

Using the SaeboFlex training splint in a patient with minimal upper limb movement

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Introduction

Options for upper limb rehabilitation in the community are limited, particularly where a patient has some proximal movement but is unable to move their hand to grasp and release. Motor learning research shows that high repetition, task specific practice is most effective in upper limb rehabilitation¹. The SaeboFlex (Figure 1) is a dynamic hand splint which provides the opportunity for independent, intensive upper limb exercise by assisting finger and thumb extension to facilitate release of the hand after grasp. SaeboFlex research is still exploratory²⁻⁴ and not community based.

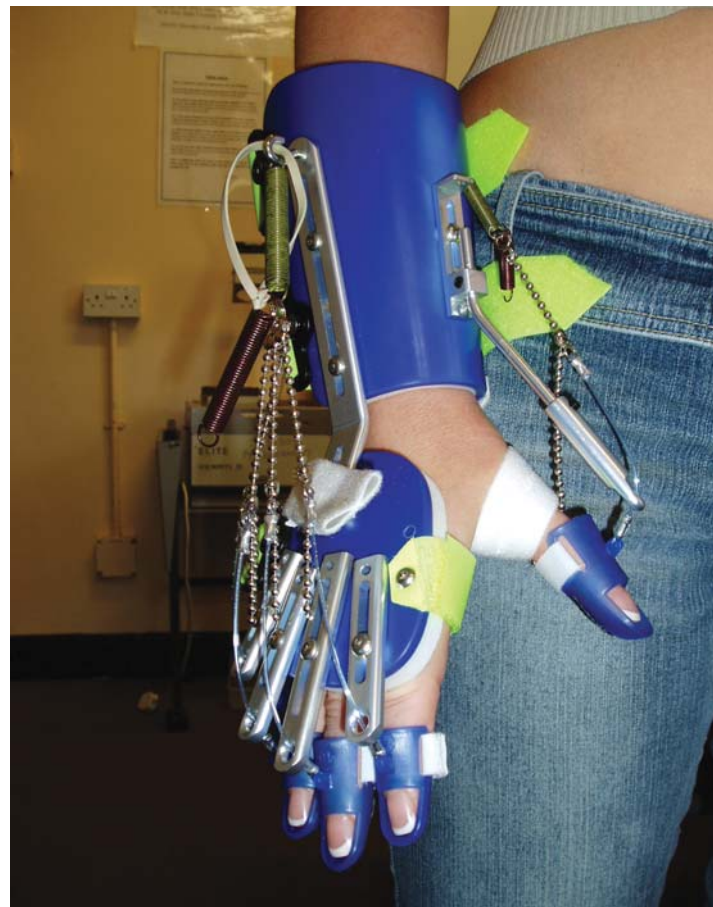


Figure 1: SaeboFlex orthosis fitted ready for exercise

Background

R (41 yrs old) was referred to the Southwark Neuro Rehab team in August 2006 after nine months of inpatient rehabilitation following evacuation of a left frontal intracranial haematoma. She received 6 months of physiotherapy treatment, which included an upper limb exercise programme before being fitted with the SaeboFlex splint in February 2007.



Outcomes

Measurement included video recording, Action Research Arm Test (ARAT), Box and Block Test (BBT) and subjective reports of ability to incorporate the right upper limb into function.



Figure 2: R practising with the SaeboFlex

Treatment

R was provided with a programme of SaeboFlex exercises (Figure 2) to carry out independently twice daily for 45 minutes, followed by attempting functional practice without the splint e.g. to hold and eat a banana.

References:

¹Kwakkel, G. 2006. Impact of intensity of practice after stroke: Issues for consideration. *Disability and Rehabilitation*, 28 (13-14) pp.823-830.

²Butler A.J., Blanton S., Rowe V.T., Wolf S.L.

2006. Attempting to Improve function and quality of life using the FTM protocol: case report. *Journal of Neurologic Physical Therapy*. 30(3) pp 148-156.

³Davenport S. 2005. Recovery within grasp? A report on a preliminary study investigating

Results

On assessment in February 2007, R had insufficient active movement to attempt any of the standardised tests or use her upper limb in function. After six months of SaeboFlex use, standardised tests showed little or no change (BBT = 1; ARAT = 0/57). At eight and nine months, BBT remained the same but some change was noted on the ARAT (6/57, 7/57).

The increase in ARAT score was almost entirely attributable to continuing improvements in proximal movement increasing from 0 to 6 in the gross movement subtest (Figure 3). Despite no change on the BBT, after six months R was able to consistently pick up an individual small block from a table placing it into a cup (4 in 1 minute). Most significant is R's reported change in functional ability incorporating the affected upper limb without the SaeboFlex (Table 1).

- ✓ Opening the fridge door
- ✓ Holding my mascara tube
- ✓ Eating a banana/apple
- ✓ Opening jars
- ✓ Mopping the floor
- ✓ Carrying washing upstairs in a plastic bag

Table 1: R's current list of functional ability using her right upper limb without the SaeboFlex.

Action Research Arm Test: Gross Movement Subtest

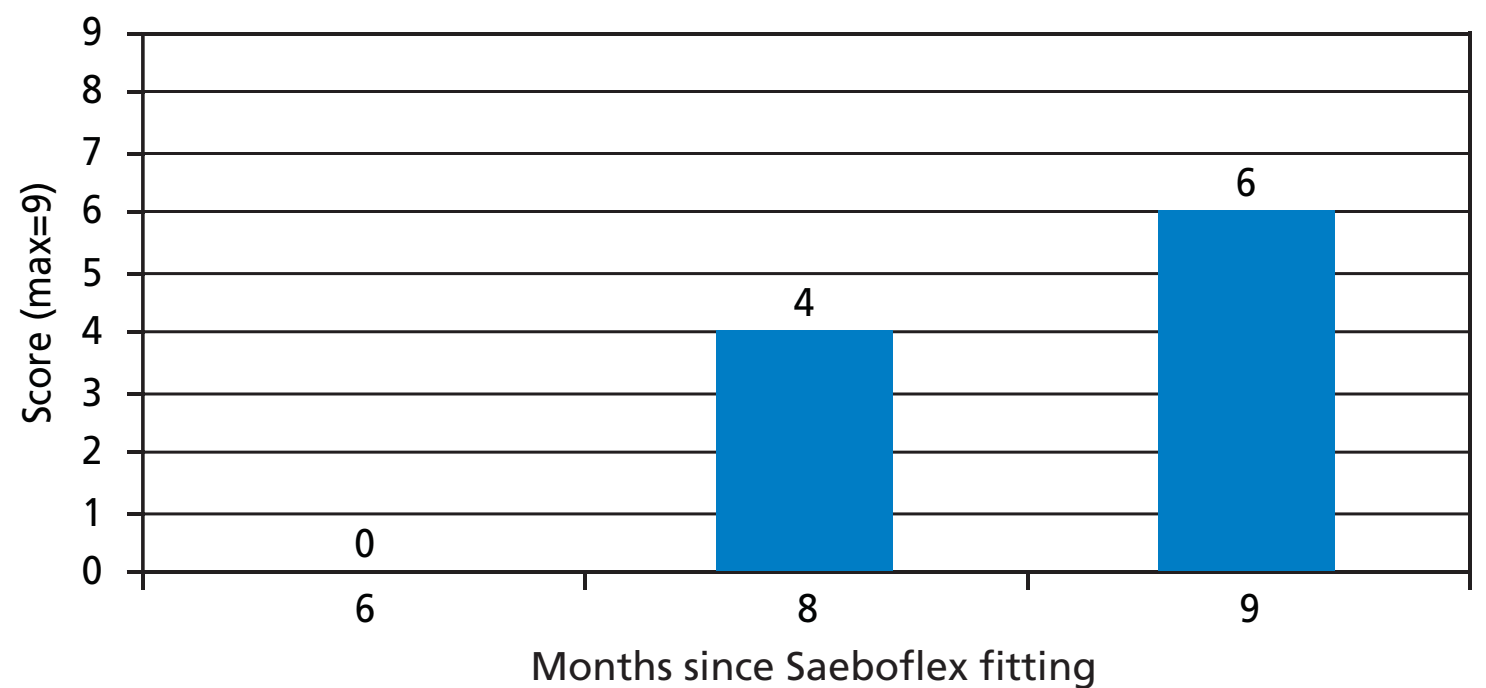


Figure 3: ARAT subtest showing improvements after 6 months in gross movements (hand behind head; hand on top of head; hand to mouth).

Discussion

This case report demonstrates that despite 15 months of rehabilitation, including upper limb treatment, R still had no functional use of her upper limb. After eight months of regular use of the SaeboFlex as part of her training programme, she started to regain some upper limb function. The SaeboFlex enabled R to practise independent, high repetition, reach, grasp and release exercises with her upper limb, which had not otherwise been possible.

Conclusions

This report suggests that the SaeboFlex training splint may be an effective treatment option to encourage upper limb function in some patients with minimal upper limb movement. It also indicates that therapists need to be more aware of the length of time over which recovery may well be possible and design services to accommodate slowly improving service users.

the short and medium term effects of the SaeboFlex (Functional Tone Management System) on chronic post stroke patients with residual upper limb deficit. *Synapse Spring* pp 12-15, *Journal and Newsletter of the Association of Chartered Physiotherapists*

Interested in Neurology
⁴Farrell J.F., Hoffman H.B., Snyder J.L., Giuliani A. and Bohannon R.W. 2007. Orthotic aided training of the paretic upper limb in chronic stroke: Results of a phase 1 trial. *Neurorehabilitation*. 22(2) pp99-103.