June 13th, 2022

STROKE SPECIAL INTEREST GROUP

Academy of Neurologic Physical Therapy

In this newsletter...

- Stroke Corner Article Review: Maintenance of Cardiorespiratory Fitness after Stroke
- ANPT Launched a NEW Education Center
- Nominate someone for an ANPT Award (including SIG awards)
- Stroke SIG NPTE/NCS Test Prep Questions: **Question 1 review and video rationale now posted!**

Stroke Corner Article Review: Maintenance of Cardiorespiratory Fitness after Stroke: A Systematic Review

Thanks to Daniel Dray, DPT, NCS for reviewing this week's article

Maintenance of Cardiorespiratory Fitness in People with Stroke: A Systematic Review and Meta-analysis

Article reference: Machado N, Wingfield M, Kramer S, Olver J, Williams G, Johnson L. Maintenance of Cardiorespiratory Fitness in People With Stroke: A Systematic Review and Meta-analysis. Arch Phys Med Rehabil. 2022 Feb 13:S0003-9993(22)00209-X. doi: 10.1016/j.apmr.2022.01.151. Epub ahead of print. PMID: 35172177

Link to abstract: https://pubmed.ncbi.nlm.nih.gov/35172177/

Definition(s):

· **Cardiorespiratory fitness** refers to the "ability to transport and use oxygen" to carry out "large-muscle, dynamic, moderate-to high intensity exercise over a prolonged period of time." Examples of cardiorespiratory fitness training modes include treadmill walking, cycling, outdoor walking, high-intensity interval training, elliptical training, and upper body cycling.

· Cardiorespiratory fitness can be expressed as **VO2max** or **VO2peak**. VO2max indicates the maximum amount of oxygen that an individual can utilize during intense or maximal exercise. VO2peak indicates the point at which oxygen uptake no longer increases (or increases only marginally) with an increase in workload. VO2 peak was considered an outcome of interest given people with stroke rarely reach true VO2max because of stroke-related impairments and fatigue.

Purpose of article: Cardiorespiratory fitness in people with stroke is 25%-45% less than age- and sex-matched adults without stroke. National and international clinical care guidelines recommend cardiorespiratory fitness training after stroke. The short-term benefits of cardiorespiratory fitness training for people with stroke at all stages of recovery are well established, and include improved modifiable risk factors for stroke (cardiovascular fitness, hypertension, obesity, dyslipidemia, sedentary lifestyle), improved cardiovascular function,

and improved neurologic impairment.

The purpose of this review was to determine if cardiorespiratory fitness is maintained after the completion of cardiorespiratory fitness interventions in people with stroke. This is an important question given higher levels of cardiorespiratory fitness are protective against secondary complications and vascular death. Further, the authors aimed to determine the impact of the type, intensity, duration, and details of follow-up on the maintenance of cardiorespiratory fitness.

Methods of interest: Two reviewers independently screened full texts and extracted data from medical literature databases. Studies included were randomized controlled trials and cohort studies including (1) people with stroke; (2) cardiorespiratory fitness interventions (individual or group based); (3) a direct measure of cardiorespiratory fitness (VO2max or VO2peak); (4) short- (0 to <3 months), medium- (3-6 months), or long-term (>6 months) follow-up data.
A lower limit of -1.0 mL•kg-1•min-1 was used to determine maintenance (ie, no change) of cardiorespiratory fitness. Any degradation of fitness greater than this was considered to be fitness that was not maintained.

Results of interest: Fourteen studies (N=324 participants) were included. The mean age was 68.7 years, and the mean time since stroke ranged from 14 days to 7.2 years. Participants completed cardiorespiratory fitness training 2-5 days per week over 4-13 weeks at

- moderate to high intensity (40%-70% heart rate reserve [HRR]; n=4 studies),
- high intensity (60% to <90% HRR; n=7 studies)
- intervals of high intensity (85%-95% peak heart rate or maximal heart rate; n=3 studies).

Most people with stroke did maintain cardiorespiratory fitness in the short- (-0.19 mL•kg-1•min-1 [95% CI, -1.66 to 1.28]), medium- (-0.61 mL•kg-1•min-1 [95% CI, -3.95 to 2.74]), and long-term (0.00 mL•kg-1•min-1 [95% CI, -2.23 to 2.23]) after completion of cardiorespiratory fitness interventions.

Discussion: Based on the results of this meta-analysis, it is evident that people with stroke can maintain cardiorespiratory fitness in the short-, medium-, and long-term after the cessation of a cardiorespiratory fitness intervention. However, these results should be interpreted with caution. Because there were only a small number of studies reporting long term maintenance of cardiorespiratory fitness, little is known about the impact of intervention (ie, type, dose) or participant (ie, stroke severity, age, sex, time post stroke) characteristics on long-term maintenance of cardiorespiratory fitness. Only 4 studies completed long-term follow-up, with the results suggesting mixed (combined with education/balance/strength training) interventions including high-intensity/high-intensity interval training of 10-12 weeks may be optimal for the long term maintenance of cardiorespiratory fitness. Two studies that included ongoing monitoring during the follow-up period were also able to demonstrate long term maintenance of fitness.

Given the importance of lifelong cardiorespiratory fitness, future research needs to target the factors that influence long-term engagement in cardiorespiratory fitness training and identify the long-term effects in people with stroke. Therefore, to determine the effect of the intervention on behavior change in people with stroke, future investigations should assess:

(1) what model of care best supports long-term cardiorespiratory fitness maintenance (eg, group vs individual training, center vs home-based training),
(2) the nature of the interventions (ie, cardiorespiratory fitness training alone or in combination with mixed interventions [ie, resistance or balance or stepping training] and/or education and/or ongoing monitoring),
(3) what dose parameters of a cardiorespiratory fitness interventions optimize long-term maintenance of cardiorespiratory fitness (ie, intervention type, frequency, intensity, and

length), and
(4) long-term monitoring of risk factors, such as physical inactivity and low cardiorespiratory fitness.

Additional references:
ANPT: Locomotor Training CPG Resource Page This page has an abundance of information/resources for clinicians interesting in implementing HIT in their clinic.
https://neuropt.org/practice-resources/anpt-clinical-practice-guidelines/locomotion

Check out ANPT's NEW Education Center

The Synapse Online Education Center has moved to a new platform and has been rebranded as the **ANPT Education Center**! The new site will provide an improved user experience while offering access to interactive courses, recorded webinars, and podcasts.

Explore 40+ courses, 180+ podcasts, and enjoy new features, including:

- The ability to identify and search content using your own personalized areas of interest. This setting will notify you when new content is released.
- Links to companion ANPT resources on each topic to expand your learning.
- Easy compilation of CEU information into one transcript.

Notes:
All course content, registered users and completed CEU information has been transferred to the new site from the former ANPT Synapse Education Center. If you had an account on the old site, please use that email address and reset your password as private passwords did not transfer in the move. ANPT members who didn't previously have an account will use your APTA email and APTA ID number to log in. When you visit the site for the first time, please set up your profile so you can be notified of new content in your areas of interest.

If you have questions or problems entering the site email education@neuropt.org.

ANPT Education Center

Nominate Someone for an Academy of Neurologic PT Award!

Nomination Link

The Academy of Neurologic Physical Therapy Awards Committee is seeking individuals to be nominated for the 2023 ANPT Awards. This year there are ten individual awards all with nomination deadlines of August 1, 2022.

AWARD DESCRIPTIONS

SIG Awards

SIG Service Award
Purpose: To acknowledge a member of a particular SIG who goes above and beyond through volunteer contributions to the SIG and its efforts.

SIG Research Award
Purpose: To recognize a member of a particular SIG who has demonstrate exemplary contributions to the body of research representative of the population the SIG serves.

Academy Awards

Service to the Academy Award
Purpose: To acknowledge and honor a member of the Academy of Neurologic Physical Therapy whose contributions to the Academy have been of exceptional value.

Excellence in Neurologic Research Award
Purpose: To acknowledge and honor a member of the Academy of Neurologic Physical Therapy who has demonstrated continuing excellence in research related to neurologic physical therapy science, theory, practice, or education.

Excellence in Neurologic Education Award
Purpose: To acknowledge and honor a member of the Academy of Neurologic Physical Therapy who is a gifted and creative educator. The awardee spends a majority of their time in an academic setting but continues to treat patients and develop strategies for intervention that directly affect patient care.

PT Clinical Excellence in Neurologic Physical Therapy Award
Purpose: To acknowledge and honor a physical therapist member of the Academy of Neurologic Physical Therapy whose major professional involvement and contributions are currently with the practice of neurologic physical therapy.

PTA Clinical Excellence in Neurologic Physical Therapy Award
Purpose: To acknowledge and honor a physical therapist assistant who is a member of the Academy of Neurologic Physical Therapy whose major professional involvement and contributions are currently with the practice of neurologic physical therapy.

Outstanding Clinical Innovator in Neurologic Physical Therapy Award
Purpose: To acknowledge and honor a member of the Academy of Neurologic Physical Therapy who translated recent evidence or emerging practice/business strategies into a program, initiative, or service to benefit patients/clients with neurologic impairment. The awardee should be individuals who led or co-led the implementation of this innovation and participated in monitoring its outcomes to measure its impact as well as success on the greater physical therapy community.

Outstanding Advocacy in Neurologic Physical Therapy Award
Purpose: To acknowledge and honor a member of the Academy of Neurologic Physical Therapy who is an advocate for the neurologic physical therapy profession and/or neurologic populations.

Early Career Professional Award
Purpose: To support new professionals who are members of the APTA Academy of Neurologic Physical Therapy and show potential to make lasting contributions to the Academy of Neurologic Physical Therapy, by providing them financial assistance to attend CSM.

CSM Abstract: Early Career Scientist Award – After submitting your abstract through the CSM portal complete the form on the application page to be considered for this award.

Please take the time to nominate a deserving colleague! For more information and nomination forms **click here.**

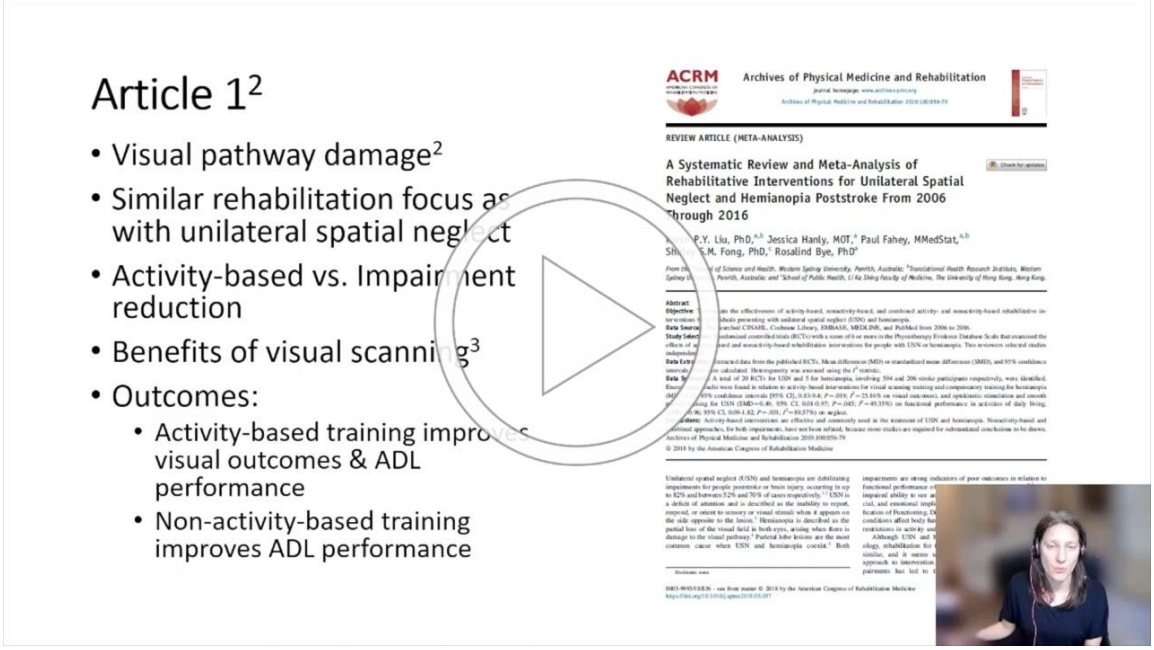
Prepping for the NPTE or NCS? Check out our Stroke Test Prep Questions - Answer #1 Video Now Posted!

STROKE SIG
STUDENT INFO
Academy of Neurologic Physical Therapy

The **Stroke SIG Student Corner** team is putting together a series of test questions to help future takers of the National Physical Therapy Examination (NPTE) and Neurologic Clinical Specialist exam.

Test your stroke knowledge by visiting the **Stroke Corner website** (questions are at the bottom). New questions are posted around the first of the month.

This month's answer review video is now posted! Dr. Michelle Sawtelle reviews the evidence-based rational behind the correct answer for the homonymous hemianopsia question.



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