



STROKE SPECIAL INTEREST GROUP

Academy of Neurologic Physical Therapy

In this newsletter...

- Stroke Corner Article Review: Lateropulsion After Stroke
- Neuro Telehealth Flowsheet

Stroke Corner Article Review: Lateropulsion Prevalence after Stroke: Systematic Review

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

Lateropulsion Prevalence After Stroke: A Systematic Review and Meta-analysis

Article reference: Dai S, Lemaire C, Piscicelli C, Pérennou D. Lateropulsion Prevalence after Stroke: A Systematic Review and Meta-analysis. *Neurology*. 2022 Feb 21;10.1212/WNL.0000000000200010. doi: 10.1212/WNL.0000000000200010. Epub ahead of print. PMID: 35190465

Link to abstract: <https://pubmed.ncbi.nlm.nih.gov/35190465/>

Definition: Lateropulsion: a deficit of active body orientation with respect to gravity in the frontal plane, mostly observed after a stroke. It limits and delays the ability to sit, stand, and walk, and creates safety challenges and burden on caregivers and family.

- After low-brainstem strokes, lateropulsion is usually *ipsilesional* and mainly secondary to vestibulospinal disorders, with co-occurrence of vestibulo-ocular signs.
- After hemispheric strokes, lateropulsion is *contralesional*. Individuals align their body onto an erroneous reference of verticality in relation to a damaged graviceptive network. The most severe form of this condition is known as Contraversive Pushing Syndrome (Pusher Syndrome).

Background: In order to design intervention studies to address lateropulsion, researchers require some basic knowledge of epidemiology. This knowledge is currently limited as most studies have historically focused only on the most severe form of lateropulsion (pusher syndrome).

Today, lateropulsion is considered more of a postural behavior with a continuum between light and severe forms, often associating 3 signs: *lateral body tilt*, *active pushing from sound limbs*, and *resistance to correction*. From this novel viewpoint, the authors assumed that the actual lateropulsion prevalence has been underestimated and that it might encompass at least half of individuals with stroke.

Purpose: The primary aim of this systematic review and meta-analysis was to estimate the lateropulsion prevalence in both supra and infratentorial stroke. The secondary aim was to conduct complementary analyses of lateropulsion prevalence by severity, side, and time after stroke.

Methods: The authors searched databases for research papers that included a prevalence or incidence of post-stroke lateropulsion. Scales used to identify lateropulsion in the studies included the Scale of Contraversive Pushing (SCP), Burke Lateropulsion Scale (BLS), Four Point Pusher Scale (4PPS), and the Grading of Lateropulsion scale.

Results:

Prevalence: The pooled overall lateropulsion prevalence was **55.1%** regardless of stroke location, and was consistent across assessment tools.

- After supratentorial stroke, lateropulsion prevalence was **41%**.
- Only **12.5%** of patients with supratentorial stroke were classified as pushers
- Regardless of lateropulsion severity, lateropulsion prevalence was **56.3%** after right hemispheric stroke and **34.3%** after left hemispheric stroke
- Pusher prevalence was **20%** after right hemispheric stroke and **8.7%** after left hemispheric stroke.
- After infratentorial stroke, lateropulsion prevalence was very high, reaching **83.2%**.
- Meta-regression did not reveal any effect of age, sex, geographic region, publication year, or study quality.

Time Poststroke:

- Lateropulsion prevalence progressively decreased from **52.8%** in the *acute* phase to **37%** in the *early subacute* phase and **22.8%** in the *late subacute* phase.
- Prevalence of pushers evolved from 11% in the acute phase to 15.1% in the early subacute phase and 6% in the late subacute phase. (This increase from acute phase to early subacute phase can possibly be explained by delayed functional assessment of patients)
- The ratio of right- to left-hemispheric stroke with lateropulsion increased as a function of time: 1.7 in the acute phase to 7.7 in the late subacute phase.

Discussion: The results confirmed the hypothesis of a **high prevalence of lateropulsion**, no matter what the stroke location. The prevalence of the most severe form of lateropulsion, pusher syndrome, was relatively small. This prompts one to think of pusher syndrome as “a tree that hides the forest” due to the disproportionate emphasis placed on this condition. The high lateropulsion prevalence strengthens the need for specific rehabilitation, targeting body orientation with respect to gravity.

This study also reveals that **lateropulsion is more frequent after right hemispheric stroke** with the ratio of right to left hemispheric stroke increasing with time. This observation confirms that uprightness is a highly lateralized brain function, mainly located in the right hemisphere. Given that lateropulsion has a longer and worse recovery in individuals with a right hemispheric stroke, these individuals should have more intensive interventions.

Lateropulsion prevalence is high within the first 3 months after a stroke, regardless of its location. This prevalence declines before the chronic phase, which indicates that brain plasticity occurs relatively early in terms of the active body orientation with respect to gravity and suggests that **most rehabilitation efforts to facilitate lateropulsion recovery should be in the acute and subacute phases**. This observation also calls for an early systematic detection of lateropulsion after stroke.

Prevalence of lateropulsion is so high in infratentorial stroke that it is viewed as a general sign among many others (ataxia, ocular motor disorders, dysarthria, dysphagia, Horner syndrome). For infratentorial stroke, the effect of the side and lateropulsion recovery course remain to be studied.

Additional references:

1. Stroke SIG Monthly Topic of Contraversive Pushing (Scroll down to December 2018)
<https://neuropt.org/special-interest-groups/stroke/stroke-corner---education/exam-treatment-considerations>
2. ANPT Synapse Online Education Center Course
Contraversive Pushing: Physical Therapy Assessment and Management Following Stroke
<https://www.anptsynapsecenter.com/public/course-detail/?id=117>

Neuro Telehealth Flowsheet



Thanks to the ANPT Neuro Telehealth Group for providing a host of clinician resources on the [ANPT Telehealth Website](#).

Don't miss the new resource: a [Traffic Light Telehealth Flowsheet](#).

The intent of this flow chart is to help guide a clinician through problem solving on the evaluation visit to determine if telerehabilitation is appropriate for the patient.

The flowsheet also includes cognitive measures that may be considered for use in a telehealth evaluation.

VISIT THE STROKE SIG ONLINE!



Academy of Neurologic Physical Therapy
info@neuropt.org | www.neuropt.org

ANPT Social Media



Academy of Neurologic Physical Therapy | 1935 County Road B2 W Ste 165, American Physical Therapy Association, Roseville, MN 55113

[Unsubscribe info@neuropt.org](mailto:info@neuropt.org)

[Update Profile](#) | [Constant Contact Data Notice](#)

Sent by info@neuropt.org powered by



Try email marketing for free today!