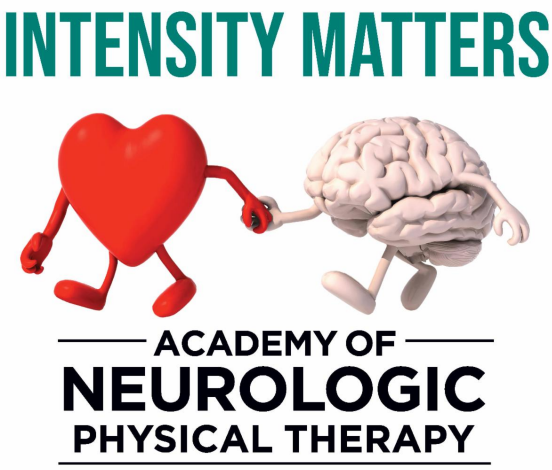
June 2020
Intensity Matters

June 2020
Videos of application of HIT
Video of clinical rationale
Reference list
Locomotor CPG Podcast (stay tuned, more podcasts coming out shortly on Intensity)

Intensity Matters



Please follow Intensity Matters campaign.

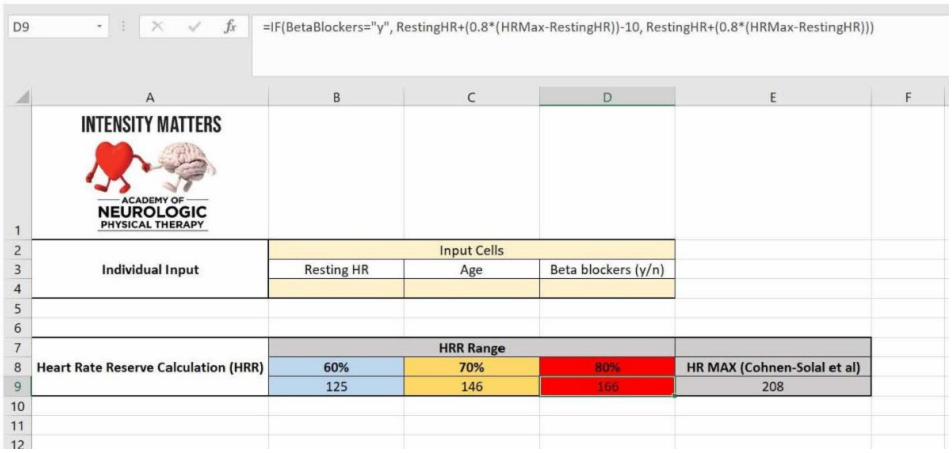
We are excited to share this week, 2 videos applying high intensity treadmill training with a patient post-stroke. Thank you Marissa and Jamie.

First video is a clinician applying high intensity training on a 41-year old, male, 4-months post-stroke with Marfan Syndrome.

Second video is an interview with the clinician about her clinical reasoning.

Note, some excellent "clinical pearls" SUPPLY AND DEMAND (quote from Mike Studer)

Note, Marissa references this calculation. The heart rate reserve calculator found on the ANPT Intensity Matters page. Click here to get the excel spreadsheet, quick and easy to use and it will calculate for you.



D9 =IF(BetaBlockers="y", RestingHR+(0.8*(HRMax-RestingHR))-10, RestingHR+(0.8*(HRMax-RestingHR)))

	A	B	C	D	E	F
1	INTENSITY MATTERS ACADEMY OF NEUROLOGIC PHYSICAL THERAPY					
2	Individual Input	Input Cells				
3		Resting HR	Age	Beta blockers (y/n)		
4						
5						
6						
7		HRR Range				
8	Heart Rate Reserve Calculation (HRR)	60%	70%	80%	HR MAX (Cohnen-Solal et al)	
9		125	146	166	208	
10						
11						
12						

Excellent reference list

Great list for journal clubs. These can help you identify protocols.
A summary found on the ANPT webpage. There is a link to all the articles.
References are for chronic neurological, acute/subacute, neuroplasticity, gait kinematics, aerobic training.

Chronic Neurological

Treadmill exercise rehabilitation improves ambulatory function and cardiovascular fitness in patients with chronic stroke: a randomized, controlled trial. Stroke. 2005 Oct;36(10):2206-11. Macko RF, Ivey FM, Forrester LW, Hanley D, Sorkin JD, Katzel LI, Silver KH, Goldberg AP.

Task-oriented aerobic exercise in chronic hemiparetic stroke: training protocols and treatment effects. Top stroke rehabil. 2005;12:45-57. Macko RF, Ivey FM, Forrester LW.

Locomotor Training Improves Daily Stepping Activity and Gait Efficiency in Individuals Poststroke Who Have Reached a "Plateau in Recovery. Stroke. 2010, 41: 129-135. Moore JL, Roth EJ, Killian C, Hornby TG.

Chronic stroke survivors benefit from high-intensity aerobic treadmill exercise: a randomized control trial. Neurorehabil Neural Repair. 2012;26:85-95. Globas C, Becker C, Cerny J, et al.

Effect of aerobic exercise (walking) training on functional status and health-related quality of life in chronic stroke survivors: a randomized controlled trial. Stroke. 2013 Apr;44(4):1179-81. Gordon CD, Wilks R, McCaw-Binns A.

Repetitive mass practice or focused precise practice for retraining walking after incomplete spinal cord injury? A pilot randomized clinical trial. Neurorehabil Neural Repair. 2014 May;28(4):314-24. Yang JF, Musselman KE, Livingstone D, Brunton K, Hendricks G, Hill D, Gorassini M

Potential contributions of training intensity on locomotor performance in individuals with chronic stroke. J Neurol Phys Ther. 2015 Apr;39(2):95-102. Holleran CL, Rodriguez KS, Echauz A, Leech KA, Hornby TG..

High-Intensity Interval Training and Moderate-Intensity Continuous Training in Ambulatory Chronic Stroke: Feasibility Study. Phys Ther. 2016;96:1533-44. Boyne P, Dunning K, Carl D, et al.

Effects of Training Intensity on Locomotor Performance in Individuals With Chronic Spinal Cord Injury: A Randomized Crossover Study. Neurorehabil Neural Repair. 2017 Oct-Nov;31(10-11):944-954. Brazg G, Fahey M, Holleran CL, Connolly M, Woodward J, Hennessy PW, Schmit BD, Hornby TG.

High-intensity treadmill training improves gait ability, VO2peak and cost of walking in stroke survivors: preliminary results of a pilot randomized controlled trial. Eur J Phys Rehabil Med. 2018 Jun;54(3):408-418. doi: 10.23736/S1973-9087.16.04224-6. Munari D, Pedrinolla A, Smania N, Picelli A, Gandolfi M, Saltuari L, Schena F.

Acute/Subacute Neurological

Speed-dependent treadmill training in ambulatory hemiparetic stroke patients: a randomized controlled trial. Stroke. 2002 Feb;33(2):553-8. Pohl M, Mehrholz J, Ritschel C, Rückriem S.

Aerobic treadmill plus Bobath walking training improves walking in subacute stroke: a randomized controlled trial. Clin Rehabil. 2004 Sep;18(6):640-51. Eich HJ, Mach H, Werner C, Hesse S.

Effects of an aerobic exercise program on aerobic capacity, spatiotemporal gait parameters, and functional capacity in subacute stroke. Neurorehabil Neural Repair. 2009 May;23(4):398-406. doi: 10.1177/1545968308326426. Tang A, Sibley KM, Thomas SG, Bayley MT, Richardson D, McIlroy WE, Brooks D.

Randomized Trial of Treadmill Walking With Body Weight Support to Establish Walking in Subacute Stroke: The MOBILISE Trial. Stroke. 2010, 41:1237-1242. Ada L, Dean CM, Morris ME, Simpson JM, Katrak P.

Feasibility of Focused Stepping Practice During Inpatient Rehabilitation Poststroke and Potential Contributions to Mobility Outcomes. Neurorehabil and Neural Repair.2015, 29(10): 923-932. Hornby TG, Holleran CL, Leddy AL, Hennessy P, Leech KA, Connolly M, Moore JL, Straube D, Lovell L, Roth E.

Variable Intensive Early Walking Poststroke (VIEWS): A Randomized Controlled Trial. Neurorehabil and Neural Repair. 2015, 30(5):440-450. Hornby TG, Holleran CL, Hennessy PW.,Et al.

Neuroplasticity

Principles of Experience-Dependent neural plasticity: Implications of Rehabilitation after Brain Damage . J Speech Lang Hear Res. 2008, 51(1): S225-239. Kleim JA, Jones TA.

Promoting Neuroplasticity for Motor Rehabilitation After Stroke. Phys Ther. 2013, 93(12): 1707-1716. Mang CS, Campbell KL, Ross CJD, Boyd LA.

Treadmill exercise activates subcortical neural networks and improves walking after stroke: a randomized controlled trial. Stroke. 2008 Dec;39(12):3341-50. doi: 10.1161/STROKEAHA.108.527531. Luft AR, Macko RF, Forrester LW, Villagra F, Ivey F, Sorkin JD, Whitall J, McCombe-Waller S, Katzel L, Goldberg AP, Hanley DF.

Gait Kinematics

Influence of systematic increases in treadmill walking speed on gait kinematics after stroke . Phys Ther. 2011, 91(3): 392-403. Tyrell CM, Roos MA, Rudolph KS, Reisman DS.

Altered Sagittal- and Frontal-Plane Kinematics Following High-Intensity Stepping Training Versus Conventional Interventions in Subacute Stroke. Phys Ther. 2016 Sep 15. Mahtani GB, Kinnaird CR, Connolly M, Holleran CL, Hennessy PW, Woodward J, Brazg G, Roth EJ, Hornby TG.

Aerobic Training Post CVA: meta-analysis/review/clinical practice guidelines

Physical activity and exercise recommendations for stroke survivors: a statement for healthcare professionals from the American Heart Association/American Stroke Association. Stroke; a journal of cerebral circulation. 2014;45(8):2532-53. Billinger SA, Arena R, Bernhardt J, Eng JJ, Franklin BA, Johnson CM, et al.

Using aerobic exercise to improve health outcomes and quality of life in stroke: evidence-based exercise prescription recommendations. Cerebrovascular diseases (Basel, Switzerland). 2013;35(1):7-22. Pang MY, Charlesworth SA, Lau RW, Chung RC.

Guidelines for Adult Stroke Rehabilitation and Recovery: A Guideline for Healthcare Professionals From the American Heart Association/American Stroke Association. Stroke; a journal of cerebral circulation. 2016;47(6):e98-e169. Winstein CJ, Stein J, Arena R, Bates B, Cherney LR, Cramer SC, et al.

Aerobic Exercise Recommendations to Optimize Best Practices in Care After Stroke: AEROBICS 2019 Update. Physical therapy. 2019. MacKay-Lyons M, Billinger SA, Eng JJ, Dromerick A, Giacomantonio N, Hafer-Macko C, et al.

Podcast

To start your understanding of the CPG, listen to this excellent podcast by the author George Hornby on the ANPT Synapse Education Center.

Stroke SIG: Locomotor CPG Discussion - Episode 9

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