Core Curriculum for the Basic Course on the Evaluation and Treatment of Adults with Neurological Conditions

Introduction

The contents reflect those subjects that the Education Committee feels must be included in the programme for the basic course.

Although the core curriculum details primarily the theoretical course content (whereas the competency profile is related to the clinical process) it is not implied that all these subjects must be presented as theoretical lectures. It is up to the individual instructor to select the style of presentation that is most appropriate to the learning style of the course participants, her own preferred style of presentation and the needs of the group. Similarly, the order of presentation is variable although certain subjects will logically precede others.

The core material occupies approximately 105 hours of the course minimum of 110. The remaining hours allow emphasis on specific areas according to the needs of the group and/or the instructor's own specific areas of interest or expertise.

Subject Headings Minimum hours	CONTENT
Introduction 2 hours	Introduction and needs of participants **Course procedures** • Structure and logistics • Requirements regarding evaluation • Competency profile and learning objectives • Information about IBITA and the website **Introduction to the Bobath concept today** • Definition and brief history • Principles
ICF - International Classification of Functioning, Disability and Health 2 hours	**The ICF** • The biopsychosocial model. • Concepts of participation, activity, impairment, context - and their inter-relationships. • Concepts of capacity and performance. • Integration of the ICF in the clinical reasoning process.
IBITA Theoretical assumptions 2 hours	**Theoretical framework for practice.**
Motor Control and Motor Learning 6 hours	• Historical and current models of motor control • The CNS as a systems model • The process-orientated model • Interaction of individual, task and environment • Intention, motivation and goal • Practice/repetition • Feedback • Task flexibility and transference • Cognition, perception, action; including motivation, emotional state, and alertness.

Neuro-physiology (Relevant functional anatomy included) 7 hours	**Physiology** • Neurons, synaptic mechanisms, excitation/inhibition • Receptors and ascending systems. • Central pattern generators. • Descending systems for postural control and selective movement control. • Integrated systems and functioning - levels of control • Postural control strategies - anticipatory/ reactive. • Muscle physiology related to activation and fibre types. **Neural and muscle plasticity** • Neural and non-neural mechanisms • Plasticity in relation to motor learning • Form and function **Pathoneurophysiology** • Altered tone: neural and non-neural • Upper motor neuron syndrome Upper motor neuron Conditions/pathologies • Controversive pushing • Apraxia, neglect • Orofacial dysfunction: swallowing, respiration, speech.
Movement analysis and facilitation 20 hours	**Principles** • function and efficiency • relationship between postural control and task-directed movement • alignment: base of support, centre of mass, centre of pressure • the concept of key-points of control • central set and postural set **Biomechanics** **Posture and movement during function - theoretical and practical analysis** • core stability / trunk control • basic functional activities • acquisition and maintenance of standing; walking / gait, stairs • role of the upper extremity in postural control • functional activities of the upper extremity and hand **Balance** • balance strategies - proactive, predictive and reactive **Age-related changes** **Facilitation of movement and function**
The clinical reasoning process 20 hours	**Principles of assessment** • Data collection • Interpretation **Goal-setting** **Treatment planning** **Treatment intervention** • at impairment level • at activity level - including positioning and seating, facilitation of movement and function • at participation level • overall management, caregiver guidance and self-determination/responsibility (including home programmes and recreational activities) • aids (e.g. external supports) **Ongoing evaluation and follow-up**
Specific problems 6 hours	• The shoulder • The wrist and hand • The foot • Orofacial and breathing - the basic course content should at least enable course participants to recognize breathing and feeding problems and to take the necessary precautions. This could be covered in a clinical demonstration and supplemented by a short hand-out and/or references

Clinical assessment and treatment 1. 6 hours 2. 20-26 hours 3. 6-12 hours Total: 38 hours	 1. Demonstrations by instructors 2. Participants' clinical practice (including discussion and documentation) 3. Participants' demonstrations/workshops **Total minimum clinical exposure**
Outcome measures 1 hour	Importance of subjective and objective outcome measurement and evidence based practice. ! Although the current time allotted to theory is 1 hour, it is expected that relevant outcome measures will be implemented during patient treatment sessions during the course. (AGM 2008)
105 hours	**Total hours core curriculum**
5 hours	**Additional hours (minimum)**
Total: 110 hours	**Total minimum hours basic course**

Suggested Readings

Theoretical Assumptions

Meadows L, Raine S, Lynch-Ellerington M (2009) Bobath Concept: Theory and Clinical Practice in Neurological Rehabilitation Wiley-Blackwell, Oxford

IBITA (2008). Theoretical assumptions 2008 www.ibita.org

Graham JV, Eustace C, Brock K, Swain E, Irwin-Carruthers S The Bobath Concept in Contemporary Clinical Practice. Top Stroke Rehabil. 2009 Jan-Feb16(1):57-68.

Gjelsvik, EB. (2007) The Bobath Concept in Adult Neurology Thieme

Raine, S. (2006) Defining the Bobath concept using the Delphi technique Physiotherapy Research International 11 (1): 4-13.

Raine S (2007) The current theoretical assumptions of the Bobath concept as determined by the members of BBTA Physiotherapy Theory and Practice 23: 137-152

Motor Control and Motor Learning

Shumway-Cook, A. Woollacott M. (2007) Motor Control - Translating research into clinical practice. Philadelphia, Lippincott Williams & Wilkins.

Kandel, ER., Schwartz, et al. (2000) Principles of neural science New York, McGraw Hill.

Krakauer JW. (2006) Motor learning: its relevance to stroke recovery and neurorehabilitation CurrOpinNeurol. 19:84-90.

Boyd L, Winstein C. (2006) Explicit information interferes with implicit learning of both continuous and discrete movement tasks after stroke. JNPT 30(2) :46-57.

Schmidt, RA. Wrisberg CA.(2004) Motor learning principles for physical therapy Human Kinetics USA.

Patla, AE (1997) Understanding the roles of vision in the control of human locomotion Gait & Posture 5(1): 54-69.

Huxham FE, Goldie PA, Patla AE. (2001) Theoretical considerations in balance assessment Australian J of Physiotherapy 47:89-100.

Winstein, CJ, Wing, et al. (2003) Motor Control and learning principles for rehabilitation of upper limb movements after brain injury 9: 77-137 Handbook of neuropsychology. Grafman and Robertson. Elsevier Science

Neuro-physiology - Plasticity - Pathoneurophysiology

Kandel, E. R., J. H. Schwartz, et al. (2000) Principles of neural science New York, McGraw Hill.

Lundy-Ekman, L. (2007) Neuroscience - Fundamentals for rehabilitation Saunders.

Blumenfeld H. Neuroanatomy through Clinical Cases (2001) Sinauer.

Bach-Y-Rita, P. (2003) "Theoretical basis for brain plasticity after a TBI." Brain Injury **17**(8): 643-651.

Gjelsvik, B.E. (2007) The Bobath Concept in Adult Neurology Thieme.

Benfenati, F. (2007) Synaptic plasticity and the neurobiology of learning and memory Acta Biomed 78 Suppl 1: 58-66.

Nudo, R. J. (2006). Plasticity NeuroRx 3(4): 420-7.

Lawes N (2004) Neuroplasticity in Physical Management in Neurological Rehabilitation 2nd Ed. Ed Stokes M. Elsevier Mosby.

MacKay-Lyons, M. (2002). Central pattern generation of locomotion: A review of the evidence Physical Therapy **82**(1): 69-83.

Rossignol, S., J. Dubuc, et al. (2006). Dynamic Sensorimotor Interactions in Locomotion Physiol Rev **86**: 89-154,

Perennou DA, Mazibrada G, Chavineau V, et al (2008) Lateropulsion, pushing and verticality perception in hemispheric stroke: a causal relationship Brain 1312401-2413.

Davies PM(1994) Reanimating the face and mouth Ch 5 in Starting Again. Springer- Verlag Berlin.

Zehr, E. P., J. E. Balter, et al. (2007) Neural regulation of rhythmic arm and leg movement is conserved across human locomotor tasks The Journal of Physiology **582**: 209-227.

Grillner, S., P. Wallén, et al. (2007). Neural bases of goal-directed locomotion in vertebrates-An overview