Intensive Goal-Directed Treatments in Enriched Environments Augments Patient Outcomes Post-Stroke

BA KANDAH, BS1, MA KŁONOWSKI, PT, DPT, PCS2, RM PELO, PT, DPT3, NM WILLIAMS, PT, DPT1, RV SANTIAGO, PT, DPT3, CK THOMPSON, PT, DPT, Ph.D.1, KA LEECH, PT, DPT2, CL HOLLERAN, PT, NCS1, AL LEDDY, PT, DPT1 and TG HORNBY, PT, Ph.D.1,2

1Sensory Motor Performance Program, Rehabilitation Institute of Chicago, Chicago, IL, USA, 2Northwestern University and University of Illinois-Chicago, Chicago, IL, USA

OBJECTIVE

• Previous research indicates that patients post-stroke take an inadequate amount of steps (400-800 steps per session)2 and work at inadequate intensities (24-35% of HR Max)3 to promote neuroplastic changes and maximize recovery4,5,6.

• Research indicates that medically stable individuals can safely begin gait training earlier after a stroke and have better outcomes than individuals that start training later1,7,8.

• The goal of this study was to examine feasibility and outcomes of high-intensity, high-dosage stepping practice for individuals after stroke in the inpatient rehabilitation setting.

METHODS

• 21 patients post sub-acute stroke (<6 months)

• Standardized outcomes assessed weekly:
  • 6-Minute Walk Test (6MWMT)
  • 10-Meter Walk Test (10MWT)
  • Berg Balance Scale (BBS)
  • Postural Assessment Scale for Stroke (PASS)

• Steps were collected with step activity monitors, and intensity was monitored and collected with heart rate monitors and BORG Rate of Perceived Exertion Scale (RPE).

• Target intensity was defined as:
  • Heart rate values of 70-85% of HR Max and RPE values of 14-20.

• Each subject was scheduled for 1-2 hours of physical therapy per day.

RESULTS AND CONCLUSIONS

• Stepping data indicated that subjects received an average daily stepping dosage of 8000-8000 steps per day, well above previously reported values.

• During the 2-month collection period, subjects demonstrated ability to tolerate a high-intensity, high-dosage stepping gait training program within the intensities defined.

• Individuals within this program took >750% more steps and worked at the target intensity level (70-85% of HR max) >650% more frequently than currently seen in stroke inpatient units across the United States.

• Individuals within this program showed improvements in 6-Minute Walk Test and Berg Balance Scale results, of approximately 2x more than reported levels of significant clinical change.

• Analysis of collected stepping and intensity data showed a positive correlation of both increased stepping and intensity levels when compared with improvements in 6-Minute Walk Test.

REFERENCES


