

# HOW TO INCREASE UTILISATION OF ROBOTIC DEVICES IN EVERYDAY CLINICAL PRACTICE IN NEUROREHABILITATION HOSPITAL?

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## INTRODUCTION

Although human resources are the basic asset in contemporary rehabilitation, the high-tech instruments may add necessary benefits. However, it happens that high-tech devices are bought, but supportive actions, ie possibilities for user training, maintenance requirements, availability of suitable patients, affect cost-effective usage of them.

## AIM

The current analysis main aims is to describe the usage of neurorobotic devices in Haapsalu Neurological Rehabilitation Centre (HNRC) during the years 2016–2018: how much high-tech devices were exploited, what would be appropriate procedural activities that support needs-based usage of them.

## METHOD

The analysis is retrospective and based on three target groups: (1) spinal cord injured adults, (2) people with acquired brain injuries, and (3) children with neurological conditions (Figure 1). The data was collected from HNRC's medical database Liisa and visualised in Power BI for better overview. The analysis concentrates on four robotic devices: LokomatPro®, Erigo®, Exoskeleton Indego® and Armeo Spring®. The actions that were put into practice over the three years in order to increase the usage of the named devices were as follows: (1) continuous education of new therapists, (2) specific measurable goals regarding diagnosed-based usage were agreed and the results followed up regularly by the team-leaders, (3) at the beginning of 2017 a structural reform of the hospital was introduced to organize the work more target group specific.

## RESULTS

The usage of robotic devices was increased 35,2% over the years 2016–2018 (Figure 2 and 3). All in all the robotic devices were used 2595 times in 2016, 3141 times in 2017, and 3509 times in 2018. Over the first year the usage increased 21,0% and over the second year 11,7%. Of all in-patient patients in 2018 17,5% received therapies with LokomatPro® (Figure 4a and 4b), 29,5% with Erigo® (Figure 5a and 5b), and 8,1% with Indego®. Armeo Spring® was mostly used for brain injured patients, the overall usage was 8,1%. In absolute numbers Erigo®'s usage increased the most: in 2018 there were 465 more therapies provided compared with 2016.

## CONCLUSIONS

The increase in the usage of robotic devices in in-patient neurorehabilitation centre could be positively affected by thoughtful management actions.

## ACKNOWLEDGEMENTS

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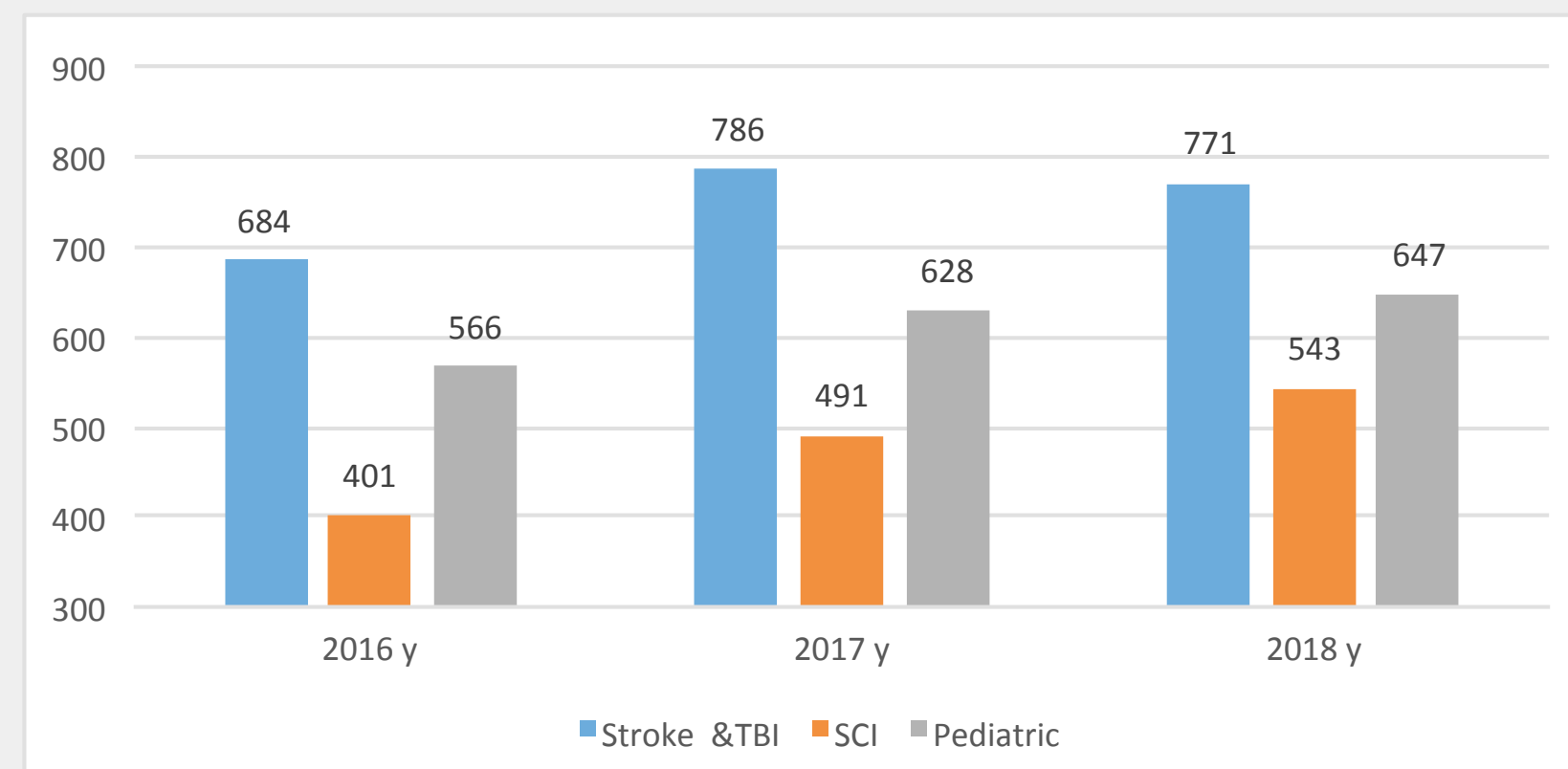


Figure 1. Overall number of stroke, TBI, SCI and paediatric patients treated in HNRC at 2016–2018.

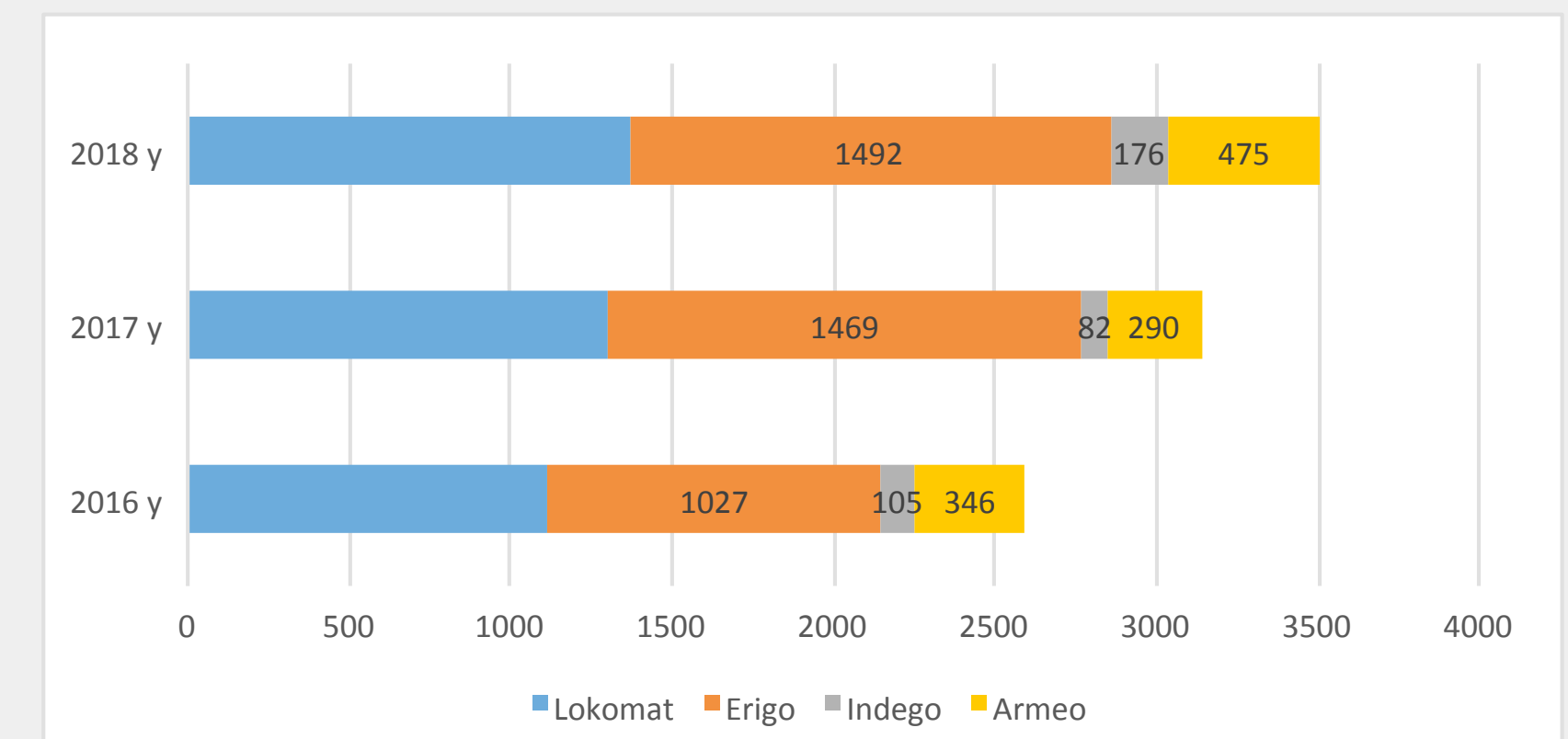


Figure 2. Total number of services provided in HNRC using different robotic devices at 2016–2018.

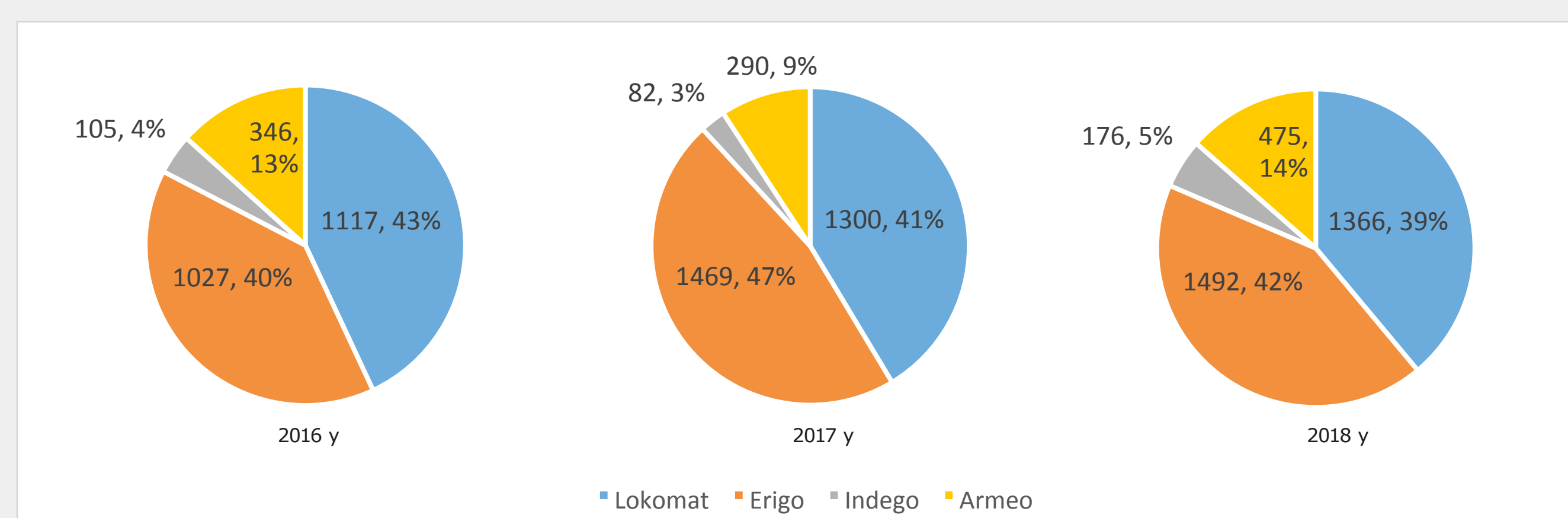


Figure 3. The proportion of usage of different robotic devices in HNRC at 2016–2018.

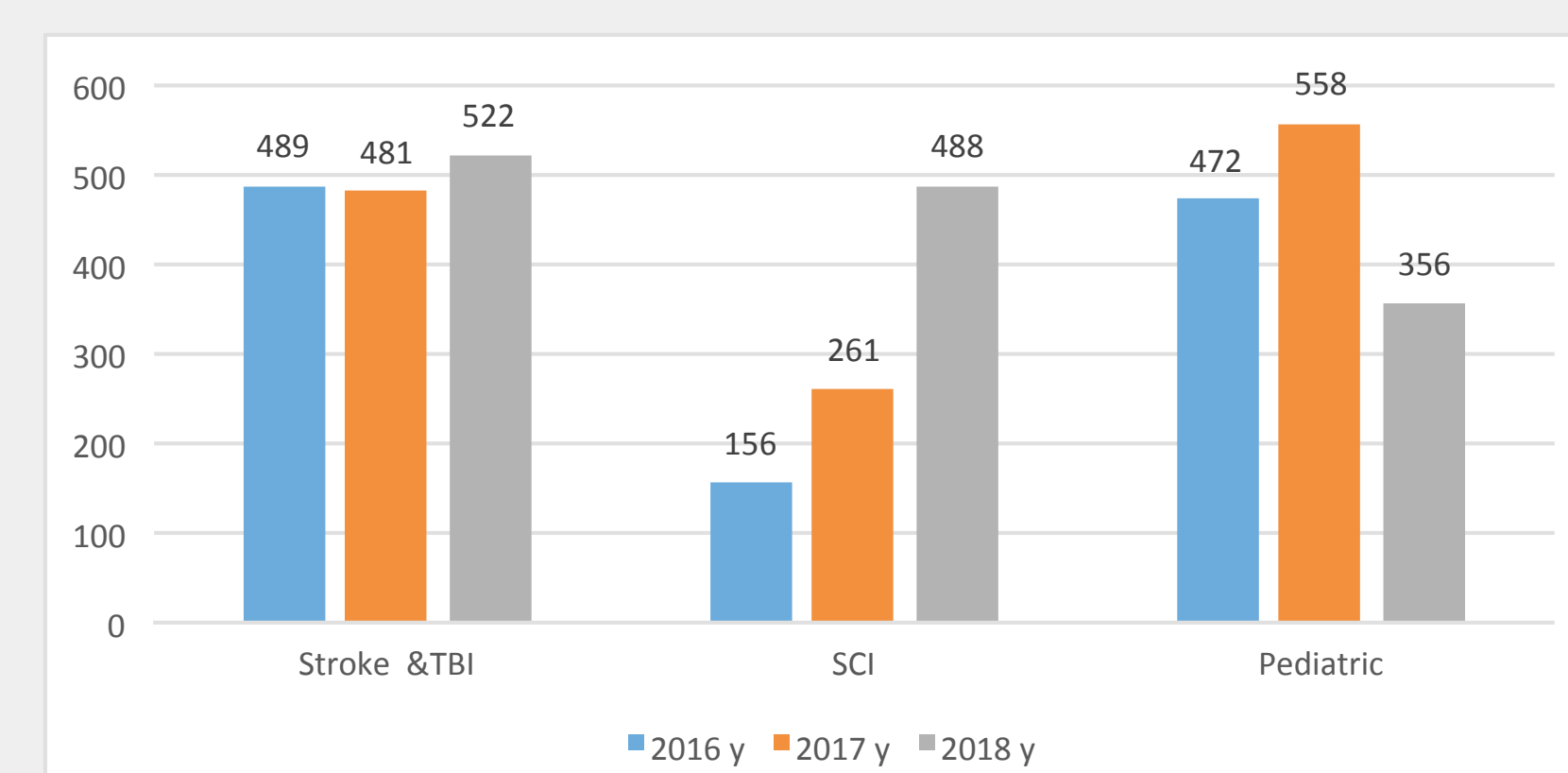


Figure 4a. Number of services provided to different patient groups using LokomatPro in HNRC at 2016–2018.

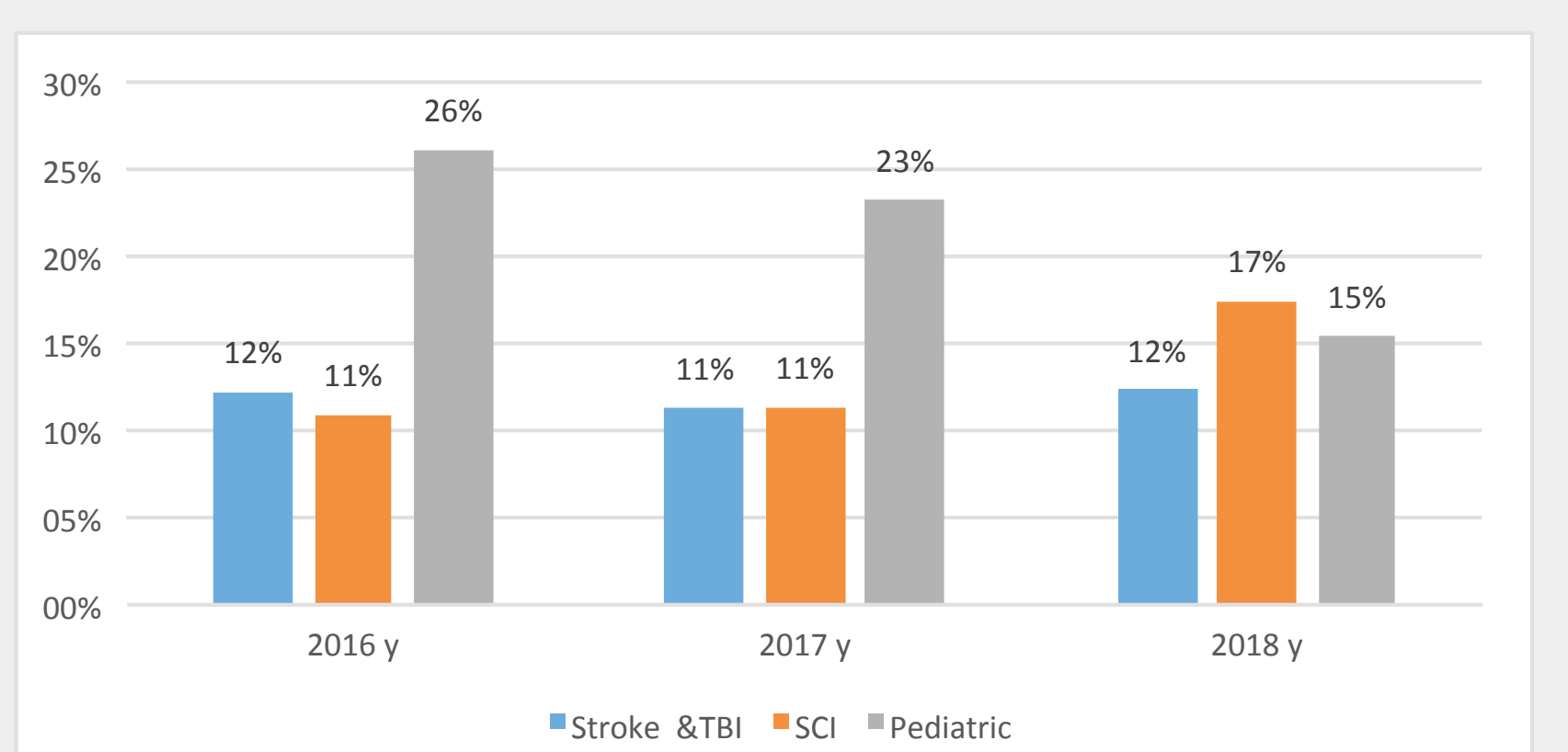


Figure 4b. Proportion of patients receiving services with Lokomat Pro by different patient groups in HNRC at 2016–2018.

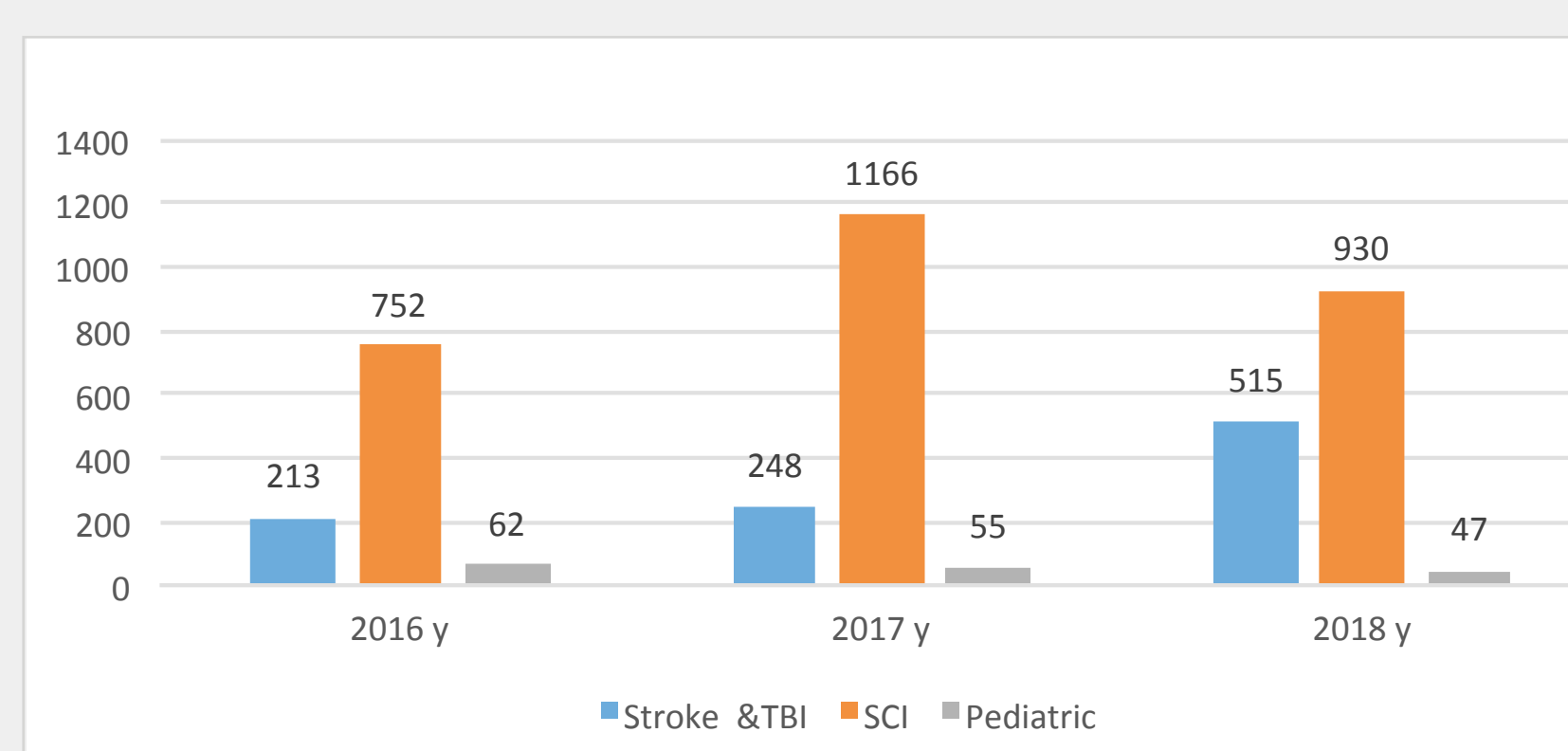


Figure 5a. Number of services provided to different patient groups using Erigo in HNRC at 2016–2018.

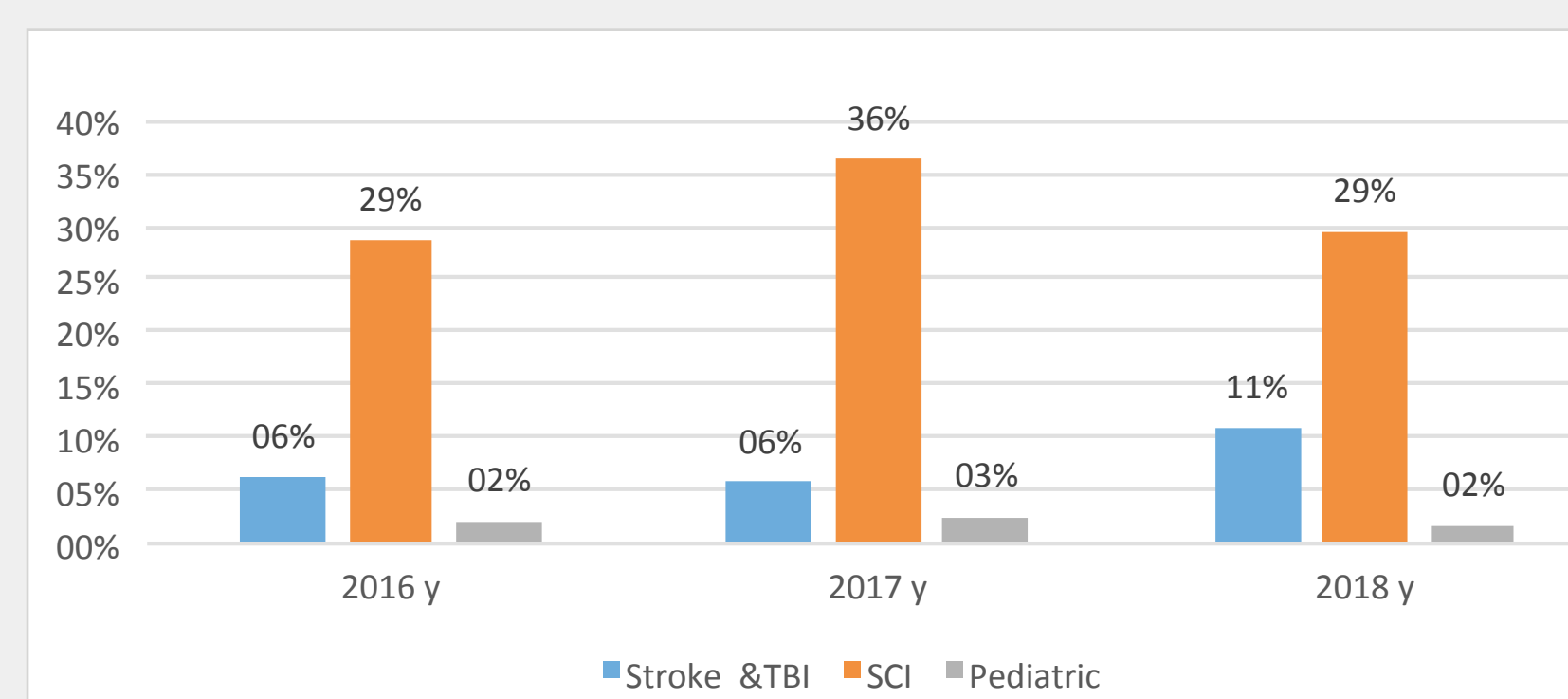


Figure 5b. Proportion of patients receiving services with Erigo by different patient groups in HNRC at 2016–2018.

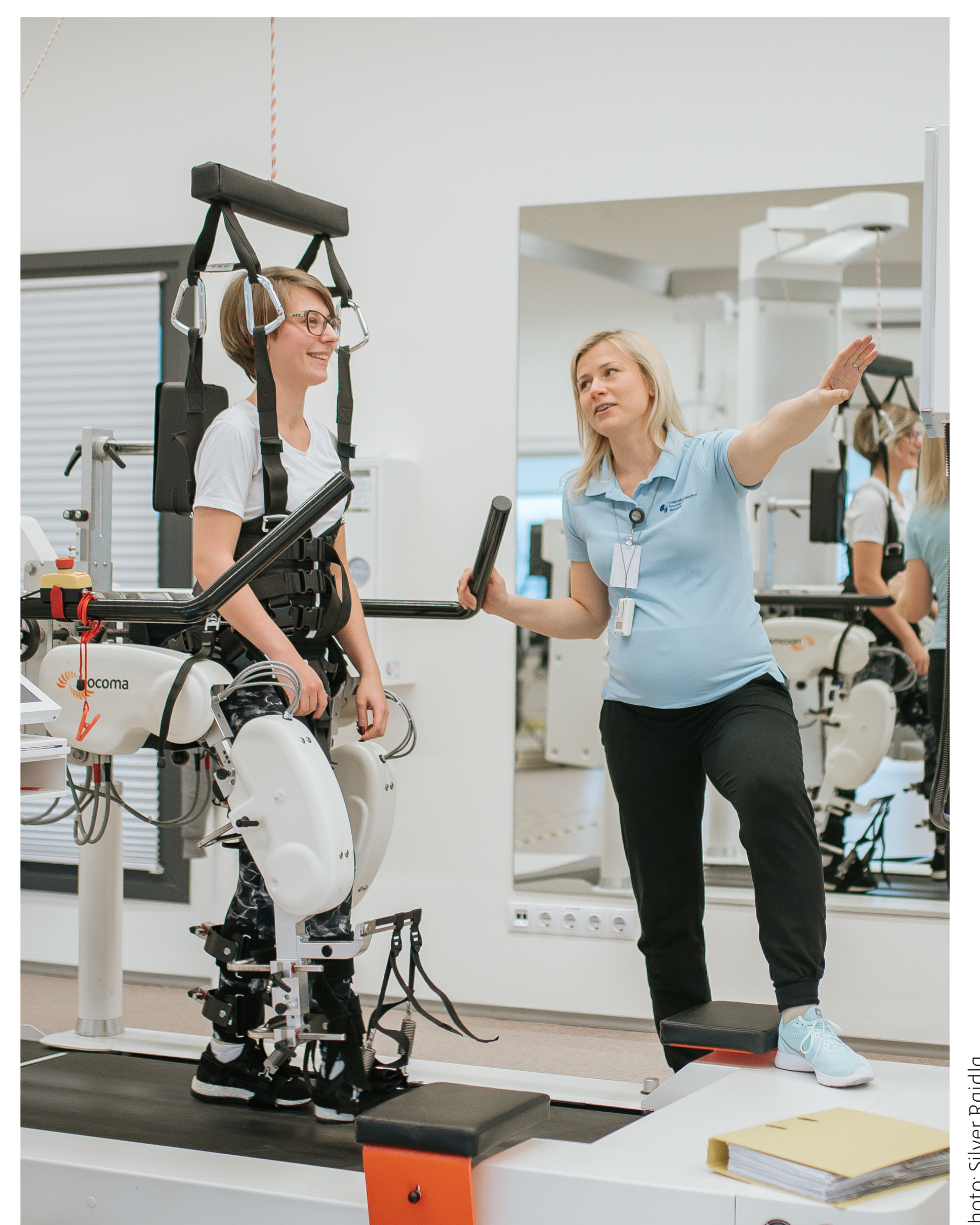


Photo: Silver Raidla