September 2020

Research in Review

Dear Members,

We are pleased to bring to you the September 2020 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. In the midst of this unprecedented Covid-19 pandemic, our team hopes you are all doing well and staying safe!

We choose recently published articles that are available through a link on PubMed or directly through the link on the Research in Review citation. Please note that to avoid redundancy with other APTA-based research newsletters, typically, we do not include articles published in Physical Therapy or Journal of Neurologic Physical Therapy. However, we included a couple in this cycle due to their importance and impact. We welcome any suggestions or comments you may have to help improve the newsletter.

Sincerely,

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Research Topics

Feature Article

Motor Control

Rehabilitation

Clinical Neurophysiology

Technologies

Full text articles in JNPT are **free** for members

Feature Article(s)

Self-selected step length asymmetry is not explained by energy cost minimization in individuals with chronic stroke. Nguyen TM, Jackson RW, Aucie Y, de Kam D, Collins SH, Torres-Oviedo G. J Neuroeng Rehabil. 2020 Aug 26;17(1):119.

Persons post-stroke improve step length symmetry by walking asymmetrically. Padmanabhan P, Rao KS, Gulhar S, Cherry-Allen KM, Leech KA, Roemmich RT. J Neuroeng Rehabil. 2020 Aug 3;17(1):105.

Motor Control

Intense and unpredictable perturbations during gait training improve dynamic balance abilities in chronic hemiparetic individuals: a randomized controlled pilot trial. Esmaeili V, Juneau A, Dyer JO, Lamontagne A, Kairy D, Bouyer L, Duclos C. J Neuroeng Rehabil. 2020 Jun 17;17(1):79.

Gait changes following direct versus contralateral strength training: A randomized controlled pilot study in individuals with multiple sclerosis. Manca A, Peruzzi A, Aiello E, Cereatti A, Martinez G, Deriu F, Della Croce U. Gait Posture. 2020 May;78:13-18.

The effects of metronome frequency differentially affects gait on a treadmill and overground in people with Parkinson disease. Hoppe M, Chawla G, Browner N, Lewek MD. Gait Posture. 2020 Jun;79:41-45.

Is Recovery of Somatosensory Impairment Conditional for Upper-Limb Motor Recovery Early After Stroke? Zandvliet SB, Kwakkel G, Nijland RHM, van Wegen EEH, Meskers CGM. Neurorehabil Neural Repair. 2020 May;34(5):403-416.

Predictors of Arm Nonuse in Chronic Stroke: A Preliminary Investigation. Buxbaum LJ, Varghese R, Stoll H, Winstein CJ. Neurorehabil Neural Repair. 2020 Jun;34(6):512-522.

The Efficiency, Efficacy, and Retention of Task Practice in Chronic Stroke. Wang C, Winstein C, D'Argenio DZ, Schweighofer N. Neurorehabil Neural Repair. 2020 Aug 24:1545968320948609.

Verbal feedback enhances motor learning during post-stroke gait retraining. Rendos NK, Zajac-Cox L, Thomas R, Sato S, Eicholtz S, Kesar TM. Top Stroke Rehabil. 2020 Sep 18:1-16.

Rectus femoris hyperreflexia contributes to Stiff-Knee gait after stroke.
Akbas T, Kim K, Doyle K, Manella K, Lee R, Spicer P, Knikou M, Sulzer J. J Neuroeng Rehabil. 2020 Aug 26;17(1):117.

Foot-placement accuracy during planned and reactive target stepping during walking in stroke survivors and healthy adults. van der Veen SM, Hammerbeck U, Hollands KL. Gait Posture. 2020 Sep;81:261-267.

Reactive Balance Adaptability and Retention in People With Multiple Sclerosis: A Systematic Review and Meta-Analysis.
Mohamed Suhaimy MSB, Okubo Y, Hoang PD, Lord SR. Neurorehabil Neural Repair. 2020 Aug;34(8):675-685.

Mixed slip-trip perturbation training for improving reactive responses in people with chronic stroke.
Dusane S, Bhatt T. J Neurophysiol. 2020 Jul 1;124(1):20-31.

Force control during submaximal isometric contractions is associated with walking performance in persons with multiple sclerosis.
Davis LA, Alenazy MS, Almuklass AM, Feeney DF, Vieira T, Botter A, Enoka RM. J Neurophysiol. 2020 Jun 1;123(6):2191-2200.

Muscle weakness has a limited effect on motor control of gait in Duchenne muscular dystrophy. Vandekerckhove I, De Beukelaer N, Van den Hauwe M, Shuman BR, Steele KM, Van Campenhout A, Goemans N, Desloovere K, Goudriaan M. PLoS One. 2020 Sep 2;15(9):e0238445.

Varied movement errors drive learning of dynamic balance control during walking in people with incomplete spinal cord injury: a pilot study.
Lin JT, Hsu CJ, Dee W, Chen D, Rymer WZ, Wu M. Exp Brain Res. 2020 Apr;238(4):981-993.

An external focus of attention compared to an internal focus of attention improves anticipatory postural adjustments among people post-stroke. Aloraini SM, Glazebrook CM, Pooyania S, Sibley KM, Singer J, Passmore S. Gait Posture. 2020 Aug 29;82:100-105.

Rehabilitation

The Effect of One Session Split-Belt Treadmill Training on Gait Adaptation in People With Parkinson's Disease and Freezing of Gait. Seuthe J, D'Cruz N, Ginis P, Becktepe JS, Weisser B, Nieuwboer A, Schlenstedt C. Neurorehabil Neural Repair. 2020 Sep 17:1545968320953144.

Mild to Moderate Sleep Apnea Is Linked to Hypoxia-induced Motor Recovery after Spinal Cord Injury. Vivodtzev I, Tan AQ, Hermann M, Jayaraman A, Stahl V, Rymer WZ, Mitchell GS, Hayes HB, Trumbower RD. Am J Respir Crit Care Med. 2020 Sep 15;202(6):887-890.

Physiotherapy in Parkinson's Disease: A Meta-Analysis of Present Treatment Modalities.
Radder DLM, Lígia Silva de Lima A, Domingos J, Keus SHJ, van Nimwegen M, Bloem BR, de Vries NM. Neurorehabil Neural Repair. 2020 Sep 11:1545968320952799.

Oxygen cost of over-ground walking in persons with mild-to-moderate Parkinson's disease. Jeng B, Cederberg KLJ, Lai B, Sasaki JE, Bamman MM, Motl RW. Gait Posture. 2020 Aug 11;82:1-5.

Pushing the Rehabilitation Boundaries: Hand Motor Impairment Can Be Reduced in Chronic Stroke. Mawase F, Cherry-Allen K, Xu J, Anaya M, Uehara S, Celnik P. Neurorehabil Neural Repair. 2020 Aug;34(8):733-745.

A new approach toward gait training in patients with Parkinson's Disease. Carvalho LP, Mate KKV, Cinar E, Abou-Sharkh A, Lafontaine AL, Mayo NE. Gait Posture. 2020 Sep;81:14-20.

Augmenting propulsion demands during split-belt walking increases locomotor adaptation

of asymmetric step lengths.
Sombric CJ, Torres-Oviedo G. J Neuroeng Rehabil. 2020 Jun 3;17(1):69.

Reactive Balance Adaptability and Retention in People With Multiple Sclerosis: A Systematic Review and Meta-Analysis. Mohamed Suhaimy MSB, Okubo Y, Hoang PD, Lord SR. Neurorehabil Neural Repair. 2020 Aug;34(8):675-685.

Vagus Nerve Stimulation Paired With Upper-Limb Rehabilitation After Stroke: One-Year Follow-up. Dawson J, Engineer ND, Prudente CN, Pierce D, Francisco G, Yozbatiran N, Tarver WB, Casavant R, Kline DK, Cramer SC, Van de Winckel A, Kimberley TJ. Neurorehabil Neural Repair. 2020 Jul;34(7):609-615.

Acute Ischemic Stroke and COVID-19: Experience From a Comprehensive Stroke Center in Midwest US. Grewal P, Pinna P, Hall JP, Dafer RM, Tavarez T, Pellack DR, Garg R, Osteraas ND, Vargas A, John S, Da Silva I, Conners JJ. Front Neurol. 2020 Aug 20;11:910.

Quantifying Postural Control in Premanifest and Manifest Huntington Disease Using Wearable Sensors. Porciuncula F, Wasserman P, Marder KS, Rao AK. Neurorehabil Neural Repair. 2020 Sep;34(9):771-783.

Assessment of Sex Differences in Recovery of Motor and Sensory Impairments Poststroke. Hawe RL, Cluff T, Dowlatshahi D, Hill MD, Dukelow SP. Neurorehabil Neural Repair. 2020 Aug;34(8):746-757.

Disability through COVID-19 pandemic: Neurorehabilitation cannot wait. Leocani L, Diserens K, Moccia M, Caltagirone C. Eur J Neurol. 2020 May 13:10.1111/ene.14320.

Clinical Neurophysiology

Stretch reflexes. Reschechtko S, Pruszynski JA. Curr Biol. 2020 Sep 21;30(18):R1025-R1030. doi: 10.1016/j.cub.2020.07.092.

Virtual reality-based treatment for regaining upper extremity function induces cortex grey matter changes in persons with acquired brain injury. Keller J, Štětkářová I, Macri V, Kühn S, Pětioký J, Gualeni S, Simmons CD, Arthanat S, Zilber P. J Neuroeng Rehabil. 2020 Sep 12;17(1):127.

Serum BDNF's Role as a Biomarker for Motor Training in the Context of AR-Based Rehabilitation after Ischemic Stroke. Koroleva ES, Tolmachev IV, Alifirova VM, Boiko AS, Levchuk LA, Loonen AJM, Ivanova SA. Brain Sci. 2020 Sep 9;10(9):E623.

Cortical inexcitability defines an adverse clinical profile in amyotrophic lateral sclerosis. Dharmadasa T, Howells J, Matamala JM, Simon NG, Burke D, Vucic S, Kiernan MC. Eur J Neurol. 2020 Sep 9. doi: 10.1111/ene.14515.

Effects of cerebellar transcranial magnetic stimulation on ataxias: A randomized trial. França C, de Andrade DC, Silva V, Galhardoni R, Barbosa ER, Teixeira MJ, Cury RG. Parkinsonism Relat Disord. 2020 Sep 6;80:1-6.

Electrical Stimulation as a Tool to Promote Plasticity of the Injured Spinal Cord. Jack AS, Hurd C, Martin J, Fouad K. J Neurotrauma. 2020 Sep 15;37(18):1933-1953.

Interlimb conditioning of lumbosacral spinally evoked motor responses after spinal cord injury. Atkinson DA, Sayenko DG, D'Amico JM, Mink A, Lorenz DJ, Gerasimenko YP, Harkema S. Clin Neurophysiol. 2020 Jul;131(7):1519-1532.

Repetitive peripheral magnetic stimulation for impairment and disability in people after stroke. Sakai K, Yasufuku Y, Kamo T, Ota E, Momosaki R. Cochrane Database Syst Rev. 2019 Nov 30;11(11):CD011968

Changes in motor-evoked potential latency during grasping after tetraplegia. Jo HJ, Perez MA. J Neurophysiol. 2019 Oct 1;122(4):1675-1684.

Technologies

Users with spinal cord injury experience of robotic Locomotor exoskeletons: a qualitative study of the benefits, limitations, and recommendations.
Kinnett-Hopkins D, Mummidisetty CK, Ehrlich-Jones L, Crown D, Bond RA, Applebaum MH, Jayaraman A, Furbish C, Forrest G, Field-Fote E, Heinemann AW. J Neuroeng Rehabil. 2020 Sep 11;17(1):124.

Exoskeleton use in post-stroke gait rehabilitation: a qualitative study of the perspectives of persons post-stroke and physiotherapists.
Vaughan-Graham J, Brooks D, Rose L, Nejat G, Pons J, Patterson K. J Neuroeng Rehabil. 2020 Sep 10;17(1):123.

Toward a hybrid exoskeleton for crouch gait in children with cerebral palsy: neuromuscular electrical stimulation for improved knee extension.
Shideler BL, Bulea TC, Chen J, Stanley CJ, Gravunder AJ, Damiano DL. J Neuroeng Rehabil. 2020 Sep 3;17(1):121.

Passive, yet not inactive: robotic exoskeleton walking increases cortical activation dependent on task.
Peters S, Lim SB, Louie DR, Yang CL, Eng JJ. J Neuroeng Rehabil. 2020 Aug 10;17(1):107.

The ReWalk ReStore™ soft robotic exosuit: a multi-site clinical trial of the safety, reliability, and feasibility of exosuit-augmented post-stroke gait rehabilitation.
Awad LN, Esquenazi A, Francisco GE, Nolan KJ, Jayaraman A. J Neuroeng Rehabil. 2020 Jun 18;17(1):80.

Effects of Virtual Reality Therapy on Gait and Balance Among Individuals With Spinal Cord Injury: A Systematic Review and Meta-analysis.
Abou L, Malala VD, Yarnot R, Alluri A, Rice LA. Neurorehabil Neural Repair. 2020 May;34(5):375-388.

Relationship between Nintendo's Wii balance board derived variables and clinical balance scores in individuals with stroke.
Madhavan S, Pradhan S. Gait Posture. 2020 Jun;79:170-174.

Energy Efficiency and Patient Satisfaction of Gait With Knee-Ankle-Foot Orthosis and Robot (ReWalk)-Assisted Gait in Patients With Spinal Cord Injury.
Kwon SH, Lee BS, Lee HJ, Kim EJ, Lee JA, Yang SP, Kim TY, Pak HR, Kim HK, Kim HY, Jung JH, Oh SW. Ann Rehabil Med. 2020 Apr;44(2):131-141.

Concurrent validity of the ZeroWire® footswitch system for the measurement of temporal gait parameters. Pradeau C, Sturbois-Nachef N, Allart E. Gait Posture. 2020 Sep 6;82:133-137.

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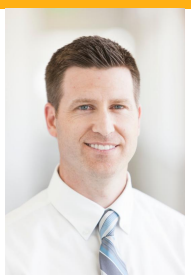

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The Research in Review was designed using Medline filters to extract high impact research articles related to the field of neuroscience and physical therapy, which includes areas of motor control, rehabilitation, clinical neurophysiology, and technology. 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 at the first and third Mondays of each month. Those interested in assisting with this endeavor are welcome to contact Trisha Kesar, PT, PhD.

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