results also show that hypnosis and relaxation are effective in reducing the amount of analgesic medication taken by participants.

**Hypnorelaxation as treatment for myofascial pain disorder: A comparative study (2002)** **E Winocur, A Gavish, A Emodi-Perlman, M Halachmi, I Eli. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology* Vol 93 (4) 429-434**

40 female patients with myofascial pain were allocated to 1 of 3 possible treatment groups: (1) hypnorelaxation (n = 15), (2) occlusal appliance (n = 15), and (3) minimal treatment group (n = 10). Hypnorelaxation and occlusal appliance were more effective than minimal treatment regarding alleviating muscular sensitivity to palpation. However, only hypnorelaxation (but not occlusal appliance) was significantly more effective than minimal treatment with regard to the patient's subjective report of pain.

### Hypnosis Treatment Has Significant Benefits Beyond Pain Relief

**In Conclusion**

* Majority report significant & meaningful reductions in pain intensity
* Many will continue to use self-hypnosis or audio recordings outside clinic settings
* Many achieve lasting reductions in pain
* May be useful for helping decrease the frequency of unhelpful pain related thoughts, anxiety, and improve sleep.

**Useful links**

[https://hypnosisandsuggestion.org//](https://hypnosisandsuggestion.org/)

<http://www.bscah.com/about-hypnosis/information-health-professionals>

<http://www.bscah.com/storage/app/media/Articles/Pre%20publication%20article%20on%20chronic%20pain.pdf>

Jensen MP [Hypnosis for chronic pain management: a new hope.](http://www.ncbi.nlm.nih.gov/sites/entrez?cmd=retrieve&db=PubMed&tool=UWMedicine&dopt=Abstract&list_uids=19596518) *Pain* 2009 Dec; 146; 3; 235-7

<http://painconcern.org.uk/airing-pain-programme-65-hypnosis-unexplained-pain/>

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