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What Is Functional Neurological Disorder?

Functional neurological disorder (FND) is a brain-based condition that can affect movement, sensory, and cognitive systems. The term "functional" means the brain and nervous system are not functioning properly — they're having trouble sending and receiving signals to and from the body. FND differs from other neurological disorders in that there's no damage to the physical structures of the brain or nervous system, or at least none that would explain the symptoms. Even without structural damage, FND can cause significant disability and often remains chronic without proper treatment.

Symptoms of FND often resemble those seen in structural or degenerative neurological diseases, such as seizures, strokes, demyelinating disease, or brain tumors, but FND works through a different process. People with FND typically don't show significant abnormalities on blood or spinal fluid testing, epileptic activity on EEGs, or brain damage on MRI. **Normal test results don't mean the symptoms aren't real.**

“Because there is no damage to the nervous system, it is very possible to improve — and many times, recover from — FND.”

One way to understand it: brain damage or neurodegenerative disease is a problem with the brain's structure and wiring — a "hardware" problem. In FND, the wiring is intact, but the brain has lost the ability to properly access or use it to control movement or process sensation — more of a "software" problem. The nervous system is fundamentally normal, but something is interfering with how it's being used to control the body. The upside: because the structures are not damaged, it's possible to retrain the nervous system and regain control.

Types of FND

Functional Movement Disorders	Shaking (functional tremor), jerky movements (functional myoclonus), tics, walking or balance difficulties (functional gait disorder), sustained muscle contractions (functional dystonia), weakness or paralysis in a body part, or speech disturbances
Functional / Dissociative Seizures	Previously called psychogenic non-epileptic seizures (PNES). These can look like epilepsy or fainting spells, with episodes of uncontrollable body movements, inability to move or speak normally, often with alterations in awareness. These are not associated with abnormal electrical discharges from the brain on EEG, unlike epileptic seizures.
Functional Sensory Symptoms	Disturbances in vision (e.g., reduced or blurred), hearing, or body sensations. Sensations may be dulled (e.g., numbness), altered, or heightened (e.g., sensitivity to light, sound, or touch).

Functional Cognitive Disorder	Difficulty with memory, attention, thinking abilities, or “brain fog” that is not due to dementia
Functional Dizziness	Persistent postural-perceptual dizziness (PPPD), which worsens with visual processing or standing

Symptoms often fluctuate and change over time, and many people with FND also experience related symptoms such as fatigue, depression, anxiety, pain, or sensitivity to medications.

How FND Is Diagnosed

Positive Signs - No Longer a Diagnosis of Exclusion

FND can now be diagnosed based on specific signs found on neurological exam and history. Normal scans, labs, and additional tests can help to rule out other co-occurring conditions, but they don’t rule *in* the diagnosis of FND. The presence of “positive signs” show that physical structures are intact but there is a problem with how the nervous system is functioning. When positive signs are present, we can diagnose FND with confidence — not just by process of elimination.

Examples of tests for some movement subtypes of FND include:

Hoover’s Sign: With leg weakness, this test compares leg strength during voluntary effort (when a person *tries* to use the leg) versus automatic movement (when a person is focused elsewhere). Normal movement during automatic movement shows that the muscles and nerves are capable of normal strength, and that the problem lies not in the leg itself, but in how the brain consciously directs movement.

Entrainment Test: With tremor, this can show that the rhythm of a functional tremor changes or disappears entirely when a person copies a different rhythm with the unaffected hand.

Variability or Inconsistency: Symptoms may change in two ways. First, a movement can be impaired when a person tries to perform it on purpose, but be normal when it occurs automatically as part of another activity (e.g., some people can run or skip but can’t walk). Second, symptoms can fluctuate over time – day to day, moment to moment, or situation to situation — without any structural change to explain the shift. Not everyone with FND experiences this fluctuation; some people have constant symptoms. But when variability is present, it’s a useful positive sign.

Together, these positive signs **show that voluntary, deliberate movement is disrupted, while automatic movement remains intact**. In other words, the muscles and nerves are not damaged, but something interferes with conscious control over them. This matches what many patients notice themselves: symptoms often get worse the harder they try to control them.

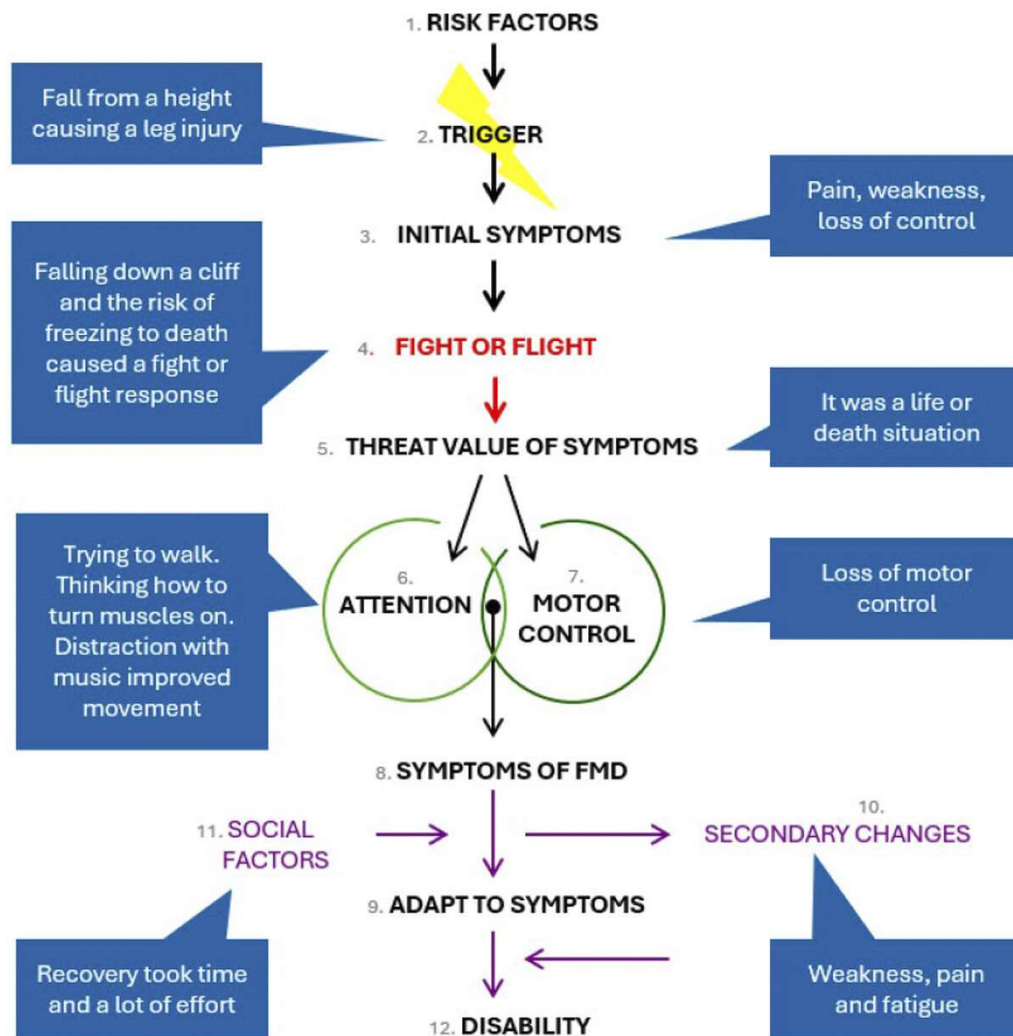
What Causes FND?

There is usually not one single cause. Most people are surprised to learn that the factors that *led* to the development of FND are often different from the factors that *keep it going* once it’s started. We organize these into three categories:

Predisposing	Factors that increase someone's risk of developing FND — genetics, other neurological diagnoses (e.g., migraines, epilepsy), other health conditions (e.g., POTS, chronic pain), psychological factors (e.g., difficulty identifying feelings, high stress sensitivity, “go go go” personality, perfectionism, autism), or a history of trauma.
Precipitating (Triggering)	A major life change, medical illness, or accident that seems to trigger symptoms to start. Not everyone experiences a clear triggering event.
Perpetuating	What keeps symptoms going and makes them worse over time — often the primary target of therapy. Includes co-occurring symptoms, neuroplastic brain changes, and some coping patterns. Some coping strategies that help at first can become harmful in the long-term (e.g., prolonged rest, avoiding triggers). Even normal fear or anticipation of symptoms can unintentionally train the brain to produce more symptoms.

How Do Symptoms Develop and Persist Over Time?

For functional movement disorders in particular, researchers have described a chain of events:



From the Nielson et al (2023) Physio4FMD Workbook

1. **A triggering (or precipitating) event.** An injury, pain, a panic attack, dissociation, a period of immobilization, a migraine, general anesthesia, or sleep paralysis are common examples. The trigger doesn't directly cause the disorder, but it sets off a chain of changes in how the body controls movement.
2. **An initial symptom and a threat response.** The trigger produces an initial symptom (e.g., a fall might cause pain, pins and needles, or a muscle spasm). The brain interprets this as a potential threat and activates a fight-or-flight response.
3. **Attention gets redirected to the body.** As part of the fight-or-flight response, the brain focuses on the affected body part like a spotlight searching for danger. This can make movement harder, since normal movement is largely automatic and runs best without conscious oversight — the same reason an athlete can “choke” under pressure or a skilled pianist can fumble a well-practiced piece by thinking too hard about their fingers.
4. **The brain starts predicting movement incorrectly.** Over time, the brain settles into an unwanted pattern and starts expecting the wrong thing — similar to misjudging how heavy a milk carton will be or stumbling when stepping onto an escalator that turns out to be stopped. While most people quickly adjust when an expectation like this turns out to be wrong, people with FND often have more difficulty making that adjustment, so the incorrect movement pattern becomes the brain's new default.
5. **Symptoms lead to further changes.** Adjustments that people make to cope with symptoms, like using a mobility aid or becoming less active, can cause new problems, such as shoulder pain from crutches or increased fatigue. Outside pressures, like feeling pushed to return to work or normal activities before you're ready, or feeling unsupported or misunderstood by family, employers, or providers, can add to this burden.
6. **All of it adds up.** Over time, the original symptoms combined with these secondary changes lead to increasing disability, which is why early, FND-informed treatment matters.

Which Type of FND Do I Have?

For our clinics, we distinguish between two main subtypes of FND:

Functional/dissociative seizures (also called PNES):

Distinct episodes (usually lasting seconds to minutes, but occasionally longer) of loss of control of neurological functions. Episodes generally involve an altered level of awareness or responsiveness that affect a person's ability to hear/understand others, respond, or remember the episode. *If there is any change in awareness, responsiveness, or memory during the FND episode, we consider it a functional seizure.*

The diagnosis of functional/dissociative seizures is best made by an epileptologist (a neurologist who specializes in epilepsy). After receiving the diagnosis at Inova, treatment typically involves referral to our FND neuropsychology clinic for self-management training or psychotherapy. For some people, occupational therapy can also help with managing sensory triggers.

Functional movement disorders

Problems with movement – either too much movement (e.g., tremor, jerky movements, abnormal muscle contractions, or tics), too little movement (e.g., weakness, paralysis, slowness), or walking/balance problems. These can be constant or episodic, but when episodic, they do **not** involve any change in awareness or responsiveness.

If your movement symptoms are present much of the time or can be readily triggered in a clinic setting, you may benefit from our [Functional Movement Disorders Interdisciplinary Clinic](#) to see our functional movement disorders specialists (neurologist, rehab therapists, and psychologists) together.

How is FND Treated?

Depending on the symptoms, treatments may include:

- **Physical therapy** helps you retrain abnormal movement patterns that may develop in FND. Unlike traditional physical therapy, FND rehab often emphasizes whole-body movement that taps into more automatic movement patterns, rather than focusing on the part of the body that is not functioning.
- **Occupational therapy** helps to restore independence and re-engagement in meaningful activities without overwhelming your nervous system.
- **Speech therapy** can help with speech, swallowing, and memory or thinking difficulties.
- **Psychotherapy** can help identify and address individual factors contributing to your FND, develop healthy ways to gain control of your symptoms, manage co-occurring mental health conditions, and get your life back.
- **Psychiatry** may be helpful if you have significant anxiety, depression, or other mental health diagnoses — these conditions, even when unrelated to FND, can make FND symptoms harder to manage.

Can I Recover From FND?

Because there's no damage to the nervous system, it is very possible to improve — and often recover from — FND, especially after a clear diagnosis and structured treatment program. **Most people see significant improvement and many recover fully**; a smaller subset have symptoms that continue to progress. The road to recovery is not always easy and takes persistence and motivation. Understanding how the diagnosis was made, learning why extra testing usually isn't needed, understanding your “personal equation” of factors that led to the development of FND, developing ways to cope with your symptoms, and retraining your brain are all part of that process.

Learn More About FND

The resources below can help put you on the path to your best possible recovery.

Inova Materials

- Functional/Dissociative (Nonepileptic) Seizures: A Guide for Patients and Families

External Resources

- www.Neurosymptoms.org — educational videos, patient testimonies, and free downloadable fact sheets on FND symptoms, diagnosis, and treatment.
- FND Society (www.fndsociety.org) — a professional society of healthcare professionals, scientists, and students focused on functional neurological disorders.
- FND Hope (www.fndhope.org) — an international patient-run charity with resources on symptoms, providers, research, and patient stories.
- FND Action (www.fndaction.org.uk) — educational and support resources for people living with FND and their families or caregivers, including the #InformTheDoctor campaign.
- FND Portal (www.fndportal.org) — a site built by a patient with FND, offering information and a patient perspective on the condition.

Apps & Websites

- myFND (www.myfnd.co.uk) — a phone app designed to help you understand and manage FND.
- Memento — a phone app for functional cognitive disorder, offering a 6-week self-guided program on how memory works and strategies to build attention and coping habits.
- Neurolog (www.neurolog.app) — a phone app for tracking FND symptoms, medications, and triggers.
- How We Feel (www.howwefeel.org) — a phone app to help you build awareness of your body's signals and emotions.
- Curable (www.curablehealth.com) — a phone app for chronic pain that helps retrain the nervous system.
- Visible (www.makevisible.com) — a phone app that tracks heart rate, symptoms, and exertion to help you pace your day.
- Tame the Beast (www.tamethebeast.org) — a patient-friendly site explaining how chronic pain works in the nervous system, with tools to help retrain it.

Books

- Overcoming Functional Neurological Symptoms: A Five Areas Approach — a CBT-based self-help workbook by Christopher Williams, MD and Alan Carson, MD, with tools for managing FND.
 - Taking Control of Your Seizures — a practical workbook for functional seizures by Joel Reiter, MD, Donna Andrews, PhD, Charlotte Reiter, MD, and Curt LaFrance, MD with an accompanying therapist guide.
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- Reset & Rewire: The FND Workbook for Kids & Teens — a workbook by Katie Carey and Meagan Watson, based on multiple therapeutic approaches; effective for children, teens, and adults.
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