Bobath Principles & Application to Rehabilitation Nursing

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What is Bobath?

• The Bobath Concept is a problem solving holistic approach to the assessment and treatment of individuals with disturbances of tone, movement and function due to a lesion of the central nervous system. IBITA, 1995

• Treatment is an interactive process between the therapist and the patient where facilitation leads to improved selective function B. Bobath, 1973

• The goal of treatment is to optimise function through the facilitation of improved postural control and selective movement.
What is Bobath?

_The concept involves:_

- Analysis of normal
- Analysis of the deviation from normal for that individual
- Understanding of the concepts of systems control, and neural and muscle plasticity
- Appropriate use of treatment techniques to facilitate normal alignment, movement and tone

M.Lynch, 1990
What is Normal Movement?

**Genotype**
This is our genetic potential. It consists of 46 chromosomes on which sit 100,000 genes, which are found in the nuclei of all cells. Most of the time, most of the genes are switched off. It represents everything that we ever were, everything that we are now, and everything that we may become.

**Phenotype**
This is the proportion of the genetic material being expressed i.e. what you are now! It is determined by: the genetic material available & the demands imposed by the environment.
What is Normal Movement?

Normal movement is the development of the efficiency of the human phenotype.

Consider the genotype as a box of files containing all of the possible characteristics of the individual. The individual never expresses all of the possibilities, but a selection of the possibilities. So the files that are taken out, or genetically expressed, are the phenotype. The phenotype is determined by the environmental stimuli. You become what the environment demands within your genetic potential.
Common Characteristics of the Human Phenotype

- To develop the ability to selectively extend (extension of the hips and posterior pelvic tilt give a unique form of alignment for head control which facilitates speech)
- Mature vestibular system for postural stability through the development of equilibrium reactions
- Mature righting reactions (trunk righting, head righting, stepping reactions, protective extension)
Common Characteristics of the Human Phenotype

• To use upper limbs selectively in space against a background of a mature balance mechanism

• The ability to receive and integrate sensory/proprioceptive information and to be able to adapt the threshold level of firing of specific receptors and therefore change motor response and performance

• To be able to plastically adapt and therefore learn at the synaptic level
Common Characteristics of the Human Phenotype

- The Bobath Concept expresses the common characteristics of the phenotype in the **Central Postural Control Mechanism**. It provides us with a mobile trunk, pelvis and feet which allows us to balance against the force of gravity via our equilibrium and righting reaction, which frees our upper limbs and head for skilled movement.
Components of the Bobath Concept

- Appropriate postural tone
- Reciprocal innervation
- Patterns of movement
- Sensory and proprioceptive controls
Postural Tone

• A state of variable activity or readiness within a muscle. It is adaptable activity responsive to a variety of controls. BBTA, 1997

• Postural tone needs to be low enough to take up a base of support, but still selectively move; high enough to maintain a position against gravity, but still move.

• It varies from person to person.

• In normals tonus changes are on an automatic level responding appropriately to sensory/proprioceptive information..
Reciprocal Innovation

• The modulation of excitation and inhibition within the central nervous system to cause a harmonious interplay of muscle activity and movement.

• It is the graded and synchronous interaction of muscle activity throughout the body for selective movement. BBTA, 1997

• Consider the best postural set (starting position) for reciprocal innovation
Patterns of Movement

• To achieve a goal movement consists of sequences of selective movement which requires reciprocal innervation.

• It increases efficiency

• It introduces the concept of perception/space.
Sensory & Proprioceptive Controls

- These involve the ability of the central nervous system to selectively receive, integrate and respond to the environment through adaptability of the individual’s motor behaviour to achieve a successful outcome. BBTA, 1997
Considerations

Base of Support
- The supporting surface, the body parts in contact with it, and the relationship of the whole body and the supporting surface.
- The size of the BOS determines the level of tonal recruitment required. A BOS acts as a reference point to create movement from.

Key Points of Control
- Are specific areas of the body from which tone, movement, pattern, goal and function can be changed and/or modified.
- Each key point has its own Reciprocal innervation, specific receptors, range of movement, bias of tone. (in different postural sets, in different contexts)
- Changing relationship with functions alternating between stability and mobility.

Selective Movement
- Is defined as reciprocal innervation of muscles surrounding one or more joints on a background of postural tone.
- It is controlled, isolated mobility of a body part on a background of stability.
- (Lynch, 1996)
Further Considerations...

Balance
• Is a wholistic motor goal achieved on an automatic basis by the production of finely graded selective movements through reciprocal innervation. It is divided into two areas which are dynamically interlinked, equilibrium reactions and righting reactions.

Righting Reactions
• Sequences of selective movement in patterns in response to displacement.
• Functionally they allow us to lose and regain midline.
• Components of righting reactions can be performed voluntarily.

Equilibrium Reactions
• Automatic adaptations of postural tone in response to gravity and displacement. Functionally they maintain postural alignment.
• They cannot be performed voluntarily.
• They are part of the role of the vestibular system.

“The Bobath Concept is unfinished. We hope it will continue to grow and develop in years to come.” K. Bobath, 1986
Practical Component...

- Postural Set (starting position)
- Alignment (including resting tone)
- Selective Movement (prepare the muscles)
- Facilitate the Functional Movement (the goal of the activity)

- Facilitation of sit to stand...
- Facilitation of walking....
- Facilitation of the upper limb....