



RESEARCH IN REVIEW

Dear Members,

We are pleased to bring to you this issue of **Research in Review** highlighting research articles relevant to neurologic physical therapy over the past months. We hope that you enjoy perusing through the collection of articles we selected for this edition.

We select recently published articles that are available through a link on PubMed or directly through the journal website in the Research in Review citation. We are now also including relevant articles from APTA journals. We appreciate any suggestions or comments you may have to help improve the newsletter.

The Research in Review is a newsletter run by ANPT members, for other ANPT members. We therefore welcome your suggestions of recently published manuscripts for inclusion in the Research in Review. Please submit your suggestion(s) for articles using the link below.

Submit your suggestions of research articles for the next issue of the Research in Review here.

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Research in Review Co-Chairs

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RESEARCH TOPICS

- Feature Article
- Motor Control
- Rehabilitation
- Clinical Neurophysiology
- Technologies



Full text articles in [JNPT](#) are **free** for members

FEATURE ARTICLES

Using Implementation Science to Guide the Process of Adapting a Patient Engagement Intervention for Inpatient Spinal Cord Injury/Disorder Rehabilitation.

Walsh RJ, McKay VR, Hansen PE, Barco PP, Jones K, Lee Y, Patel RD, Chen D, Heinemann AW, Lenze EJ, Wong AWK.

Arch Phys Med Rehabil. 2022 May 17:S0003-9993(22)00400-2. doi: 10.1016/j.apmr.2022.04.010. Online ahead of print.

PMID: 35588857

Psychological Contributions to Symptom Provocation Testing After Concussion.

Terpstra AR, Louie DR, Iverson GL, Yeates KO, Picon E, Leddy JJ, Silverberg ND.

J Head Trauma Rehabil. 2022 Jun 9. doi: 10.1097/HTR.0000000000000796. Online ahead of print.

PMID: 35687896

MOTOR CONTROL

Effects of Intensive Vibratory Treatment with a Robotic System on the Recovery of Sensation and Function in Patients with Subacute and Chronic Stroke: A Non-Randomized Clinical Trial.

Rodríguez-Pérez MP, Sánchez-Herrera-Baeza P, Cano-de-la-Cuerda R, Camacho-Montaña LR, Serrada-Tejeda S, Pérez-de-Heredia-Torres M.

J Clin Med. 2022 Jun 21;11(13):3572. doi: 10.3390/jcm11133572.

PMID: 35806854 Free PMC article.

Investigation of postural control and spatiotemporal parameters of gait during dual tasks in ataxic individuals.

Sütçü G, Doğan M, Topuz S.

Neurol Sci. 2022 Jul 7. doi: 10.1007/s10072-022-06248-9. Online ahead of print.

PMID: 35796918

Real-time feedback control of split-belt ratio to induce targeted step length asymmetry.

Carr S, Rasouli F, Kim SH, Reed KB.

J Neuroeng Rehabil. 2022 Jun 30;19(1):65. doi: 10.1186/s12984-022-01044-0.

PMID: 35773672 Free PMC article.

Practice-Not Task Difficulty-Mediated the Focus of Attention Effect on a Speed-Accuracy Tradeoff Task.

Yamada M, Lohse KR, Rhea CK, Schmitz RJ, Raisbeck LD.

Percept Mot Skills. 2022 Jun 19:315125221109214. doi: 10.1177/00315125221109214.

Online ahead of print.

PMID: 35723022

Retrospective Analysis of Task-Specific Effects on Brain Activity After Stroke: A Pilot Study.

Demers M, Varghese R, Winstein C.

Front Hum Neurosci. 2022 Jun 2;16:871239. doi: 10.3389/fnhum.2022.871239.

eCollection 2022.

PMID: 35721357 Free PMC article.

Timing of propulsion-related biomechanical variables is impaired in individuals with post-stroke hemiparesis.

Alam Z, Rendos NK, Vargas AM, Makanjuola J, Kesar TM.

Gait Posture. 2022 May 21;96:275-278. doi: 10.1016/j.gaitpost.2022.05.022. Online ahead of print.

PMID: 35716486

Do sensorimotor control properties mediate sway in people with chronic balance complaints following mTBI?

Parrington L, Brumbach BH, Peterka RJ, King LA.

Gait Posture. 2022 May 21;96:173-178. doi: 10.1016/j.gaitpost.2022.05.023. Online ahead of print.

PMID: 35667229

Muscle contributions to pre-swing biomechanical tasks influence swing leg mechanics in individuals post-stroke during walking.

Brough LG, Kautz SA, Neptune RR.

J Neuroeng Rehabil. 2022 Jun 3;19(1):55. doi: 10.1186/s12984-022-01029-z.

PMID: 35659252 Free PMC article.

Restorative Action of Vitamin D3 on Motor Dysfunction Through Enhancement of Neurotrophins and Antioxidant Expression in the Striatum.

Manjari SKV, Maity S, Poornima R, Yau SY, Vaishali K, Stellwagen D, Komal P.

Neuroscience. 2022 Jun 1;492:67-81. doi: 10.1016/j.neuroscience.2022.03.039. Epub 2022 Apr 10.

PMID: 35413386

REHABILITATION

Acute unilateral vestibulopathy/vestibular neuritis: Diagnostic criteria.

Strupp M, Bisdorff A, Furman J, Hornibrook J, Jahn K, Maire R, Newman-Toker D, Magnusson M.

J Vestib Res. 2022 Jun 11. doi: 10.3233/VES-220201. Online ahead of print.

PMID: 35723133

Trends in online search for multiple sclerosis symptoms - Is pain a hot topic?

Serrazina F, Salavisa M, Correia AS.

Mult Scler Relat Disord. 2022 Aug;64:103939. doi: 10.1016/j.msard.2022.103939. Epub 2022 Jun 4.

PMID: 35716475

Associations of Bilateral Vestibulopathy With Cognition in Older Adults Matched With Healthy Controls for Hearing Status.

Bosmans J, Gommeren H, Mertens G, Cras P, Engelborghs S, Van Ombergen A, Vereeck L, Gilles A, Van Rompaey V.

JAMA Otolaryngol Head Neck Surg. 2022 Jun 16:e221303. doi: 10.1001/jamaoto.2022.1303. Online ahead of print.

PMID: 35708675 Free PMC article.

Voluntary motor command release coincides with restricted sensorimotor beta rhythm phases.

Hussain SJ, Vollmer MK, Iturrate I, Quentin R.

J Neurosci. 2022 Jun 13;JN-RM-1495-21. doi: 10.1523/JNEUROSCI.1495-21.2022. Online ahead of print.

PMID: 35701160

Tactile Sensation Improves Following Motor Rehabilitation for Chronic Stroke: The VIGoROUS Randomized Controlled Trial.

Borstad A, Nichols-Larsen D, Uswatte G, Strahl N, Simeo M, Proffitt R, Gauthier L. Neurorehabil Neural Repair. 2022 Jun 11:15459683221107893. doi: 10.1177/15459683221107893. Online ahead of print. PMID: 35695197

Psychological Contributions to Symptom Provocation Testing After Concussion.

Terpstra AR, Louie DR, Iverson GL, Yeates KO, Picon E, Leddy JJ, Silverberg ND. J Head Trauma Rehabil. 2022 Jun 9. doi: 10.1097/HTR.0000000000000796. Online ahead of print. PMID: 35687896

Comparison of Clinical Balance and Visual Dependence Tests in Patients With Chronic Dizziness With and Without Persistent Postural-Perceptual Dizziness: A Cross-Sectional Study.

De Vestel C, De Hertogh W, Van Rompaey V, Vereeck L. Front Neurol. 2022 May 24;13:880714. doi: 10.3389/fneur.2022.880714. eCollection 2022. PMID: 35685740 Free PMC article.

Multiple sclerosis in the era of COVID-19: disease course, DMTs and SARS-CoV2 vaccinations.

Pugliatti M, Berger T, Hartung HP, Oreja-Guevara C, Bar-Or A. Curr Opin Neurol. 2022 Jun 1;35(3):319-327. doi: 10.1097/WCO.0000000000001066. PMID: 35674075 Review.

Gains in Daily Stepping Activity in People with Chronic Stroke after High-Intensity Gait Training in Variable Contexts.

Hornby TG, Plawewski A, Lotter JK, Scofield ME, Lucas E, Henderson CE. Phys Ther. 2022 Jun 7:pzac073. doi: 10.1093/ptj/pzac073. Online ahead of print. PMID: 35670001

Interventions for preventing falls in Parkinson's disease.

Allen NE, Canning CG, Almeida LRS, Bloem BR, Keus SH, Löfgren N, Nieuwboer A, Verheyden GS, Yamato TP, Sherrington C. Cochrane Database Syst Rev. 2022 Jun 6;6(6):CD011574. doi: 10.1002/14651858.CD011574.pub2. PMID: 35665915 Review.

A Novel Core Strengthening Intervention for Improving Trunk Function, Balance and Mobility after Stroke.

Pilkar R, Veerubhotla A, Ibironke O, Ehrenberg N. Brain Sci. 2022 May 20;12(5):668. doi: 10.3390/brainsci12050668. PMID: 35625054 Free PMC article.

The TWIST Tool Predicts When Patients Will Recover Independent Walking After Stroke: An Observational Study.

Smith MC, Barber AP, Scrivener BJ, Stinear CM. Neurorehabil Neural Repair. 2022 Jul;36(7):461-471. doi: 10.1177/15459683221085287. Epub 2022 May 18. PMID: 35586876

Coping Style Moderates the Effect of Pain on Depression Symptoms in Multiple Sclerosis.

Bradson ML, Cadden MH, Guty ET, Riegler KE, Thomas GA, Graham-Engeland JE, Arnett PA. Arch Clin Neuropsychol. 2022 May 12:acac025. doi: 10.1093/arclin/acac025. Online ahead of print. PMID: 35551333

Effectiveness of vestibular rehabilitation therapy in patients with idiopathic Cerebellar Ataxia with Bilateral Vestibulopathy (iCABV).

Hassannia F, Misale P, Sulway S, Olmos GV, Dabiri S, Ranalli P, Rutka JA. J Vestib Res. 2022 May 6. doi: 10.3233/VES-210058. Online ahead of print. PMID: 35527586

Effects of automatic mechanical peripheral stimulation on gait biomechanics in older adults with Parkinson's disease: a randomized crossover clinical trial.
Marques NR, Kuroda MH, Moreno VC, Zámuner AR, Barbieri FA.
Aging Clin Exp Res. 2022 Jun;34(6):1323-1331. doi: 10.1007/s40520-022-02075-2. Epub 2022 Apr 6.
PMID: 35386097 Clinical Trial.

Photosensitivity Is Associated with Chronic Pain following Traumatic Brain Injury.
Balba NM, McBride AA, Callahan ML, Mist SD, Jones KD, Butler MP, Lim MM, Heinricher MM.
J Neurotrauma. 2022 May 17. doi: 10.1089/neu.2022.0019. Online ahead of print.
PMID: 35373595

Aerobic exercise increases irisin serum levels and improves depression and fatigue in patients with relapsing remitting multiple sclerosis: A randomized controlled trial.
Bilek F, Cetisli-Korkmaz N, Ercan Z, Deniz G, Demir CF.
Mult Scler Relat Disord. 2022 May;61:103742. doi: 10.1016/j.msard.2022.103742. Epub 2022 Mar 15.
PMID: 35349884 Clinical Trial.

CLINICAL NEUROPHYSIOLOGY

Multimodal Neural Response and Effect Assessment During a BCI-Based Neurofeedback Training After Stroke.
Wang Z, Cao C, Chen L, Gu B, Liu S, Xu M, He F, Ming D.
Front Neurosci. 2022 Jun 17;16:884420. doi: 10.3389/fnins.2022.884420. eCollection 2022.
PMID: 35784834 Free PMC article.

Soft robotics and functional electrical stimulation advances for restoring hand function in people with SCI: a narrative review, clinical guidelines and future directions.
Cardoso LRL, Bochkezanian V, Forner-Cordero A, Melendez-Calderon A, Bo APL.
J Neuroeng Rehabil. 2022 Jun 30;19(1):66. doi: 10.1186/s12984-022-01043-1.
PMID: 35773733 Free PMC article. Review.

Stance Phase Gait Training Post Stroke Using Simultaneous Transcranial Direct Current Stimulation and Motor Learning-Based Virtual Reality-Assisted Therapy: Protocol Development and Initial Testing.
Salameh A, McCabe J, Skelly M, Duncan KR, Chen Z, Tatsuoka C, Bikson M, Hardin EC, Daly JJ, Pundik S.
Brain Sci. 2022 May 28;12(6):701. doi: 10.3390/brainsci12060701.
PMID: 35741586 Free PMC article.

Voluntary Motor Command Release Coincides with Restricted Sensorimotor Beta Rhythm Phases.
Hussain SJ, Vollmer MK, Iturrate I, Quentin R.
J Neurosci. 2022 Jul 20;42(29):5771-5781. doi: 10.1523/JNEUROSCI.1495-21.2022. Epub 2022 Jun 14.
PMID: 35701160

Bicephalic Transcranial Direct-Current Stimulation Does Not Add Benefits to a Footdrop Stimulator for Improving Functional Mobility in People with Chronic Hemiparesis after Stroke: a Double-Blind, Randomized Controlled Trial.
da Cunha MJ, Pinto C, Schifino GP, Sant'Anna Py I, Cimolin V, Pagnussat AS.
Phys Ther. 2022 Jun 10:pzac079. doi: 10.1093/ptj/pzac079. Online ahead of print.
PMID: 35689805

Deep Brain Stimulation for Chronic Pain.
Alamri A, Pereira EAC.
Neurosurg Clin N Am. 2022 Jul;33(3):311-321. doi: 10.1016/j.nec.2022.02.013. Epub 2022 May 25.
PMID: 35718401 Review.

Transcranial Magnetic Stimulation in the Treatment of Neurological Diseases.

Somaa FA, de Graaf TA, Sack AT.

Front Neurol. 2022 May 20;13:793253. doi: 10.3389/fneur.2022.793253. eCollection 2022.

PMID: 35669870 Free PMC article. Review.

Five-Session Dual-Transcranial Direct Current Stimulation With Task-Specific Training Does Not Improve Gait and Lower Limb Performance Over Training Alone in Subacute Stroke: A Pilot Randomized Controlled Trial.

Aneksan B, Sawatdipan M, Bovonsunthonchai S, Tretriluxana J, Vachalathiti R, Auvichayapat P, Pheungphrarattanatrai A, Piriayaprasarth P, Klomjai W.

Neuromodulation. 2022 Jun;25(4):558-568. doi: 10.1111/ner.13526. Epub 2021 Sep 21.

PMID: 35667771 Clinical Trial.

Combined effects of cerebellar tDCS and task-oriented circuit training in people with multiple sclerosis: A pilot randomized control trial.

Baroni A, Magro G, Martinuzzi C, Brondi L, Masiero S, Milani G, Zani G, Bergonzoni A, Basaglia N, Straudi S.

Restor Neurol Neurosci. 2022;40(2):85-95. doi: 10.3233/RNN-211245.

PMID: 35527585 Clinical Trial.

TECHNOLOGIES

Multimodal Ambulatory Monitoring of Daily Activity and Health-related Symptoms in Community-dwelling Stroke Survivors: Feasibility, Acceptability, and Validity.

Lau SCL, Connor LT, King AA, Baum CM.

Arch Phys Med Rehabil. 2022 Jun 30:S0003-9993(22)00484-1. doi:

10.1016/j.apmr.2022.06.002. Online ahead of print.

PMID: 35780826

Soft robotics and functional electrical stimulation advances for restoring hand function in people with SCI: a narrative review, clinical guidelines and future directions.

Cardoso LRL, Bochkezanian V, Forner-Cordero A, Melendez-Calderon A, Bo APL.

J Neuroeng Rehabil. 2022 Jun 30;19(1):66. doi: 10.1186/s12984-022-01043-1.

PMID: 35773733 Free PMC article. Review.

Wearable airbag technology and machine learned models to mitigate falls after stroke.

Botonis OK, Harari Y, Embry KR, Mummidisetty CK, Riopelle D, Giffhorn M, Albert MV, Heike V, Jayaraman A.

J Neuroeng Rehabil. 2022 Jun 17;19(1):60. doi: 10.1186/s12984-022-01040-4.

PMID: 35715823 Free PMC article. Clinical Trial.

Effects of Virtual Reality-Based Aerobic Exercise on Perceptions of Pain and Fatigue in Individuals with Spinal Cord Injury.

Azurdia D, Acuña SM, Narasaki-Jara M, Furtado O Jr, Jung T.

Games Health J. 2022 Aug;11(4):236-241. doi: 10.1089/g4h.2021.0151. Epub 2022 Jun 15.

PMID: 35704919

Design-development of an at-home modular brain-computer interface (BCI) platform in a case study of cervical spinal cord injury.

Davis KC, Meschede-Krasa B, Cajigas I, Prins NW, Alver C, Gallo S, Bhatia S, Abel JH, Naeem JA, Fisher L, Raza F, Rifai WR, Morrison M, Ivan ME, Brown EN, Jagid JR, Prasad A.

J Neuroeng Rehabil. 2022 Jun 3;19(1):53. doi: 10.1186/s12984-022-01026-2.

PMID: 35659259 Free PMC article.

Machine learning methods for functional recovery prediction and prognosis in post-stroke rehabilitation: a systematic review.

Campagnini S, Arienti C, Patrini M, Liuzzi P, Mannini A, Carrozza MC.

J Neuroeng Rehabil. 2022 Jun 3;19(1):54. doi: 10.1186/s12984-022-01032-4.

PMID: 35659246 Free PMC article. Review.

Soft robotic exosuit augmented high intensity gait training on stroke survivors: a pilot

study.
Shin SY, Hohl K, Giffhorn M, Awad LN, Walsh CJ, Jayaraman A.
J Neuroeng Rehabil. 2022 Jun 3;19(1):51. doi: 10.1186/s12984-022-01034-2.
PMID: 35655180 Free PMC article.

Combined effects of virtual reality techniques and motor imagery on balance, motor function and activities of daily living in patients with Parkinson's disease: a randomized controlled trial.

Kashif M, Ahmad A, Bandpei MAM, Gilani SA, Hanif A, Iram H.
BMC Geriatr. 2022 Apr 30;22(1):381. doi: 10.1186/s12877-022-03035-1.
PMID: 35488213 Free PMC article. Clinical Trial.

Active Videogaming Interventions in Adults with Neuromuscular Conditions: A Scoping Review.

Malone LA, Mendonca CJ, Kim Y.
Games Health J. 2022 Jun;11(3):141-156. doi: 10.1089/g4h.2021.0096. Epub 2022 Apr 27.
PMID: 35482057 Review.

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The Research in Review was designed using Medline filters to extract high impact research articles related to the field of neuroscience and physical therapy, which includes areas of motor control, rehabilitation, clinical neurophysiology, and technology. Emphasis is placed heavily on articles published within the last eight weeks, that cover issues related to spinal cord injury, stroke, balance and falls, brain injury, degenerative diseases, and vestibular rehabilitation. The list contains the full citation and a link to the abstract or full text article. The Research in Review is published once every 2 months and will arrive in your email box in a format that is easily viewable by both HTML and text-based readers. Articles with no volume, issue or page numbers indicate that the article has not been published in paper form yet, but may be available in electronic form through the publisher. We welcome requests for article postings. Those interested in assisting with this endeavor are welcome to contact [Dr. Antoinette Domingo](#).

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