



STROKE SPECIAL INTEREST GROUP

Academy of Neurologic Physical Therapy

In this newsletter...

- **NEW Article Review! See below for video link to listen!
- **NEW Student Resources Exam Question!
- NCS 2024 Application Deadline!



You can either read below, or listen to the audio version with this [LINK](#) or by clicking the video above!

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Thank you Colton!

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Summary topic title: The Effects of Treadmill Training with Visual Feedback + Rhythmic Auditory Cueing in Chronic Stroke

Article reference: Shin J, Chung Y. The effects of treadmill training with visual

feedback and rhythmic auditory cue on gait and balance in chronic stroke patients: A randomized controlled trial. *NeuroRehabilitation*. 2022;51(3):443-453. doi:10.3233/NRE-220099

Link to

abstract: <https://pubmed.ncbi.nlm.nih.gov/35964207/#:~:text=Results%3A%20The%20VF%2BRAC%20group,compared%20to%20the%20Control%20group>

Definitions: Visual Feedback and Rhythmic Auditory Cueing (VF+RAC)- In this study, the intervention where subjects were provided visual feedback on their actual step length and target step length while walking as well as rhythmic auditory cues on their step cycle initiation. Target step length was based on the side with the longer step of the patient (unaffected side). The rhythmic auditory cue was provided by synchronizing the treadmill walking speed with the target step cycle initiation. The cues were provided through eye-level TV screen in front of the treadmill in real-time.

Purpose of article: To explore the effects of combined VF+RAC during treadmill training on walking symmetry, spatiotemporal gait parameters, and balance in patients with chronic stroke.

Methods of interest: Outcomes including Berg Balance Scale (BBS), Timed Up and Go (TUG), and spatiotemporal gait parameters were assessed before and after interventions. The study used a randomized controlled trial design. The experimental and control groups each had 16 subjects. Both groups received 30 minutes of general rehabilitation in addition to either VF+RAC treadmill training or traditional treadmill training (3 times per week for 8 weeks).

Results of interest: The group receiving VF+RAC demonstrated significantly improved spatiotemporal gait parameters (except non-paretic single limb support) compared to both the control group and baseline measurements. Additionally, the VF+RAC group demonstrated a significantly reduced spatial and temporal gait asymmetry compared to control and baseline. The control group demonstrated higher gait velocity, cadence, paretic single limb support, and non-paretic single limb support, while demonstrating lower paretic step length. On the BBS, the VF+RAC scored significantly higher than the control group, and both groups increased their BBS score significantly compared to baseline measurements. On the TUG, the VF+RAC had a significantly reduced time compared to the control group, and both groups had significantly reduced times compared to baseline.

Discussion, take home message: Clinicians should consider utilizing visual feedback in combination with rhythmic auditory cueing during treadmill training to address gait asymmetry, impaired spatiotemporal gait parameters, and balance as it may result in better outcomes compared to conventional treadmill training.

Additional references:

- Core Outcome measures to objectify dynamic balance and gait parameters <https://neuropt.org/practice-resources/anpt-clinical-practice-guidelines/core-outcome-measures-cpg>
- Shaw Gait Analysis Tool: A user friendly online tool for assessing spatiotemporal gait parameters



New Exam Question! Return in September 2023 for answer and rationale!

A patient presents with right arm numbness, blurred vision, and speech deficits. Neurological examination findings included mild fluent aphasia with some word substitutions, difficulty seeing fingers on the right side, mild right pronator drift and absent graphesthesia/stereognosis of the right hand. Where is the most likely location of the lesion?

- a. Left-sided injury to: postcentral gyrus, primary somatosensory cortex, and parietal cortex
- b. Right-sided injury to: frontal lobe, primary somatosensory and primary motor cortex
- c. Right-sided injury to: lateral and caudal pons
- d. Left-sided injury to: medulla and medial pons



NCS 2024 Application

Get a jump-start on advancing your career with APTA Neurologic Specialist Certification, governed by the American Board of Physical Therapy Specialties. APTA members [save on combined application and](#)

exam fees! The early bird deadline has passed. The final submission deadline is **September 30, 2023**. Learn more about the application deadline and fees on the ABPTS [website](#).



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