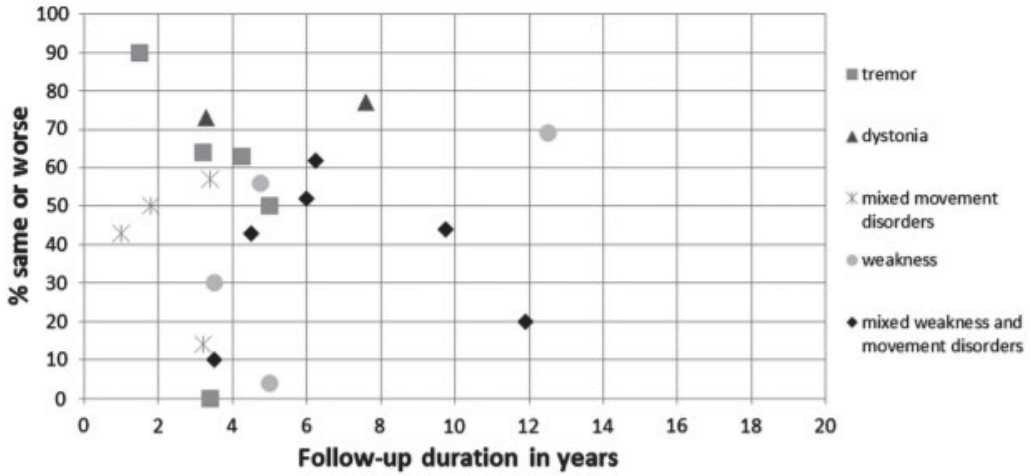
FND prognosis in the outpatient setting



- 24 studies, average f/u 7.4 years, 40% same or worse (range 10-90%)
- Positive predictive factors: short symptom duration, early dx, positive health care exp

(Gelauff 2014)

FND prognosis in the inpatient setting

- Functional stroke mimics most common motor FND (Gargalas 2017; Cock 2018)
  - **~8%** of acute presentations of stroke
  - >young and F, +weakness, speech

- Outcomes for functional stroke mimics (Simhan 2020):

  - 30% → 63% good mRS or NIHSS≤1 at hosp dc or f/u

  - Acute presentation, more prompt dx, may lead to better outcomes

Contents lists available at ScienceDirect

Journal of Psychosomatic Research

Review

Physiotherapy for functional (psychogenic) motor symptoms: A systematic review

Glenn Nielsen [a,*], Jon Stone [b], Mark J Edwards [c]

- 1 controlled intervention + 28 case series (n=373)
- Typically PT in the context of MDT, included inpt, outpatient, intensive multidisciplinary.
- Improvements in 60-70% of cases including some studies with long-term follow-up

(Nielsen 2013)

Outpatient rehab for motor FND

- Retrospective cohort study (n=50)
- Outcomes analyzed over 4 months
  - Mean illness duration = 5.1 years
  - Weekly PT, # in 4 months = 6.5 sessions (4.3 SD)
  - 13 total discontinued treatment prior to discharge
  - 10 completely asymptomatic, 7 markedly improved
  - Positive correlation between # of sessions and clinical improvement

(Maggio 2020)

FND outpatient day programs in the US

MAYO CLINIC

- 5 days (M-F)
- PMR screening; PT (2xdaily), OT (2xdaily), SLP (daily if needed), psychologist (once)

→ 73.5% remission or near 60% at 2 yrs (Czarnecki 2012)

Shirley Ryan Abilitylab

UNIVERSITY OF LOUISVILLE SCHOOL OF MEDICINE

- 5 days (M-F)
- PT (daily), OT (daily), SLP (daily if needed), psychologist (daily)

→ 86.7% at discharge
69.2% at 6 month follow-up (Jacob 2018)

UW Medicine

- 8-12 sessions over 3wks
- PMR (beginning and end), rehab psych (6x), PT (4x/wk), OT (3x/wk), SLP (2x/wk), patient care coordinator

ORIGINAL ARTICLE

Inpatient Treatment of Functional Neurological Disorder: A Scoping Review

Gabriela S. Gilmour, Jessica D. Jenkins

- 34 articles met inclusion criteria, 11 acute presentations, 16 chronic presentations
- Rehabilitation + psychotherapy in most cases
- Most reported partial or complete resolution of symptom, mostly persisting in f/u
- Those with shorter duration of symptoms had better outcomes
- LOS mean 24.4 days

(Gilmour 2020)

Physiotherapy for functional motor disorders: a consensus recommendation

Glenn Nielsen,[1,2] Jon Stone,[3] Audrey Matthews,[4] Melanie Brown,[4] Chris Sparkes,[5] Ross Farmer,[6] Lindsay Masterton,[7] Linsey Duncan,[7] Alisa Winters,[3] Laura Daniell,[3] Carrie Lumsden,[7] Alan Carson,[8] Anthony S David,[9,10] Mark Edwards[1]

Box 1 General treatment principles for physiotherapy for functional motor disorder (FMD)

- Build trust before challenging/pushing the patient.
- Project confidence making it clear that the physiotherapist knows about FMD.
- Create an expectation of improvement.
- Open and consistent communication between the multidisciplinary team and patient.
- Involve family and carers in treatment.
- Limited 'hands-on' treatment. When handling the patient, facilitate rather than support.
- Encourage early weight bearing. 'On the bed strength' will not usually correlate with ability to stand in functional weakness.
- Foster independence and self-management.
- Goal directed rehabilitation focusing on function and automatic movement (eg, walking) rather than the impairment (eg, weakness) and controlled ('attention-full') movement (eg, strengthening exercises).
- Minimise reinforcement of maladaptive movement patterns and postures.
- Avoid use of adaptive equipment and mobility aids (though these are not always contra-indicated).
- Avoid use of splints and devices that immobilise joints.
- Recognise and challenge unhelpful thoughts and behaviours.
- Develop a self-management and relapse prevention plan.

From Nielsen et al., 2015

Physical Therapy

- First line treatment for mFND
- Targets underlying mechanisms
- Embedded in transparent communication

Key features:

1) Education
2) Demonstration that normal movement can occur
3) Retraining movement w/ diverted attention
4) Changing maladaptive behaviors related to symptoms

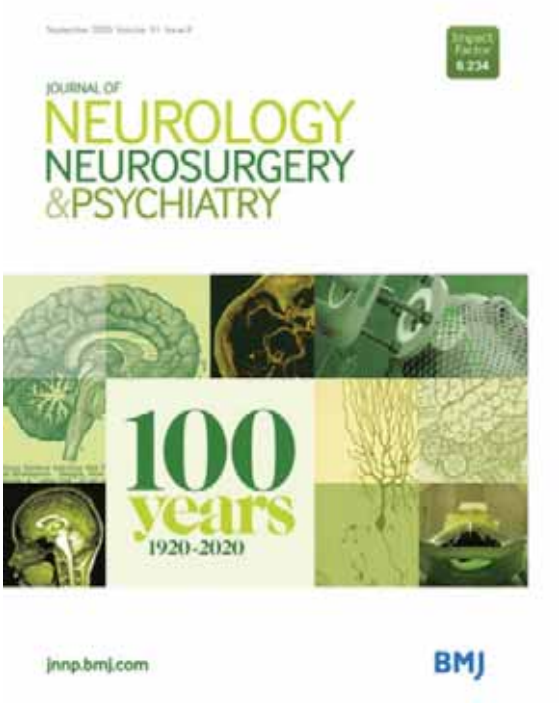
Techniques to normalize movement

FUNCTIONAL GAIT PHENOTYPES (Nonnekes et al., 2020)
1. Variability in base of support or inability to walk in a straight line, often with excessive arm movements and claims of poor balance **(ataxia)**
2. Scissoring **(spasticity)**
3. The weak gait with knees giving way or Trendelenburg gait **(weakness)**
4. Antalgic gait. Asymmetrically reduced stance phase **(limping)**
5. Excessive slowness, sometimes with start hesitancy **(bradykinesia)**
6. Dragging **(hemiparesis)**
7. Abnormal posturing of the leg or trunk **(dystonia)**

- **Change speed of walking – speed up or slow down;** change direction – backwards and sideway
- Walk by sliding feet forward, plantar surface in contact on ground. Gradually progress to normal walking.
- **Pre-gait (part vs whole) activities with aim of building up normal gait pattern; eg – side to side weight shift, continue until feet "automatically" advance forward incrementally, progressively increasing step length with focus on maintain rhythmical weightshift rather than action of stepping**
- Walk carrying small weights/dumbbells in each hand
- **Walk to set rhythm (eg, metronome, counting, in time to music)**
- Exaggerated movement (eg walking with high steps, jogging, skipping, stepping and kicking ball), hurdle negotiation
- Walking up/down stairs
- Walking while performing motor (eg bouncing ball, pouring water between cups) or cognitive (eg serial 3's) dual-task activities

Adapted from Nielsen et al., 2015

Consensus recommendations



Combine motor-relearning with a behavioral approach

2015: Physical Therapy

2020: Occupational Therapy

2021: Speech Therapy

Nielsen 2015; Nicholson 2020; Baker 2021

PT Interventions

JNNP Online First, published on November 28, 2014 as 10.1136/jnnp-2014-309255
Neuropsychiatry

OPEN ACCESS

VIEWPOINT

Physiotherapy for functional motor disorders: a consensus recommendation

Glenn Nielsen,[1,2] Jon Stone,[3] Audrey Matthews,[4] Melanie Brown,[4] Chris Sparkes,[5] Ross Farmer,[6] Lindsay Masterton,[7] Linsey Duncan,[7] Alisa Winters,[3] Laura Daniell,[3] Carrie Lumsden,[7] Alan Carson,[8] Anthony S David,[9,10] Mark Edwards[1]

Table 3 Examples of techniques for specific symptoms to normalise movement

Symptom	Movement Strategy
Gait disturbance	Speed up walking (in some cases, this may worsen the walking pattern) Slow down walking speed Walk by sliding feet forward, keeping plantar surface of foot in contact with the ground (ie, like wearing skis). Progress towards normal walking in graded steps Build up a normal gait pattern from simple achievable components that progressively approximate normal walking. For example—side to side weight shift, continue weight shift allowing feet to 'automatically' advance forward by small amounts; progressively increase this step length with the focus on maintaining rhythmical weight shift rather than the action of stepping Walk carrying small weights/dumbbells in each hand Walking backwards or sideways Walk to a set rhythm (eg, in time to music, counting: 1, 2, 1, 2…) Exaggerated movement (eg, walking with high steps) Walking up or down the stairs (this is often easier that walking on flat ground)

OT Interventions

Occasional essay

Occupational Therapy Consensus Recommendations for Functional Neurological Disorder (Long Version)

Clare Nicholson,[1] Mark J Edwards,[2] Alan Carson,[3] Paula Gardiner,[4] Dawn Golder,[5] Kate Hayward,[1] Susan Humblestone,[6] Helen Jinadu,[7] Carrie Lumsden,[8] Julie MacLean,[9] Lynne Main,[10] Lindsey McGregor,[11] Glenn Nielsen,[2] Louise Oakley,[12] Jason Price,[13] Jessica Ranford,[9] Jasbir Ranu,[1] Ed Sum,[14] Jon Stone[3]

Table 5 Examples of intervention strategies for functional movement symptoms

Symptom	Intervention Strategy
Functional Tremor	- Superimpose alternative, voluntary, 'rhythms' on top of the existing tremor and gradually slowing all movement to a complete rest. - Unilateral tremor: use the unaffected limb to dictate a new rhythm (eg, tapping/opening and closing the hand), that is entrain the tremor to stillness.[12] Music can be introduced to dictate a rhythm to follow. - Assist the person to relax the muscles in the limb to prevent co-contraction. - Try to control a tremor with the person at rest, before moving on to activity. - Use of gross rather than fine movements (which take more concentration) eg, handwriting retraining; using a marker and large piece of paper or white board with big lettering or patterns / shapes rather than trying to focus on 'normal' handwriting. - Discourage co-contraction or tensing of muscles as a method to suppress a tremor, as this is unlikely to be a helpful long-term strategy.

SLP Interventions

General neurology

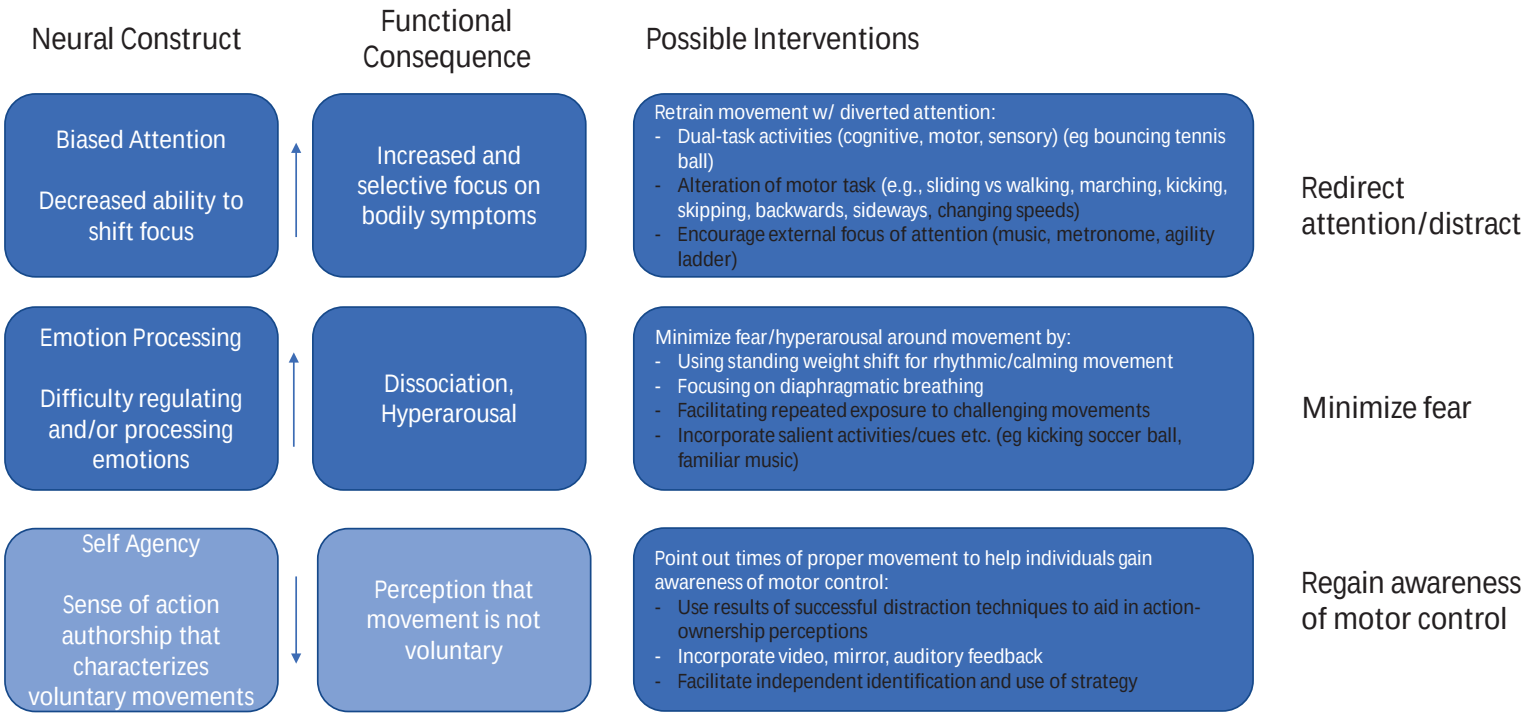
Review

Management of functional communication, swallowing, cough and related disorders: consensus recommendations for speech and language therapy

Table 5 Treatment of functional articulation disorders

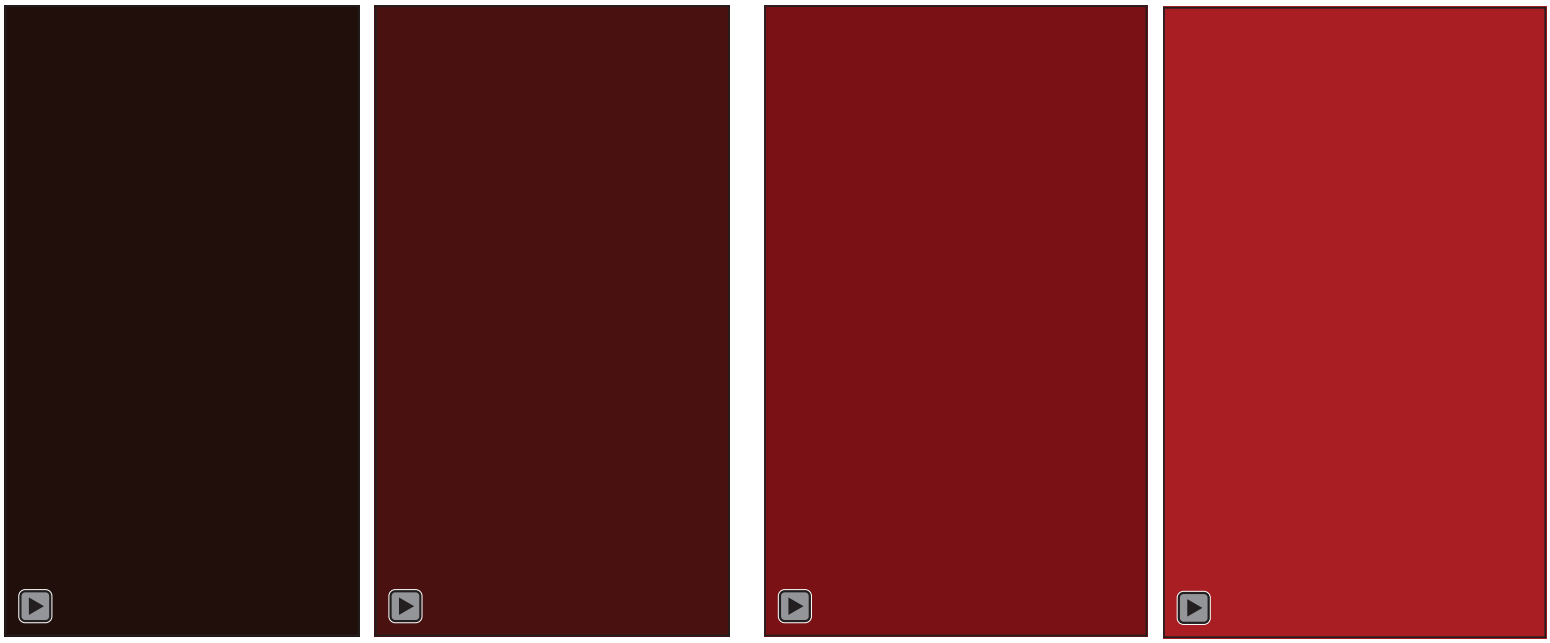
Domains of intervention	Examples of possible strategies
Education and explanatory	► Reassurance regarding nature of symptoms and good prognosis for resolution. ► General principles already discussed as for functional voice and fluency including their understanding of diagnosis, the rationale for current diagnosis. ► Education about how we actually speak vs how we think we speak for example, we do not necessarily pronounce words according to spelling.
Symptomatic	► Reduction of excessive musculoskeletal tension in speech and non-speech muscles often associated with articulation: in head, neck, shoulders, face and mouth. ► Where there is functional facial weakness, spasm, or trismus, collaborative treatment with physiotherapy or occupational therapy may be helpful. ► Eliminate secondary or accessory movements which may involve the patient doing something differently, which acts as a distraction, later to be faded out as speech normalises. ► Focusing on normal movements and sounds, distracting from abnormal sounds, etc. ► Dual tasking while speaking as form of distraction. ► Invite non-speech articulation such as singing. ► Introduce skills in 'mindfulness' during oromotor tasks as a way of maintaining focus on easy, smooth movements where possible. ► Slow speech down or elongate a sound rather than building tension around it, which can be explained as 'resetting the system'. ► Use nonsense words or syllable repetitions as way to demonstrate potential for 'normal' function. ► Advance communication with higher cognitive linguistic content in hierarchical fashion (similar to the strategies for functional voice and stuttering). ► Redirect patient focus on speech to other topics, monitoring if speech improves and in which contexts. ► If functional voice or fluency problems are also present the treatment of a single communication problem may result in resolution of all communication symptoms.

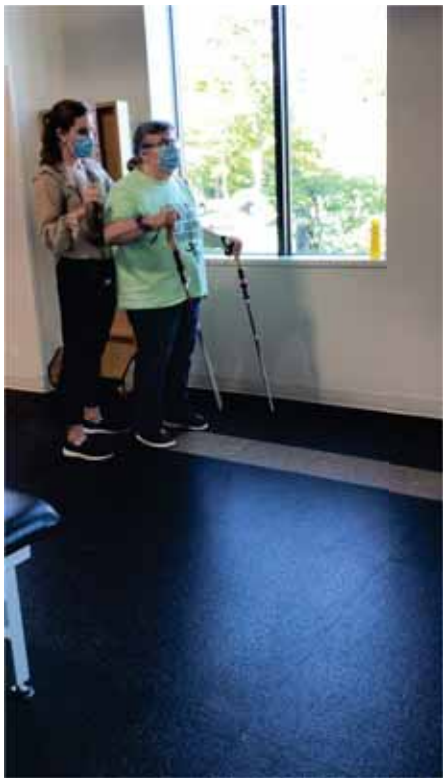
Understanding and Targeting the Underlying Mechanisms



Adapted from Maggio et al 2023; Fobian and Elliot 2019

Rehabilitative Strategies




RAS applied to a functional gait disorder

Baseline

RAS trial

Carryover

(Hebb 2022)

Functional progress over the course of rehabilitation

(Geary 2022)