What is Rehabilitation?

Approaches with children and adults following brain injury

Dr Fergus Gracey
Consultant Clinical Neuropsychologist
Cambridge Centre for Paediatric Neuropsychological Rehabilitation
and
Oliver Zangwill Centre for Neuropsychological rehabilitation

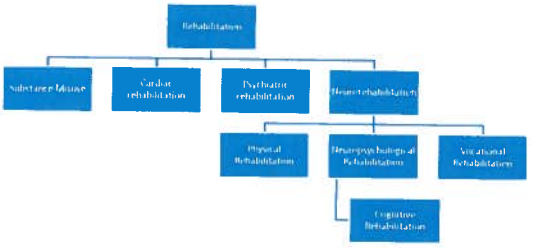
outline

- Rehabilitation
  - definitions
  - the WHO framework
- Rehabilitation following brain injury
  - definitions
  - WHO – ICF applied to rehab
  - evidence base – adults and children
  - comprehensive / holsitic rehabilitation
  - case illustrations
    - cognitive rehab, neuropsychological rehab

outline

- Rehabilitation
  - definitions
  - the WHO framework
- Rehabilitation following brain injury
  - definitions
  - WHO – ICF applied to rehab
  - evidence base – adults and children
  - comprehensive / holsitic rehabilitation
  - case illustrations
    - cognitive rehab, neuropsychological rehab

The Field of Rehabilitation

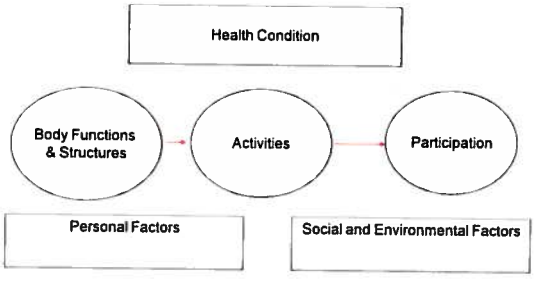


Rehabilitation

Rehabilitation of people with disabilities is a process aimed at enabling them to reach and maintain their optimal physical, sensory, intellectual, psychological and social functional levels. Rehabilitation provides disabled people with the tools they need to attain independence and self-determination.

World Health Organisation

WHO ICF (2001)



WHO International Classification of Functioning (ICF and ICF-CY)

Body Functions
physiological functions of body systems (including psychological functions).
Body Structures
anatomical parts of the body such as organs, limbs and their components.
Impairments
problems in body function or structure such as a significant deviation or loss.
Activity
the execution of a task or action by an individual

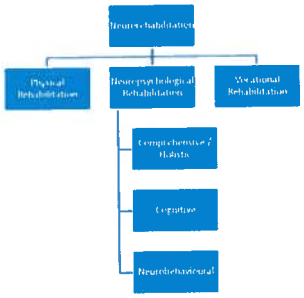
Participation
involvement in a life situation

Environmental Factors
make up the physical, social and attitudinal environment in which people live and conduct their lives

outline

- Rehabilitation
  - definitions
  - the WHO framework
- Rehabilitation following brain injury
  - definitions
  - WHO – ICF applied to rehab
  - evidence base – adults and children
  - comprehensive / holsitic rehabilitation
  - case illustrations
    - cognitive rehab, neuropsychological rehab

Rehabilitation after brain injury



Neuropsychological Rehabilitation

"is concerned with the amelioration of cognitive, emotional, psychosocial and behavioural deficits caused by an insult to the brain"

Barbara Wilson

Rehabilitation after brain injury

Rehabilitation: *a process of active change by which a person who has become disabled acquires the knowledge and skills needed for optimal physical, psychological and social function*

The service: *the use of all means to minimise the impact of disabling conditions and to assist disabled people to achieve their desired level of autonomy and participation in society*

British Society of Rehabilitation Medicine / Royal College of Physicians Guidelines (p. 7, 2003)

Rehabilitation after brain injury

- The process is non-linear
- There is an early focus on participation. Impairment and activity restrictions are assessed and interventions planned in the context of the individual's participation goals.
- The person's strengths and wishes are acknowledged, as well as those of their support team, rather than the focus being solely on deficits.

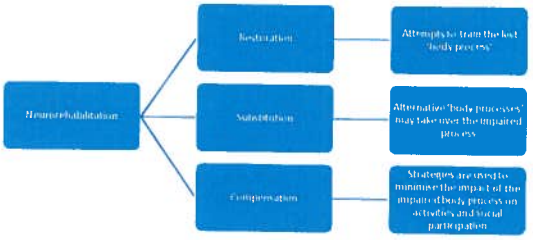
New Zealand Guidelines for Rehabilitation of TBI, 2006, p 70

Rehabilitation after brain injury

- Rehabilitation is a process that includes four core components:
  - assessment – to determine the relevant rehabilitation approach
  - planning – that involves the development of meaningful and collaboratively determined goals
  - interventions – that are specific, measurable, attainable and time-limited to meet these goals
  - evaluation – of that intervention, before further iterations of this cycle."

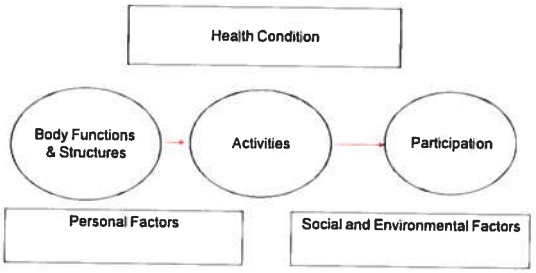
New Zealand Guidelines for Rehabilitation of TBI , 2006, p 70

Approaches used in Neurorehabilitation



Strategies and skills

WHO ICF (2001)



WHO – ICF applied to rehab

- Wade (2005)
  - Reducing pathology e.g. through medical management
  - Reducing impairment e.g. 'train' a lost function; address depression
  - Practicing activities e.g. learning to cook a meal
  - Increasing social participation

  "it is the difference between practicing cooking a dinner and practicing being a host to a dinner party"
  - Altering personal context e.g. changing attitudes or beliefs
  - Altering physical and social contexts

outline

- Rehabilitation
  - definitions
  - the WHO framework
- Rehabilitation following brain injury
  - definitions
  - WHO – ICF applied to rehab
  - evidence base – adults and children
  - comprehensive / holistic rehabilitation
  - case illustrations
    - cognitive rehab, neuropsychological rehab

Evidence - adults

Cicerone et al, 2005, Cappa et al, 2005, Tate et al, 2006, Rohling et al, 2009

- compensatory approaches for memory impairment (Wilson et al, 2005)
- 'training' approaches for attention, working memory, language, visual inattention
- goal management training and external alerting for executive difficulties (Levine et al, 2000, Miotto et al, 2008, Fish et al, 2007)
- goal setting (Locke and Latham, 2002, Hart and Evans, 2006)
- coping skills training to improve mood and coping (Anson and Ponsford, 2006)
- adapted CBT (Tiersky et al, 2005, Bradbury et al, 2008)

www.psycbite.com

Evidence – children

(see Slomine and Locascio, 2009)

- Comprehensive metacognitive programmes
  - involving family members (e g Braga et al, 2005)
- Context-sensitive behavioural supports (Feeney and Ylvisaker, 2003)
- Problem solving training (Suzman et al, 1997)
- Attention and working memory remediation (graded skills training) (van't Hooft et al, 2003, Butler et al, 2010, Amsterdam memory and Attention Training, Klingberg et al's COGMED programme)
- Compensatory memory approaches, external devices (e g Wilson et al, 2009, Neuropage, DePompei et al, 2008)
- Provision of information to family (mTBI, Ponsford et al, 2001)
- Improving family problem solving (e.g. Wade et al, 2006)

– v. important to involve family. Training the family to provide the rehab after discharge may be the way to go to help cont'd improvement.

Rehabilitation and change

- What is the 'active change process'
- What skills are required on the part of the professional?
- Guidelines emphasise the importance of collaborative goal setting etc
- The psychotherapy literature does deal with this very thoroughly
- Holistic / comprehensive approaches to rehab

Lorna: background

- Open head injury from gun shot
- CT: left lateral orbit entry, left parieto-occipital exit; coma 14 days, extensive gliosis, abscess
- Presented for rehabilitation 5 years post injury, age 32
- Pre-injury: management and accountancy
- Post injury
  - expressive aphasia (anomia)
  - excellent functional communication
  - mild executive difficulties
  - dyscalculia
- Goals for rehabilitation:
  - Cooking
  - Independent travel
  - Reduce frustration
  - Improve communication

Lorna: Rehabilitation

- Intensive aphasia rehabilitation
- Intensive dyscalculia intervention
- Goal management training
- Psychological therapy – self-monitoring and regulating anger and frustration
- Practical aids for routine tasks:
  - Filofax, stickers
  - Train ticket; money strategies
  - Photos: cooking, train travel

Specific interventions

- Supported rehearsal of tasks
  - Compensatory strategies
- Errorless learning
- Constraint induced aphasia therapy
- Peer feedback in groupwork
- Cycles of learning
- Practice in vivo
- Involving mother and partner

Approaches to learning

outline

- Rehabilitation
  - definitions
  - the WHO framework
- Rehabilitation following brain injury
  - definitions
  - WHO – ICF applied to rehab
  - evidence base – adults and children
  - comprehensive / holsitic rehabilitation
  - case illustrations
    - cognitive rehab, neuropsychological rehab

Comprehensive-holistic cognitive rehabilitation

interventions directed at multiple aspects of dysfunction, often addressing a combination of cognitive, emotional, motivational, and interpersonal impairments, in the context of an integrated and programmatic treatment approach

(Cicerone et al, 2005; p. 1686)

Core components

- Wilson et al (2009; after Prigatano, 1999; Trexler, 2000 and others)
  - Therapeutic milieu: social context
  - Shared understanding: engagement
  - Developing skills and strategies
  - Psychological therapies
  - Family involvement: support and generalisation
  - Meaningful practical activity: social participation

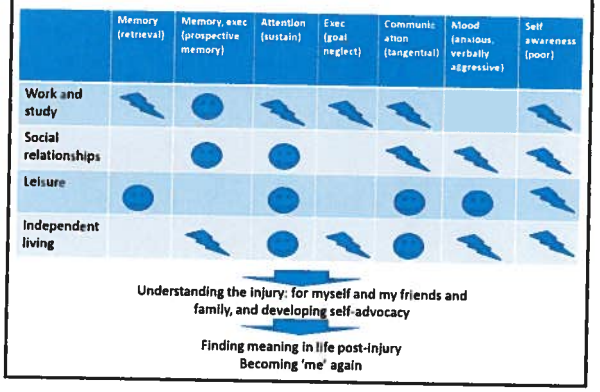
↳ increase in activity should have some degree of social participation.

Formulating a shared understanding

"Patients come to psychotherapy because they are demoralised by the menacing meanings of their symptoms. The therapist collaborates with the patient in formulating a plausible story that makes the meanings of the symptoms more benign and provides procedures for combating them thereby enabling the patient to regain his morale"

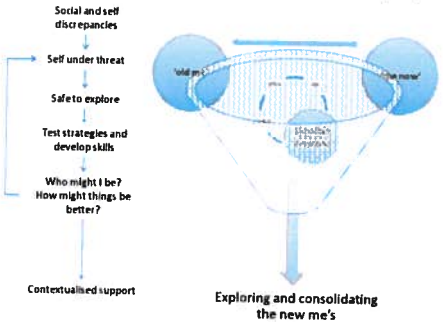
(Frank, 1986: cited by Butler, 1998)

Interacting domains

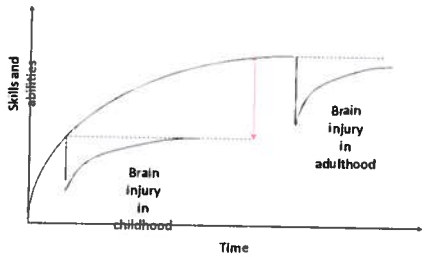


The 'Y shaped' model

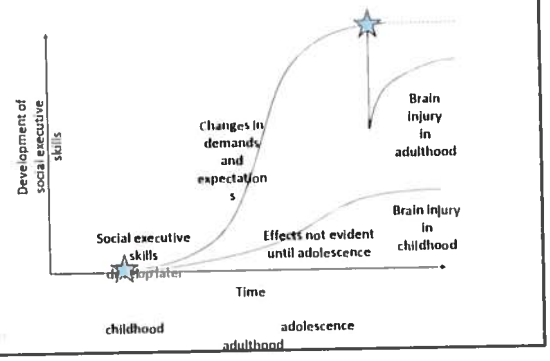
(Wilson et al, 2009; Gracey, Evans and Malley, 2009)



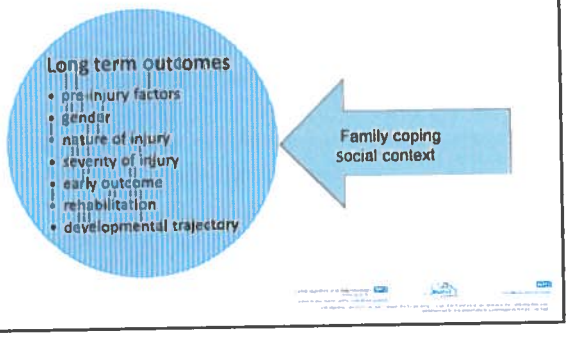
Trajectory of development



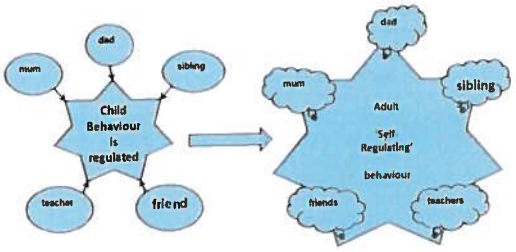
Trajectory of development



Consequences of injury



Self-regulation



Summary

- Rehabilitation encompasses a large range of approaches
- WHO – ICF provides a very useful framework
- Traditional neurorehabilitation approaches address 'technical' change (skill + learning)
  - Easier to describe, market and cost?
- Contemporary approaches integrate psychological change
  - Adults
    - personal and social adjustment processes
  - Children: maximising developmental trajectory
    - focus on family and school as well as the child's own skills
  - More difficult to describe, market and cost?