

SaeboFlex Upper Limb Training in Acute Stroke Rehabilitation: Feasibility Study

R Stuck & L Marshall

Stroke Unit, Colchester Hospital University NHS Foundation Trust

Colchester Hospital University NHS Foundation Trust



Introduction

Functional recovery of the upper limb (UL) is often poor after stroke. The SaeboFlex was designed to improve functional recovery of the UL through repetitive task practice. We sought to explore its benefits and feasibility in acute stroke.

Method

Six acute stroke patients with moderate/severe UL weakness participated in SaeboFlex training for a maximum of 3 X 45 minutes/day for 12-weeks in addition to normal therapy. A battery of measures was taken at baseline and 12 weeks along with end of study questionnaire to determine patient experience.

Flowchart to illustrate study procedure



Participant Characteristics

| Participant ID | Stroke Classification | Gender | Age | Weeks post stroke | Baseline ARAT Score (max 57) |
|----------------|-----------------------|--------|-----|-------------------|------------------------------|
| 1 | L PACS | Male | 59 | 2.3 | 24 |
| 2 | L TACS | Male | 69 | 4.1 | 3 |
| 3 | R PACS | Female | 68 | 1.9 | 4 |
| 4 | R PACS | Female | 39 | 3.4 | 7 |
| 5 | L PACS | Male | 82 | 1.0 | 3 |
| 6 | R LACS | Female | 79 | 2.3 | 18 |

SaeboFlex Training

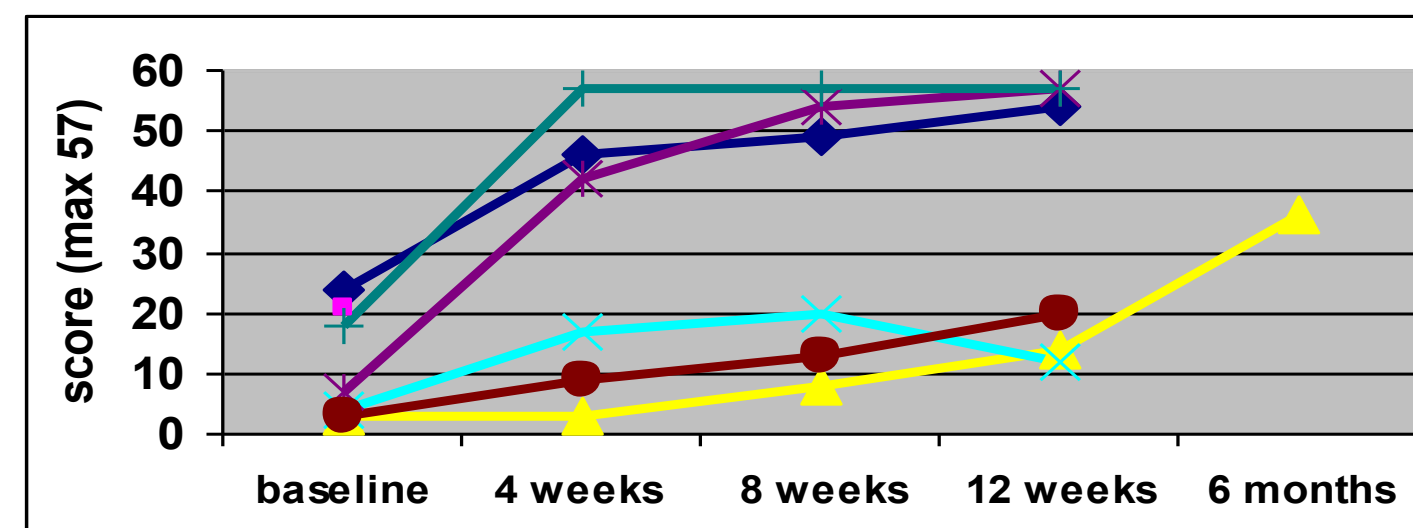
Therapy was tailored to the individual and focused on repetitive task orientated grasp and release activities, with and then without the SaeboFlex. Training took place as an in-patient or out-patient and was reviewed at least once a week by a therapist. All routine care was continued.



Results

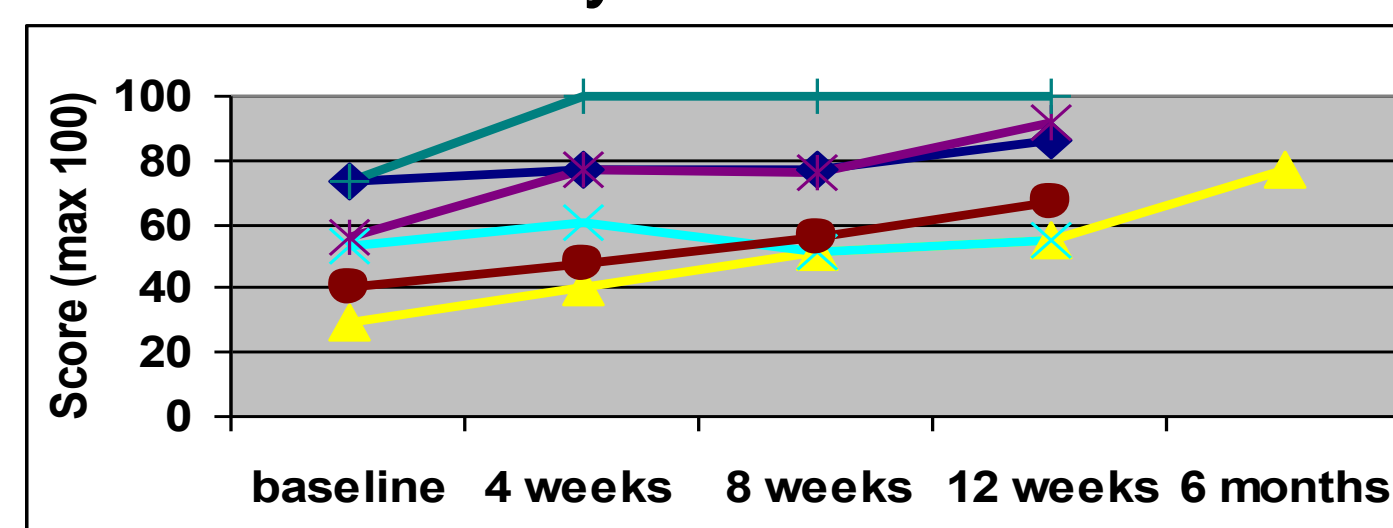
Primary outcome: Action Research Arm Test's mean (SD) score at baseline and 12 weeks were 9.8(8.98) and 35.7(22.46) respectively. ($p < 0.05$) Controversy exists on the criterion for clinically significant improvement. For a score of 6, all achieved improvement, but for a score of 12(dominant) and 17(non-dominant), 4 out of 6 achieved improvements.

Action Research Arm Test Outcomes



There were clinically significant improvements in UL Motricity Index, Modified Barthel Index, Berg Balance scores, and Stroke Impact Scale (4 physical domains).

UL-Motricity Index Outcomes



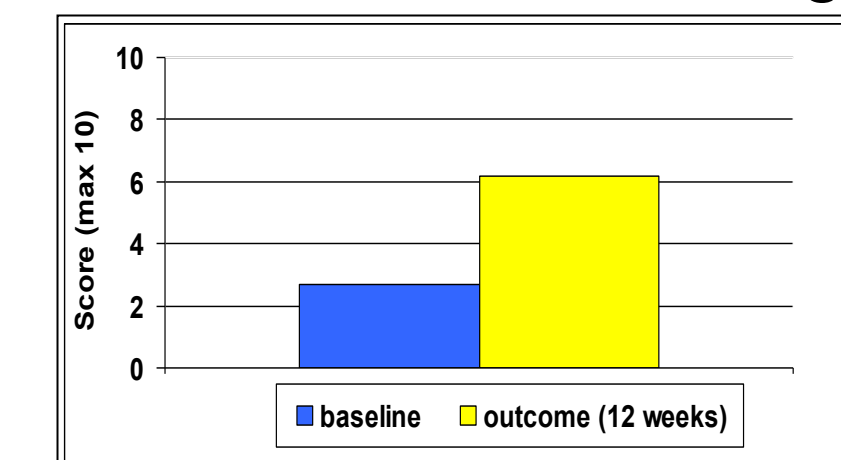
Adverse Events

Shoulder complications occurred in one patient. No other adverse events were recorded.

Subjective Measures

All patients felt that SaeboFlex facilitated recovery.

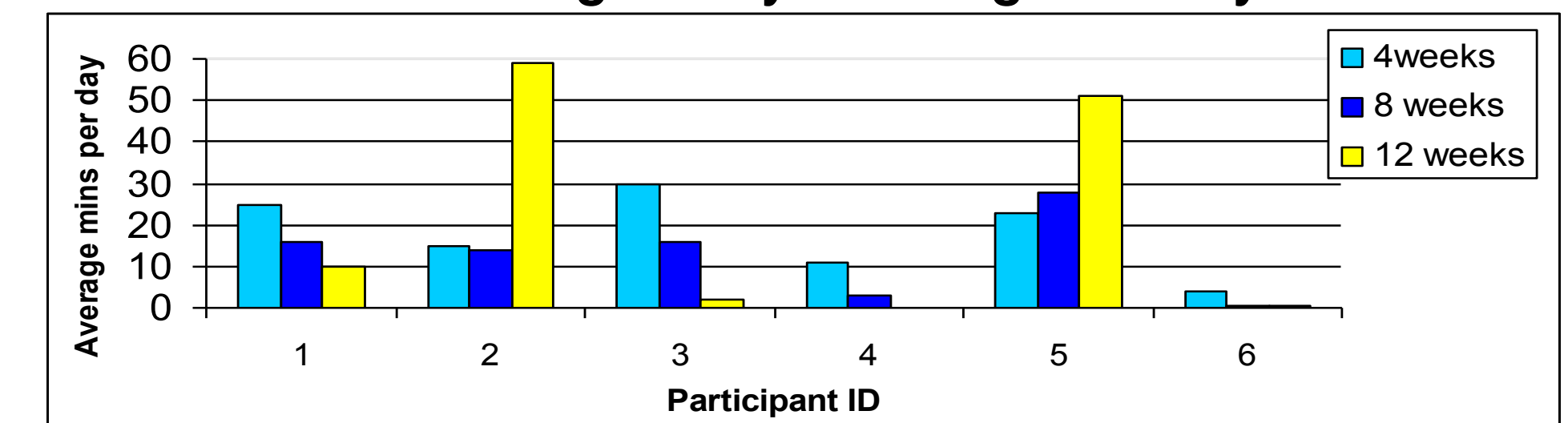
Mean Scores on Visual Analogue Scale



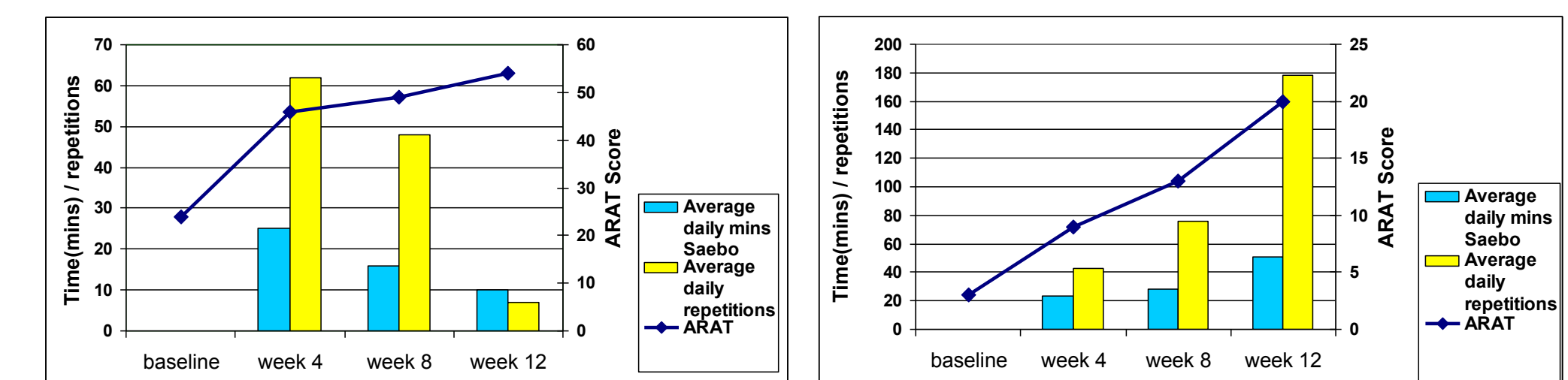
Training Intensity

No patients trained at the maximum intensity (3 x 45mins per day) due to inadequate motivation.

Average Daily Training Intensity



Examples of Training Intensity versus ARAT Scores Participant 1 and 6



Conclusion

SaeboFlex training in acute stroke was feasible and facilitated clinically significant improvements. Patients' physical ability to participate and motivation were improved with family involvement.

These findings make a case for future research and would be useful in designing research around its effectiveness, dose-finding and adverse effects.

Acknowledgements: The authors would like to thank and acknowledge Dr Sivakumar, Petra Russell, Maree Penney and Steve Knowing for their ongoing support and Saebo Ltd for supplying additional equipment for these participants.