

INTRODUCTION

15 million people suffer stroke worldwide each year. Of these, 5 million die and another 5 million are permanently disabled.

Symptoms of stroke include motor, cognitive and emotional deficits that often have a negative impact on patient's independence level and life quality.

This disease brings significant changes in everyday life, especially on independence in daily life activities (ADL), on walking and on the functional use of the upper limb. Indeed, in two out of three patients, the function of the upper limb is critically compromised.



STUDY OBJECTIVES

The purpose of this study is to assess the effects of the application of a neoprene tailor-made thumb splint on spasticity and its secondary consequences on the hand of the hemiplegic patient.

MATERIALS AND METHODS:

- **Study design and population:** 13 patients (average age 50 years) with spasticity on the wrist and thumb districts. The patients were assessed on the beginning and on the end of the treatment, that lasted three months for each patient. The treatment consisted of using the thumb splint every day for three hours.

- **Splint creation and properties:** the splint used in this study is made from a single neoprene strip shaped like an "8" that wraps itself around the wrist and the thumb. The splint is custom-made for each patient.

The function of this splint is to maintain the thumb away from the palm with the application of a light and continuous stretch on the muscles of the thumb that are more inclined to suffer from shortening in the hand of the hemiplegic patient: opponens pollicis, flexor pollicis brevis and longus, and adductor pollicis.

- Outcome measures

- Ashworth Scale (thumb, wrist, forearm)
- wrist PROM (to measure levels of shortening)
- distance from thumb to palm (in cm)
- Quebec User Evaluation of Satisfaction with Assistive Technology (QUEST)

CONCLUSIONS

The results of this study, although preliminary, show that using a neoprene thumb splint could be useful and effective for the rehabilitation of the hemiplegic patient's hand.

We obtained positive changes in the levels of shortening of the thumb muscles and we also achieved a muscle tone reduction. Besides, the patients had a positive experience with the splint that was appreciated especially for its lightness and simplicity.

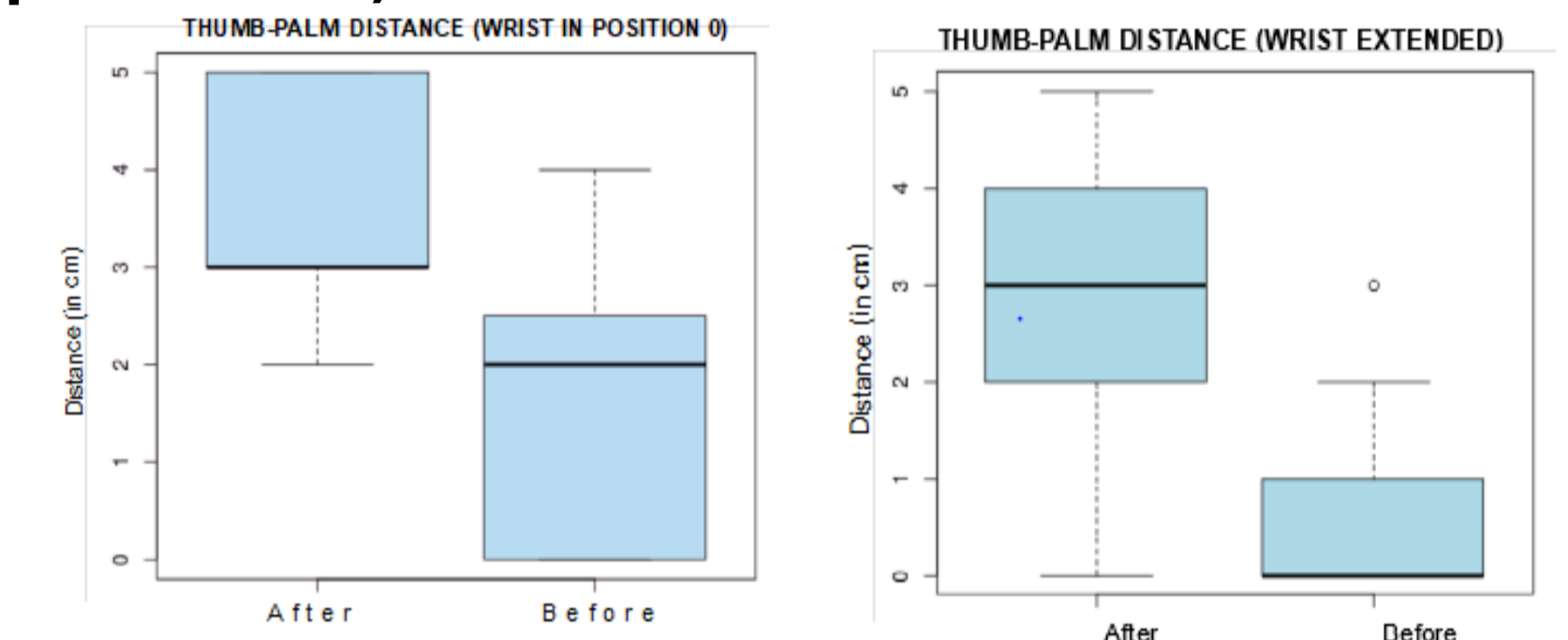
In conclusion we can say that this splint, along with other rehabilitative procedures, could be a useful tool for the physiotherapist and one important intervention that could improve the quality of life of the hemiplegic patients and his caregivers.

RESULTS

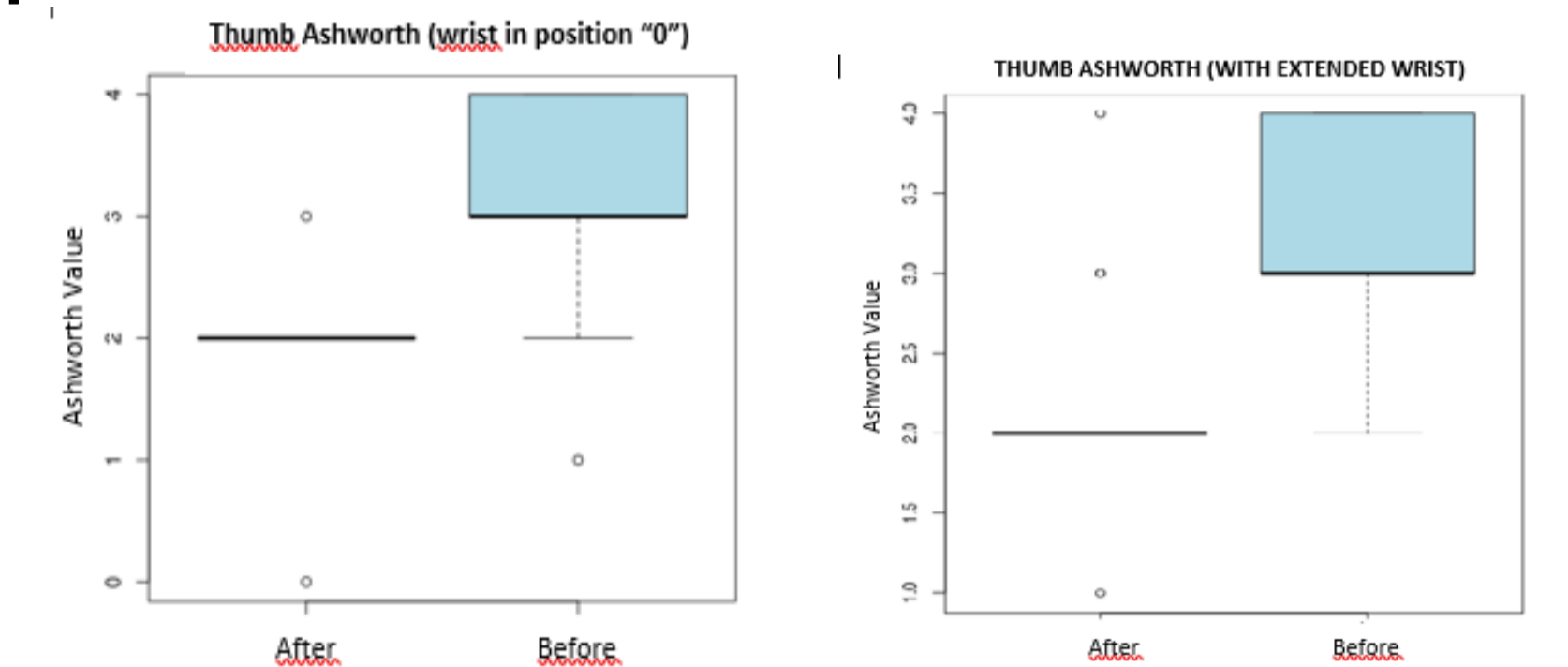
The results we obtained with this study seems to be encouraging.

We achieved statistically relevant improvements in this two study areas:

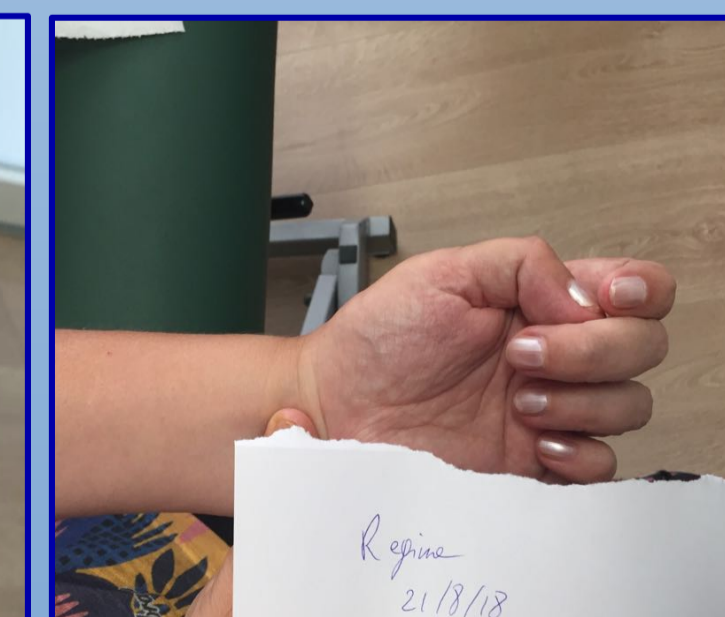
- **Thumb to palm distance (with wrist extension and in "position 0")**



- **Thumb Ashworth value (with wrist in extension and in "position 0")**



Beginning



One Month



Three Months