ABSTRACT

The use of robotic gait training systems has become commonplace worldwide. Robotic-assisted gait training (RAGT) affords an opportunity to increase walking practice with mechanical assistance from robotic devices, rather than therapists, where the patient may not be able to generate a sufficient or correct motion with enough repetitions to promote improvement. Robotic technologies are becoming more prevalent for treating neurological conditions in clinical settings. This article supports that locomotor training with robotic assistance is beneficial for improving walking function in individuals following spinal cord injuries, neurological disorders etc.

Keywords: robotic, gait, spinal cord injury, neurological disorders, rehabilitation

INTRODUCTION

The main goal of rehabilitation programme of the patients suffering from spinal cord injuries, neurological disorders etc. is the enhancement of strolling potentiality which in turn helps in improving the quality of life. Reduced sensory motor coordination, spasticity, decreased muscle strength and impaired balance are the leading limitations for the patients suffering from spinal cord injuries and neurological disorders in normal walking. Up till now various types of treatments have been adopted for walking potentiality easier. One of the examples for this is manually assisted tread mill training. The rehabilitation robotic training programmes are easily available nowadays which include Lokomat.

The Lokomat is a robot treadmill education device which makes use of a body weight aid system to droop patients even as their legs are attached to robot legs that assist with fundamental walking capabilities. The legs of the patients get automatically guided according to a pre-programmed physiological gait sample. The main advantage of this system is that one can easily conduct a repetition of the pre-programmed gait pattern. The previous studies carried out regarding robotic-assisted gait training show the evidence that this helps in promoting motor restoration and effective usable advancement.

MATERIALS AND METHODS

The sample size chosen for this study was twenty admitted to Kokilaben Dhirubhai Ambani Hospital, Mumbai.

Inclusion Criteria:
1] The samples who were suffering from spinal cord injury or neurological disorder
2] The samples who were admitted to Kokilaben Dhirubhai Ambani Hospital, Mumbai only.
3] The samples who were interested in participating in the study.
4] The samples who were suffering from the disease for less than 3 months.
5] The samples who were in the age group of 25 years to 65 years of age.

Exclusion criteria:
1] The samples who were not suffering from spinal cord injury or neurological disorder
2] The samples who were not admitted to Kokilaben Dhirubhai Ambani Hospital, Mumbai
3] The samples who were not interested in participating in the study.
4] The samples who were suffering from the disease for more than 3 months.
5] The samples that were not in the age group of 25 years to 65 years of age.

LIMITATIONS
1] Small sample size
2] Short treatment period

Out of the total sample size of 20 only 50% that is 10 samples were separated for robotic-assisted gait training programme along with regular rehabilitation programme (Group A) and 10 samples were assigned for control group which will only participate in the regular rehabilitation programme (Group B). The treatment schedule used for group A was 4 days a week for robotic-assisted gait training programme (a session of 40 minutes) along with regular rehabilitation programme for the remaining 2 days (a session of 20 minutes) likewise for 10 weeks. The robotic-assisted gait system used was manufactured by HIWIN Healthcare, Taiwan. Parameters such as impairment, posture control and balance were assessed by using the standard scales.

STATISTICAL ANALYSIS
The data collected in the pre test and post test was analyzed using the statistical program SPSS version 20. Results were expressed as mean ± standard deviation (SD). With the help of different tests the level of statistical significance found.

RESULTS & DISCUSSION
Samples from the robotic-assisted gait training group (Group A) showed the significant improvement after completion of the study. Comparing the results of both the groups that is Group A & Group B a significant difference was found regarding ambulatory functions, depression scores which resulted in the better quality of life.

CONCLUSION
Robotic assisted gait training group was found with better improvement in ambulatory function, psychological condition and quality of life compared to control group

REFERENCES
3. Swinnen E., Beckwée D., Meeusen R., Baeyens J.-P., Kerckhofs E. Does robot-assisted gait rehabilitation improve balance in stroke patients? a systematic review. Topics in Stroke...

