

Walking to Rhythm in Neurorehabilitation

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Objectives

Barry suffered a Hypoxic Brain Injury and was admitted to the complex rehab ward at RHN for neurorehabilitation. His long term goals were to return home to live with his wife without need for additional care, and to return to his work for the Police force. He stayed for a period of six months for neurorehabilitation. The main aim in joint physiotherapy and music therapy sessions was to improve Barry's balance, gait velocity, cadence, and endurance, in order for him to be able to safely get around his house and access the community for work. Barry had daily physiotherapy sessions, 2-3 per week were joint with music therapy.

Assessment

On admission to RHN Barry required full hoist to transfer and was reliant on a carer to push him in a tilt in space wheelchair. He saw a gradual increase in his lower limb strength and control, and by approximately eight weeks into his admission was able to stand with assistance of two, at which point we started more intense gait rehabilitation. The Gait velocity test and Dynamic gait index were used to objectively monitor his progression.

Rehabilitation Method

Neurologic music therapy techniques were used in all sessions, which included: patterned sensory enhancement (PSE) and rhythmic auditory stimulation (RAS). RAS is used to 'facilitate the rehabilitation, development, and maintenance of movements that are intrinsically biologically rhythmical e.g. walking' (Thaut, 2016). Both techniques use rhythm and auditory priming to improve his balance, speed, and to cue steps to increase cadence.

Towards the end of his therapy programme, music and songs he liked were used as a divided attention task to make his walking more automatic. Walking sessions without music were also scheduled to practice carry over within his daily environment.

Outcomes

After six months, Barry was independent with all transfers, walking more than 50 metres indoors with supervision, and ascending and descending stairs with one rail. He was also starting to walk short distances outdoors with a walking stick.

Gait velocity scores suggested Barry progressed from a household ambulatory to a community ambulatory (Perry et al. 1995; I Van de Pat et al. 2008). With Dynamic gait Index scores showing a significant improvement in functional gait.

Barry achieved his goal of returning home with his wife, and was embarking on a phased return to work.

Photograph 1: Walking with frame

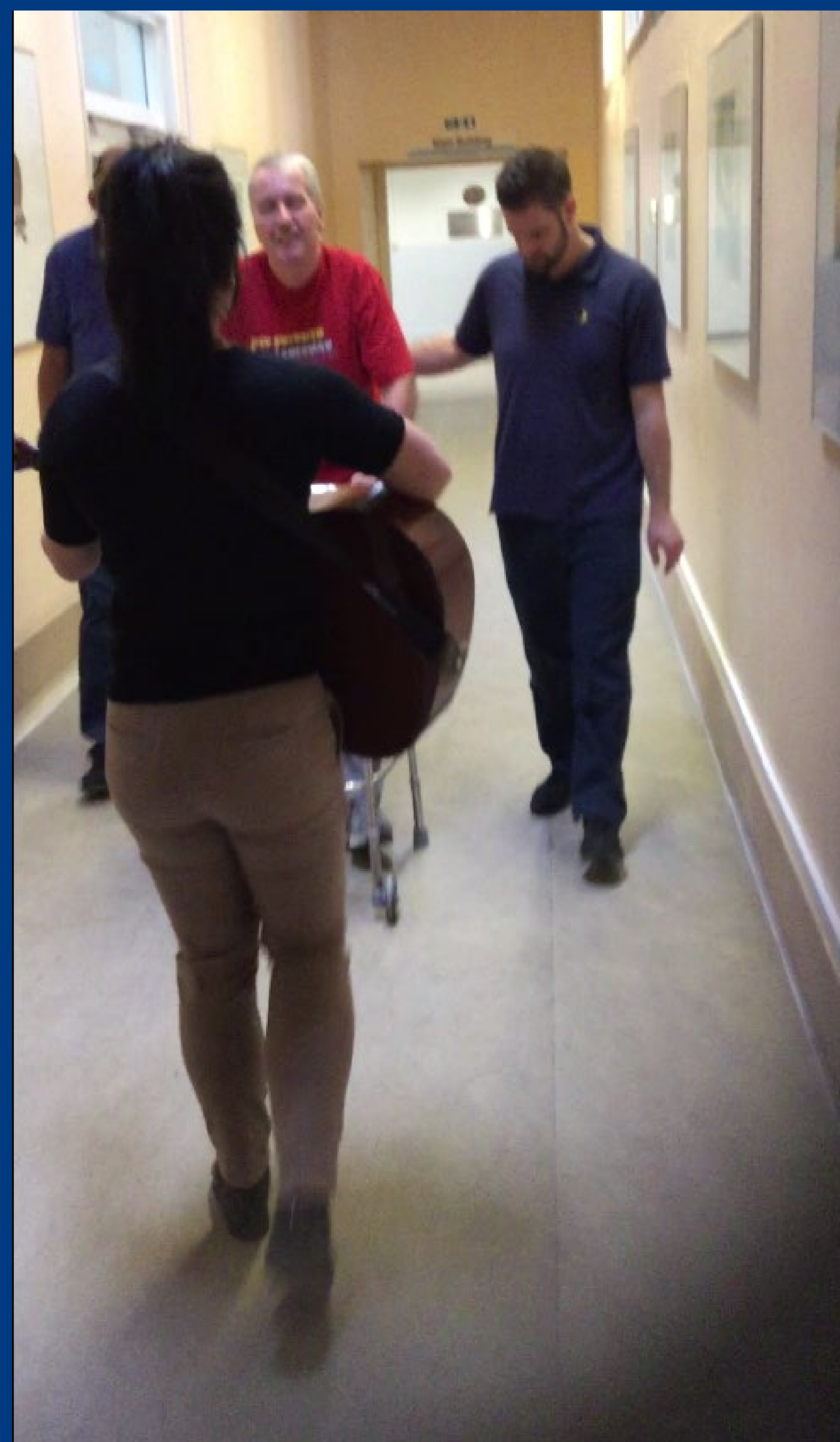


Table 1: Gait Velocity scores

Date	Method	Velocity (m/s)
Week 15	Ax2 + Frame	0.38
Week 19	Supervision + w/s	0.55
Week 24 (D/C)	Distant Supervision	0.90

Table 2: Dynamic Gait Index

Date	Score
Week 16	2/24
Week 24 (D/C)	15/24

Patient Feedback

How did you find the music therapy sessions?

Circle the one you want to: ...

1 2 3 4 5

Not helpful Quite helpful Helpful Very helpful Not sure

What did you find helpful about the sessions?

finger exercises and movement exercises

References

Brain Injury Service Team at the Royal Hospital for Neuro-disability

I. van de Port, G. Kwakkel and E. Lindeman Community ambulation in patients with chronic stroke: how is it related to gait speed? Journal of Rehabilitation Medicine 2008; 40; 23-27

Thaut and Hoemberg eds., 2016, Handbook of Neurologic Music Therapy, Oxford University Press, Oxford, UK.

Perry J, Garrett M, Gronley JK, Mulroy SJ. Classification of walking handicap in the stroke population. Stroke 1995; 26:982-9



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