



STROKE SPECIAL INTEREST GROUP

Academy of Neurologic Physical Therapy

In this newsletter...

- *****NEW***** Article review. Temporal but not Spatial Gait Parameters Associated with Lower Balance Capacity in Moderate-High Functioning Persons with Stroke
- Student Corner question. Applying Rhythmic Auditory Stimulation in Stroke
- ANPT Annual Conference 2022. Stroke SIG Poster WINNER
- Time to consider being involved in the ANPT, Nominations are OPEN.



STROKE SIG
ARTICLE REVIEW
Academy of Neurologic Physical Therapy



Completed by: Arco Paul, PT, PhD, NCS THANK YOUR FOR YOUR TIME.

Summary topic title: Temporal but not Spatial Gait Parameters Associated with Lower Balance Capacity in Moderate-High Functioning Persons with Stroke

Article reference: Handelzalts S., Steinberg-Henn F., et al. Temporal but not Spatial Gait Parameters Associated with Lower Balance Capacity in Moderate-High Functioning Persons with Stroke. Journal of Neurologic Physical Therapy 2021,

DOI: 10.1097/NPT.0000000000000368

Link to full article if available: <https://doi.org/10.1097/NPT.0000000000000368>

Definitions:

- **PwS:** Persons with Stroke (PwS) in their subacute stages, with an average 32 days after stroke
- **Gait parameters** investigated:
 - **Step length:** distance between the leading limb's ankle marker at initial contact and the contralateral limb's ankle marker on the sagittal plane
 - **Step width:** distance between the leading limb's ankle marker at initial contact and the contralateral limb's ankle marker on the frontal plane
 - **Swing time:** time between toe-off and initial contact of the same foot
 - **Stance time:** time between initial contact and toe-off of the same foot
- **BBS:** Berg Balance Scale, a measure of proactive balance. BBS scores ranged from 0-56.
- **Fall Threshold:** defined as the lower perturbation intensity leading to a fall into a

harness system in at least 1 of the 4 perturbation directions, a measure of reactive balance. Fall threshold scores ranged from 1-7.

Background and Purpose of article:

- PwS show substantially higher risk of falls than general population.
- Walking is the most common activity associated with falls in PwS.
- Gait spatial and temporal asymmetries, that are known to be associated with falls, are generally observed in PwS.
- Gait spatiotemporal variabilities, that are also known to be associated with falls, are also noted in PwS.
- The purpose of this study was to quantify gait spatiotemporal symmetry parameters and gait variability parameters in PwS undergoing rehabilitation in the subacute stage of the disease, in comparison to neurologically healthy individuals. Another purpose was to investigate the association between these gait parameters and reactive balance capacity (using fall threshold) as well as proactive balance capacity (using BBS).

Methods of interest:

- This was a cross-sectional study in which 22 PwS and 12 similarly aged healthy adults participated.
- Inclusion criteria for PwS were first-ever unilateral ischemic or hemorrhagic stroke and the ability to stand independently or under supervision for at least 2 minutes. PwS who were able to walk on a treadmill without assistance for 2 minutes were included in the data analyses.
- Exclusion criteria were other neurological disorders in addition to stroke, significant musculoskeletal conditions, and significant visual impairment.
- Participants walked over a computerized treadmill system at comfortable speed for 120 seconds. A safety harness protected them in the event of a loss of balance but did not support any body weight or restrict their movements.
- Spatiotemporal asymmetries of the gait parameters were calculated using symmetry ratios, $V_{paretic}/V_{nonparetic}$, where a ratio of 1.0 indicated perfect symmetry. Spatiotemporal variabilities were calculated using standard deviations of the gait parameters.
- Prior to treadmill walking, reactive and proactive balance capacities of all participants were assessed using BBS and Fall Thresholds.

Results of interest:

- PwS in the subacute stage of the disease demonstrated greater asymmetry in spatial and temporal gait parameters in comparison to healthy participants, but only temporal parameters were significantly associated with lower balance capacity.
- In PwS, significant negative associations were found between fall threshold and stance time asymmetry, between BBS and swing time asymmetry, and between BBS and stance time variability of the paretic lower extremity.

Discussion and clinical implications:

- These findings highlight the importance of gait temporal symmetry and variability measures for dynamic balance control after stroke
- This association between temporal parameters and balance capacity in PwS suggests the importance of targeting temporal walking deficits during physical rehabilitation.



STROKE SIG

STUDENT CORNER

Academy of Neurologic Physical Therapy



We had a question posed on the Stroke SIG Student Corner. Thank you!

What are some general guidelines/tips for rhythmic auditory stimulation use with post-stroke gait training?



2nd ANNUAL CONFERENCE
ANPT 2022

October 13-15 Minneapolis, MN

Congratulations to the ANPT Annual Conference 2022, Stroke SIG Poster Winner.

["Functional Ambulation Category in Acute Stroke Predicts Disability at 3 Months"](#)

Andrew K, Costello M, DiCarlo J, Gillan E, Greenler E, Lin D, Parlman K, Plummer P, Strom J

Click link to view e-poster

You can find more great content at the [ANPT YouTube Channel](#). Stroke SIG has it's own content under Playlists



**ANPT
YouTube
Channel**



Sign up NOW to run for ANPT Office!!

Serving in an ANPT or SIG leadership position is a great way to engage with the neuro community. Your involvement and leadership ensures ANPT will continue to grow and be innovative. Consider serving in one of the open positions and make note of the upcoming deadlines. As a member-driven Academy, we need you to help define our future!

2023 Open Positions and Descriptions

The ANPT and SIG Nominating Committees have created a [web page](#) to answer your questions about each of the open positions.

- Secretary
- Director of Communications
- Director of Practice
- ANPT Nominating Committee

For Special Interest Group open positions, visit the SIG pages for information on their activities [here](#).

Nominations are **due March 27, 2023**. Elections will be held April 10 - May 8, 2023. Three-year terms begin July 1, 2023. If you are interested in getting involved in a leadership position, please contact one of the members of the ANPT Nominating Committee:

- Leslie Wolf
- Kate Enzler
- Lauren Bilski

You can also reach out to each SIG nominating committee as listed on the specific SIG Leadership pages.

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