Unpacking Rehabilitation

Dr Nada Signal
Senior Research Fellow & Co-Director of the Rehabilitation Innovation Centre
NeuroRehabilitation Research Group
@RehabInnov  @signal_nada Email: nada.signal@aut.ac.nz
What concepts underpin Stroke Rehabilitation?

- Expertise is required
- Capacity for Change
- Person centred
- Doing is Important
- Economic realities
- Society has priorities

Principles of Experience-Dependent Neural Plasticity: Implications for Rehabilitation After Brain Damage
What is Activity?

- It’s not just physical activity
- Cognitive Activity
- Social Activity
- Activities of daily living
- Instrumental activities of daily living

All meaningful activity carries a cognitive load and a physical load.
Rehabilitation Parameters

• Activity
  - What
    - Salience, Specificity, Meaningfulness

• Dose
  - How much
  - Frequency x Duration
    - How often x How long

• Intensity
  - How hard

• Delivery Method
  - With whom and where

How did you reflect rehabilitation parameters in your documentation?
Dose – How much rehabilitation?

- During inpatient rehabilitation people with stroke spend less than one hour in face-to-face therapy (PT, OT, SLT) per week day.

Dose influences Outcome

What is the Dose of a therapy session?

3.5 minutes walking practice

- Training, 27
- Doing nothing, 23
- Conversation, 9

Who is busy?

STAFF

Staff responsibility extends beyond face-to-face contact

PATIENTS

Patients spend lots of time alone and inactive
What limits Dose of Rehabilitation?

• Organisational culture
• Organisational priorities
• Patient and family perceptions
• Environment
• Opportunities for
  • meaningful activity
  • safe unsupervised activity
  • safe supervised activity
• Permission to ‘take risks’ and test boundaries
• Activity/Recovery paradox
• Opportunities for quality rest
• What we measure

(Bayley, Hurdowar et al. 2012, McCluskey, Vratsistas-Curto et al. 2013)
Environmental Enrichment

Ohhh nice, this is just like my place at Mangawhai. Reckon I might go for a walk along the beach later....

Dude! Check it out! This is way more exciting than our old cage


http://www.kellylambertlab.com/research.html
Dose of rehab should be measured based on engagement in meaningful activity (not face-to-face contact time with a therapist).
Rehabilitation Parameters

- **Activity**  
  What
  Salience, Specificity, Meaningfulness

- **Dose**  
  How much
  Frequency x Duration
  How often x How long

- **Intensity**  
  How hard

- **Delivery Method**  
  With whom and where

What is Intensity?

• Work rate, effort level or metabolic demand of an activity or exercise
• “the amount of physical or mental work put forth by the client during a particular movement or series of movements, exercise, or activity during a defined period of time.”
• Intensity is relevant regardless of the ‘type’ of task

Why is Intensity important?

**Intensity influences outcome**

- Similar physiological and behavioural change can be driven by higher intensity training at lower doses.
- Effort in everyday life.

Cameron et al, 2003, Lomaglio & Eng, 2005
What is the Intensity of Rehabilitation?

- Much of therapy time is spent in low intensity activities
- Standard rehabilitation does not induce a cardiovascular or strength training load sufficient for a training effect
What limits intensity in Rehabilitation?

• Patient and family concerns about safety
• Staff concerns about safety
• Activity/Recovery paradox
• Organisational culture
• Organisational priorities
• Opportunities for quality rest
• What we measure (or don’t measure)

Is “Hard work” a Barrier or Facilitator to Engagement in Rehab?
Method

Qualitative descriptive study: A component of a mixed methods randomised, controlled pilot trial investigating high intensity exercise rehabilitation interventions in people with stroke

*What influences the acceptability of high intensity exercise rehabilitation interventions?*

*What are the barriers and facilitators to engagement in high intensity exercise rehabilitation?*
Results

Intervention Acceptability

- Making Progress
- Motivation
- Working Hard
- The People
- Fit with me
- Fit with my life
It was really hard work...

“I mean the pushing the various weights and things, that was so hard. I was sweating straight away...you put maximum effort in”
(Jeff, Age 70)

And it was tiring...

“Mind you, I was fairly buggered at the end of the first couple of weeks. I had to go home and sleep.” (Jonathon, Age 56)

But that was OK…
Relished the challenge

“It just got harder and harder as the time went on, but actually I started feeling that I wanted it to be harder. And I wanted it to continue to be a challenge...they really did challenge me and I loved it.” (Tania, Age 51)

Hard work = Outcomes

“No pain, no gain, isn’t it. What I put in, it was benefiting me…the more I put in, the more benefits I was getting out of it.” (Jonathon, Age 56)

Highlighted capacity & Empowered

“I think it’s the endurance of doing it…I had to challenge myself every day, every time I came here ….But I was doing them…So I think, that gave me the, the oomph to get up and do it.” (Leona, Age 68)
Conclusions

• Intensity was not a barrier to engagement in rehabilitation.

• In contrast, as the intervention progressed high intensity appeared to facilitate engagement.

• These findings challenge our assumptions about the intensity of rehabilitation.
The road to recovery is challenging, but is stroke rehab challenging enough?
Summary for Day-to-Day Practice

DOSE
• How much a patient does will influence their outcome
• Re-think who is busy
• Value patient activity
• Focus on changes which promote patient activity

INTENSITY
• How hard a patient works will influence their outcome
• Clearly plan rehabilitation intensity
• Have the patient evaluate the intensity of rehabilitation
• Rehab should be HARD WORK!