

DOMAILLE
NEUROPHYSIO

Neurophysiotherapy

Colin Domaille GradDipPhys MCSP
Specialist Neurophysiotherapist

Learning objectives

- Understand what Neurophysiotherapy is and what it can offer to people with neurological conditions
- Understand recent advances in technologies in relation to rehabilitation of people with neurological conditions
- Increased awareness of local services offering neurophysiotherapy and related adjuncts

Session Plan

- Neurophysiotherapy approaches
- Conditions
- Symptoms
- Management
- Emerging technologies in the world of neurophysiotherapy
- Case studies
- Local services

Me

- Qualified in 1991 from QE Birmingham
- Neurophysiotherapy since 1996
- Managed the rehabilitation and stroke team in Bristol General from 1998 – 2005
- North Somerset specialist neurology practitioner 2005 – 2011
- Independent practice 2011 – to date set up my own practice – ‘Domaille Neurophysio’ in 2014
- Close working with other health professionals including neurology consultants, OT’s, GP’s Speech Therapists, Psychologists, Orthotists and holistic therapists
- Working with Case managers and solicitors
- Expert witness work for Claimant and Defense.



"OK, you've had a great fall, but we'll have you back on that wall in no time."

Neurophysiotherapy...

- Specialise in assessment and treatment of people with disorders of the central nervous system
- Based on extensive knowledge of Normal Movement and an understanding of biomechanics
- Holistic approach
- Therapy carried out in variety of settings depending on client's needs

Bobath

- Based on approach from 1940's
- Widely used worldwide
- Based on therapist's understanding of normal movement
- "Hands on" facilitation to help restructure the nervous system enabling client to relearn movement and function

Movement Science

- Also known as the Motor Relearning Programme
- Combines fields of biomechanics, motor performance and neuromuscular physiology
- Also encompasses understanding of the psychology of movement and how people learn patterns of movement

Conditions we treat

- Brain Injury
- Spinal cord injury
- Multiple Sclerosis
- Stroke
- Motor Neurone Disease
- Cerebral Palsy
- Parkinson's
- Neuromuscular Disease such as Guillain Barre

Symptoms

- Spasticity
- Pain
- Muscle weakness
- Poor balance and falls
- Problems with gait
- Fatigue
- Reduced sensation and proprioception

Neuroplasticity

- Also known as ‘cortical re-mapping’
- Changes which occur in the organisation of the nervous system as a result of experience
- Previously thought to only occur in children
- Sensory stimulation of certain body parts = expansion of sensory areas of the cortex
(Jenkins 1990)
- Retraining following lesion proved to be better than no training (Nudo et al 1990)

Neurophysio management

- Pain management
- Spasticity management
- Exercise programmes including supported gym visits, home exercise programmes and exercise classes
- Gait analysis and re-education
- Balance re-education and falls prevention
- Provision of aids and equipment
- Postural management
- Fatigue management
- Sensory re-education
- Advice and education

Spasticity

- Comes from the Greek word “Spastikos” meaning to ‘draw in’
- “Disordered sensorimotor control, resulting from an upper motor neurone lesion, presenting as intermittent or sustained involuntary activation of muscles” (Pandyan et al 2005)
- May include spasms, associated reactions, co-contractions
- If left untreated may lead to contractures

Spasticity Management

- Detailed assessment and identification of possible triggers
- Stretches
- Positioning
- Splinting
- Advice and education
- Liaison with GPs and neurologists re anti-spasmodics
- Botulinum Toxin injections

Botulinum Toxin

- For focal spasticity
- Potent neurotoxin producing temporary muscle weakness by presynaptic inhibition of acetylcholine release at neuromuscular junction
- Review by physio 7-10 days post BTX
- Terminal sprouting occurs after 3-4 months

However....

- Constant balancing act in mobile patients



Pain

- Multiple causes in neuro patients
- Vast subject!



Pain management

- Detailed assessment including nature, agg and ease factors, postural assessment if indicated
- Education and advice
- Postural management
- TENS (Transcutaneous Electrical Nerve Stimulation)
- Liaison with GPs and Consultants re analgesia
- Referral to MSK colleagues as appropriate

Management of muscle weakness

- Consider lack of neural drive versus deconditioning
- Detailed assessment
- Home exercise programme
- Supported gym visits/accessing suitable leisure facilities
- Exercises classes



Exercise Programmes

- Based on individual client needs
- Home exercise programme
- Supported gym visits
- Reviews as indicated



Balance re-education and falls management

- Detailed assessment
- Education and advice
- Exercise programmes
- Review of environment
- Liaison with GPs and consultants around meds



Gait analysis & re-education

- Detailed assessment and analysis
- Gait re-education
- Provision of walking aids as appropriate



Postural Management

- Aims:
 - To facilitate function
 - To reduce secondary complications
- Based on detailed postural assessment
- 24 hour management
- Equipment issue eg T-rolls, sleep system, specialist seating

T-roll



Sleep System



Sensory re-education

- Sensory feedback hugely significant in producing a normal motor response
- Experience and training equally as important as in motor areas

Fatigue Management

- Overlap with Occupational Therapists
- Activity diary
- Planning
- Pacing

New technologies...

- Functional Electrical Stimulation
- Virtual reality
- Dynamic Movement Orthoses
- Saeboflex
- Amadeo
- Pablo

Functional Electrical Stimulation

- Following injury to the brain or spinal cord impulses to the muscles may be reduced or blocked
- FES uses electrical stimulation to create muscle contraction
- Can help to retrain muscles and retrain functional movement
- Commonly used for 'foot drop'



Dynamic Movement Orthoses

- “Normalization” of tone
- Improves sensory and proprioceptive feedback
– increased body awareness
- Helps improve stability
- Re-alignment of joints – greater biomechanical advantage
- Improves function

Amadeo Robotic Arm

- Used initially in Stroke rehab
- Recreates grasp-release mechanism of hand
- Intelligent system which utilises client's natural movement
- Visual feedback
- www.ectron.co.uk



Pablo & TYMO

Pablo® - Rehabilitation: Hand & Arm Therapy and rehabilitation of patients with motor disorders of the upper extremities

A tool for evaluation of the hand and/or arm function
A sensor for the operation of interactive training programme



Saeboflex

- Extension spring system assists in 'release' of hand
- Positions hand and wrist in position for optimum function
- Task orientated upper limb rehab helps re-programme the nervous system
- Big commitment for client – minimum of two 45 minute sessions every day
- www.saebo.com



Other adjuncts

- Hydrotherapy
- Pilates
- Holistic therapies such as Massage , reflexology etc.
- Exercise referral schemes

Current research and developments

- Increased evidence for the use of strengthening exercises.
- Intensity of practice
- Constraint Induced Movement Therapy
- Increasing use of virtual reality technologies & wearable technologies.

Case studies

- Mr K. – Guillan Barre 10 years ago, stroke 2 years ago
- Mr D – Acquired brain injury following head on car collision
- Mr S –Acquired brain injury following fall from scaffolding
- Mr Y – Parkinsons and frequent falls
- Mr M – AKA and head injury

Referrals

- GPs
- Neuro consultants
- Case managers
- Other Physiotherapists/ healthcare professionals
- Self

Bristol and surrounding areas

- Different areas offer differing neuro services – either specialist teams or individual practitioners.
- Excellent practitioners with limited resources
- MS Centre – Bradley Stoke
- Brain Injury Rehabilitation Unit - Frenchay
- Freeways and Healthy Hydro offer hydrotherapy.

Partnerships

- Numerous case management companies
- Spire Health group
- Musculoskeletal practices throughout Bristol
- NHS
- Voluntary groups and charities

Thank you!
Any questions?

