# Hypnosis & Functional Neurological Symptom Disorder (FND)

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Functional neurological symptoms (FNS) are common and account for a significant proportion of new presentations to Neurology outpatients (as a single or co-morbid presentation)[1]. These symptoms manifest as behaviours seen in conditions of neurological disease or injury (such as dystonia, paralysis, movement disturbance, seizures), but without an identifiable organic pathogen or structural defect which could produce such symptoms. These conditions are also known as conversion or dissociative disorders in psychiatric diagnostic terms. ICD-11 now uses the diagnostic label 'Dissociative Neurological Symptom Disorder', although 'Functional Neurological Disorder' (FND) is currently the most commonly used term.

Increasingly, patients with FNS have presented to neurology with these neurological symptoms, which has eventually led to a paradigm shift in understanding FNS, with an emerging movement to understand these conditions as resulting from cognitive neuroscience principles of how the brain processes 'data', and what happens when these processes go wrong. This does not discount psychosocial processes, it just explains a psychobiological mechanism by which FNS can be created and maintained, which had been absent from psychopathological theories.

The concept of the 'Bayesian Brain' in FNS is a contemporary cognitive neuroscience model, which applies particularly well to motor/movement FNS[2]. The model proposes that the brain and mind develops patterns of activation based upon prior experiences, which in turn allow these systems to make accurate predictions about cause and effect. If these predictions are 'fit for purpose', they minimise systemic surprise (i.e. an unexpected result), which produces disequilibrium – the antithesis to a system's 'desire' to maintain homeostasis. A well balanced system will have reasonably accurate predictive capabilities, based upon flexible 'top-down' models of ourselves and the world (i.e. 'schemas' or specific functioning neural networks), which can be finessed through ongoing experience, by validating against incoming, 'bottom-up' data (i.e. sensory feedback from the resulting experience). If the 'bottom-up' data supports the predictions of the 'top-down' model, it is strengthened. If the 'bottom-up' data is incongruent the model has to either adapt to incorporate the new information, or 'ignore' the incongruency to maintain homeostasis. What determines the likelihood of either action is unclear, although the likely explanation is the relative strength of the top-down or bottom-up signals. It is hypothesised that in FNS, there is a creation of an overly dominant top-down process involving an inaccurate model, which resists any incongruent bottom up feedback (to maintain homeostasis) and is therefore inflexible and unable to adapt (to functional recovery from injury, for example).

Traditionally, FNS has been treated psychologically with therapies based upon psychodynamic and cognitive behaviour therapy approaches[3]. The emergence of the Bayesian Brain model in FNS gives us a new direction for neuropsychologically informed interventions; psychological therapies attempting to directly influence neurocognitive processes – therapies such as hypnosis.

Hypnosis works with the same elements that are theorised to act as the catalysts to create and maintain FNS within the Bayesian Brain model; attention, beliefs and agency. Attention refers to the system's 'interest' in what is happening - internal or external experiences. Excessive attention to 'malfunctioning' parts, or specific processes in the body, appear to isolate that element from normal integrated functioning (which might also be called a physical dissociation), and so creates and perpetuates a functional symptom. Inaccurate beliefs about capability of functioning can also serve to 'feed' the rogue representation by being complicit. Agency (and self-awareness) refers to the perception that we are engaged or involved with a process which is happening. In FNS, the affected individuals are disconnected from this sense of agency[2]. Both attention and agency are neural processes (i.e. have discrete neural networks), as well as cognitive (thought) processes.

As FNS can be seen to result from an *automatic* dominant top-down process[2], hypnosis involves a *voluntary* top-down domination of conscious perception[4], involving the modulation of key neural networks which govern attention, self-awareness (including agency) and goal directed behaviours[5]. Therefore, we have an intervention which works on the same principles as those which are seen to maintain FNS. Contemporary hypnosis research has demonstrated that functional symptoms can be created and removed under hypnosis, with changes evidenced on brain imaging[6]. Hypnosis has been shown to reliably attenuate automatic 'top down' processes, such as word reading impulses in The Stroop Effect[7]. In terms of attention, hypnotic trance is a state of highly developed focused attention (or absorption), which can be voluntarily moved around to focus (or de-focus) upon different stimuli[8,9] to ameliorate symptoms. Hypnosis can also modulate one's sense of agency/self-awareness[8,9]. That is, under hypnosis, actions (mental, perceptual, physical) can be suggested and enacted by the individual, without a sense that the individual is volitional in the process (as occurs in motor/movement FNS). It has been found that both FNS patients and high hypnotisable patients have less (somatosensory) self-awareness on the Libet's test[10], which asks participant to gauge their awareness of an intention to make a movement, before the movement is initiated (which can give rise to a sense of involuntary action).

Imagery and re-scripting techniques are standard CBT approaches to working with a variety of mental health issues, including phobias and trauma. These techniques help to modify a person's maladaptive beliefs, which hinder adaptive functioning. The hypnotic state allows for a more intense imagery experience, through greater absorption/focused attention. Therefore, hypnosis can be a powerful mechanism to help an individual alter dysfunctional beliefs, by facilitating vivid therapeutic imagery[11].

Hypnosis for FNS has a long history, at least from the late 18th century with Jean-Martin Charcot, Sigmund Freud, Pierre Janet and others, treating 'hysteria'. It appears to be an intervention of potential merit for FNS[3] and has some well described hypnotic strategies to target specific FNS presentations[12], including what might be considered 'functional overlay' in patients with brain injury[1]. With the emergence of the 'Bayesian Brain' FNS model, the potential benefit of hypnosis with these conditions becomes even more obvious, by highlighting that the therapeutic mechanisms of hypnosis involves those very same processes, which in FNS, cause the dysfunction. We can therefore use hypnosis to more directly 're-calibrate' the dysfunctional FNS system to restore a more even 'power balance' between top-down and bottom-up processes, so that adaptive change can be made.

### *Illustrative Table*

| FNS | Hypnosis |
|---|---|
| Abnormal attention to mal-adaptive model of functioning | Modulates attentional 'spotlight' |
| Misperception of 'agency' | Modulates sense of agency (FND pts. and HH do worse on Libert's test) |
| Maladaptive beliefs of function | Imagery 'rescripting' |
| Maladaptive models of functioning 'protected' by selective attention processes which 'guard' against in-congruent data to maintain homeostasis | Modulates self-awareness – can turn on or off |
| **SO THAT PRETTY MUCH CEMENTS THE RELATIONSHIP!** | |

The British Society of Clinical and Academic Hypnosis (BSCAH) is a registered charity and has been in existence in various forms since the 1950's. All our members and trainers are health care professionals, (HCP's). Our aim is to promote the safe use and research of medical hypnosis. We run courses for colleagues across the UK including a University Accredited Diploma Course in Birmingham. https://www.bscah.com/list-courses-and-events

Standard Membership costs £75 annually and is open to all HCP's and Academics with an interest in the subject.


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# Case Study (permission has been given)

Dr JP Price. Consultant Clinical Neuropsychologist

Sean is a 46 year old man with a two year history of neck pain and an atypical torticollis. He was initially assessed by a physiotherapist, and following MRI, a large lipoma was discovered in his right trapezius, which was thought to be causing some of the symptoms. It was thought that the symptoms would resolve following surgical removal of the lipoma, although the symptoms became worse and did not respond to a trial of Baclofen. He was eventually diagnosed with FND by a Neurologist. Sean could not participate in physiotherapy due to his level of pain and the exacerbation of the symptoms during therapy. He felt such a strong sense of spasm in his neck that he constantly had to forcefully support his head, by pushing his face to the opposite side of the neck spasm, meaning that he only had the use of one arm as the other was engaged in supporting his head. This obviously had a disastrous consequence for his daily functioning, including simple tasks such as not being able to butter a slice of toast. This sensation only ceased when he was laid down in bed. His physiotherapy was stopped and he was referred to neuropsychology for intervention for his FND. At that point, Sean was only managing to work 2½ hours each week in his professional job due to the severity of the symptoms. Significant domestic distress had been noted in the referral.

Following Sean's neuropsychological assessment, the psychological issues which were noted in the referral were seen as consequences of his disability, rather than as a primary trigger to the symptoms. There were no other psychological issues which required a psychotherapeutic approach to treatment. One interesting aspect of Sean's childhood was an unidentifiable and temporary problem he had with his neck. He said he couldn't really recall any specific diagnosis or treatment, but saw several doctors and the problem just seemed to resolve over time. Using the 'Bayesian brain' model, the neuropsychological formulation was that Sean had a predisposing factor from childhood (enigmatic neck problem) that generated a dysfunctional schema of neck sensation and movement, which became less salient over time, allowing the normal pattern of functioning to return.

The development of the lipoma when Sean was an adult was seen as a trigger to reinstating the dysfunctional neck schema, which was strengthened by unusual and uncomfortable sensations in the neck/trapezius from the lipoma. Developing abnormal movement patterns as a consequence further strengthened the dysfunctional schema of neck functioning. Through discussion and demonstration of Bayesian Brain principles and how they manifest in normal and abnormal patterns of physical functioning, Sean could see the rationale of the model, and subsequently, the rationale for treatment via hypnosis. The aim of the hypnosis was to directly 'tap' into subconscious attentional systems to help Sean defocus from sensations from his neck, whilst attempting to perform normal movement patterns (including 'mirror' work), and allowing muscle groups to relax to prevent abnormal volitional tension (thus, strengthening the 'normal' schema of neck function). A self-hypnosis CD was made with the movement exercises, for Sean to practice at home. The intention was to get Sean to a stage where he could engage with physiotherapy to complete his physical rehabilitation. In only five sessions, over a period of two months, Sean had made sufficient progress via clinical hypnosis to be referred back to physiotherapy for further treatment. In collaboration with the physiotherapist, Sean continued to have periodic review in neuropsychology to consolidate his progress. He continued to use his self-hypnosis CD at home. After only four physiotherapy sessions over the next eight months, Sean had made a substantial recovery. He no longer had to support his head and had no observable abnormal movement patterns. At the time of writing, he still experiences some stiffness in his neck, which can become exacerbated at times with stress and muscle fatigue, but the impact on his life was minimal. He was back at work full time, gained a promotion and was back to driving. His confidence (which had previously hit a very low point) had returned, he felt more able to socialise, and he was hopeful that the remaining two planned sessions of physiotherapy and neuropsychology would see him return to his pre-morbid level of functioning.

In summary, after a period of over two years of severely debilitating functional motor/movement symptoms (following failed surgical, medication and standard physiotherapy interventions) which were eventually seen as untreatable, clinical hypnosis facilitated physical rehabilitation so that Sean could engage fully in FND informed physiotherapy to improve his symptoms to near complete recovery.

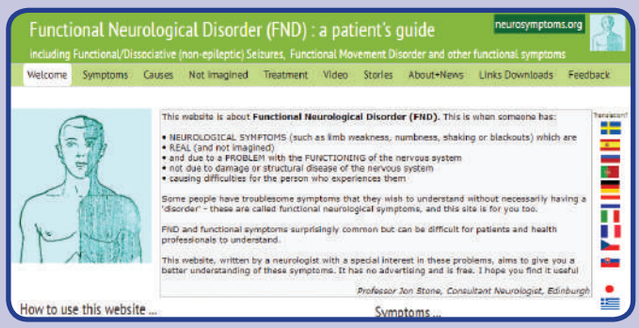
**Resources**

FND Information websites:

- www.neurosymptoms.org
- www.nonepilepticattacks.info


FND patient support organisations:

- FND Hope (https://fndhope.org)
- FND Action (www.fndaction.org.uk)




# Exercise and physical activity: Physiotherapists' perspective

The benefits of exercise and physical activity in people with Multiple Sclerosis (MS) are widely documented. These include improved muscle strength, fitness and quality of life[1,2]; yet uptake is poor placing people with MS at an increased risk of developing the secondary complications associated with inactivity, such as stroke, type 2 diabetes and cardiovascular disease[3,4]. Indeed, there is evidence to suggest that only 20% of people with MS meet the recommended levels of physical activity[3]. It is therefore crucial that health professionals develop strategies to help change this trajectory as it is a public health concern.

But how do we engage people with MS, a progressive neurological condition, to sustain physical activity overtime? Many attempts have been made to address this issue but with limited success. Perhaps there is a need to examine this topic from another perspective. That is, understanding the prioritisation and meaning of exercise and physical activity both from the perspective of people with MS and health professionals such as physiotherapists. Physiotherapists, the third most contacted healthcare professionals by people with MS in the United Kingdom[5], play an important role in improving health and wellbeing through the promotion of exercise and physical activity[6-8].

A recent study, using focus groups underpinned by the principles of framework analysis, explored physiotherapists' interpretation of exercise and physical activity; examined physiotherapists' views and opinions about the meanings and prioritised physical activity as reported by people with MS; and discussed the implications for clinical practice. Here physical activity was defined as "any bodily movement produced by skeletal muscles that result in energy expenditure"[9] and would include domestic, occupational and sports related activities. Exercise on the other hand was defined as "a subset of physical activity that is planned, structured and repetitive"[9] and aims to either improve or maintain physical fitness.

Physiotherapists were asked to reflect on the prioritised