



Occupational Therapy and the Treatment of Ataxia: **The Road to Independence**

Madisen Redar, OTR/L

Cleveland Clinic Lou Ruvo Center for Brain Health

NAF
National Ataxia
Foundation

March 27-29, 2025
Planet Hollywood
Las Vegas, NV

DISCLAIMER



The information speakers provide in any presentation made as part of the 2025 NAF Annual Ataxia Conference is for informational use only.



NAF encourages all attendees to consult with their primary care provider, neurologist, or other healthcare provider about any advice, exercise, therapies, medication, treatment, nutritional supplement, or regimen that may have been mentioned as part of any session.



Products or series mentioned during these sessions do not imply endorsement by NAF.

March 27-29, 2025 • Planet Hollywood • Las Vegas, NV



PRESENTER DISCLOSURES

Financial disclosures: The author receives a salary as an employee of the Cleveland Clinic.

Non-financial disclosures: No relevant disclosures.



March 27-29, 2025 • Planet Hollywood • Las Vegas, NV

What Is Occupational Therapy (OT)?

- Use of therapeutic techniques and meaningful occupation to improve quality of life and daily engagement
 - (need to do, wants to do, or is expected to do)
- **OTs Assess and Analyze:**
 - Participation in daily activities and occupations
 - Environmental influence, supports, and barriers
 - Support participation in roles, routines, and healthy habits
 - Address skills and factors required for participation
- **Goal:** support the “just right challenge,” improve quality of life, promote health and well-being, and activity participation

Occupational Therapy Process



EVALUATION



COLLABORATIVE
INTERVENTION



ASSESSMENT OF
PATIENT OUTCOMES

Occupational Therapy Evaluation



Subjective questionnaire to create an occupational profile



Activity analysis and administration of standardized testing



Review assessment results



Analysis of the environment (supports and barriers)



Determine patient-centered goals

Occupational Therapy Goals

- Collaborative
 - Meaningful
 - Functional
 - (rooted in occupation)
 - Achievable
 - Time bound
- **Plan of Care in the Outpatient Setting:**
 - Frequency
 - Duration
 - Regular check-ins and homework
 - home exercise program

Occupational Therapy Approach & Ataxia

- **Compensation and Adaptation**
 - E.g., built up plate and plate guard to reduce food spillage
- **Prevention of disability**
 - E.g., design a home exercise program to prevent falls
- **Maintenance of activity performance**
- **Establish**
 - Establish a daily routine to support neuroprotective benefits and overall health
- **Health Promotion**
 - Develop energy conservation techniques to minimize fatigue

General Interventions

- Occupational analysis
- **Educate** the patient on symptom management
- **Train** the patient and caregiver in techniques to improve activity engagement
- Recommend **modifications** to the environment to improve safety and prevent falls
- Teach a patient to use **adaptive equipment** or **technology** during an occupation or activity

Home Modifications and Safety

Benefits: prevent falls,
improve safety and
independence

Assess risk factors:
fall history, medication
side effects, balance
changes, safe use of
assistive devices

Home Modifications and Safety

- Installation of **grab bars** in the bathroom/shower to prevent falls
- Utilize **adaptive equipment** such as a shower chair or bath bench to conserve energy
- **Lighting** enhancement (Spinocerebellar ataxia type 7 – changes in the macula of the eye)
- **Removal** of clutter and throw rugs
- Furniture **organization** and safe use of mobility device
- Object placement

Daily Occupations

- **Activities of daily living (ADLs)**
 - Self care tasks
 - Dressing, grooming, hygiene, etc...
- **Instrumental Activities of Daily Living**
 - Daily life activities in the home and community
 - Financial management, driving, pet care, driving, etc...
- **Management of Health and Well-Being**
 - Energy conservation, medication management, physical activity routine
- **Sleep and Rest**
- **Leisure**
- **Community Participation**
- **Work and Education**



Note: From Microsoft 365 Stock Images

Compensatory Strategies

- Compensating for a loss of skill or function
- **Examples:**
 - Energy conservation techniques (e.g., Spinocerebellar ataxia type 3)
- **Proximal stabilization:**
 - Postural stability
 - Control of joint mobility
- **Adaptive equipment:**
 - Two handled cup, elastic shoelaces, built up toothbrush
- **Cooling strategies for tremor:**
 - Temporary effects
 - Decrease in the frequency and amplitude of tremor
 - Cooling physiology: nerve conduction velocity and muscle spindle decrease

Activity Modifications

Reduce the
number of steps
needed to
complete the task

Change the task

Caregiver
assistance during
the task

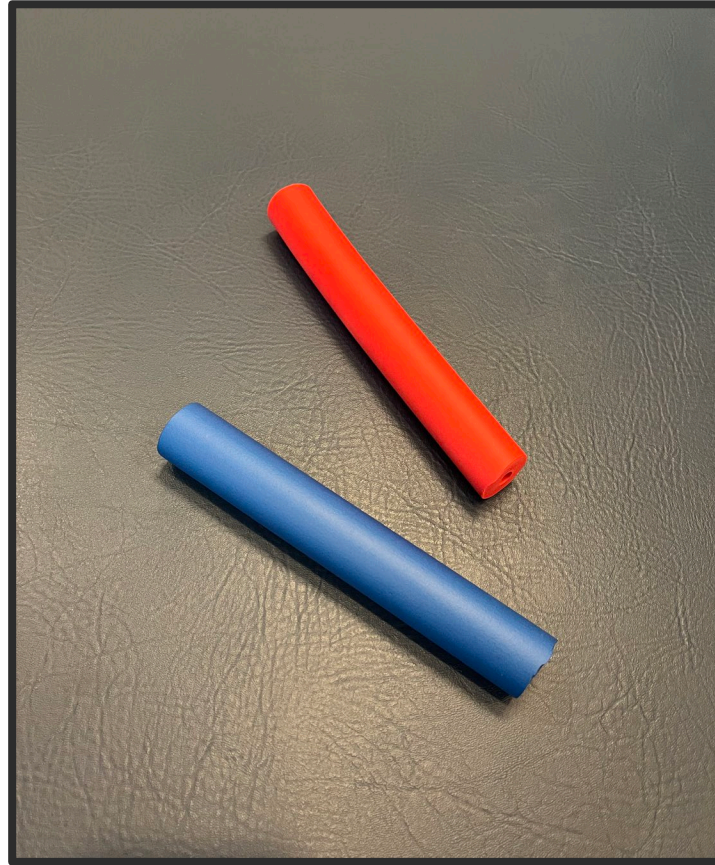
Weighted Tools & Limb Weighting

- Mixed literature
- UE/wrist weights
- Potential Benefits:
 - Improved coordination
 - Reduced amplitude/frequency of tremor
 - Reduction in tremor intensity



Note: Weighted Glove and Sleeve (Redar, 2025)

Built Up/Large Handled Equipment



Note: Built Up Foam Tubing (Redar, 2025)

Adapted Writing Aids



- Built up handles
- Weighted pens
- Ergonomic pens

Note: Adapted Pens (Redar, 2025)

Dressing Adaptations



Note: Elastic Shoelace (Redar, 2025)



Note: Magnetic Shoelace (Redar, 2025)



Note: Button Hook (Redar, 2025)

Self Feeding Utensils



Note: Weighted Cup (Redar, 2025)



Note: Adapted Utensils (Redar, 2025)



Note: Plate Guard (Redar, 2025)

Toileting and Shower Safety



Note: Drop Arm Commode (Redar, 2025)



Note: Raised Toilet Seat (Redar, 2025)



Note: Bath Bench (Redar, 2025)

Healthy Routines to Support Neuroprotective Benefits

- **Pillars of Brain Health:**
 - Physical activity
 - Mental fitness
 - Food and nutrition
 - Control of medical risk factors
 - Rest, sleep, and relaxation
 - Social engagement
- **Neuroprotection:** “the mechanisms and strategies employed to defend the central nervous system (CNS) against injury” (Rehman et al., 2019).

Healthy Routines and Lifestyle



Goal: Promote health and well-being



"Lifestyle Redesign as an occupational therapy intervention framework that promotes awareness of the relationship between everyday activities and health and guides people in the process of orchestrating occupations, habits, and routines to enhance health and well-being" (Pyatak et al., 2022).



Analysis of occupations, routines, and habits



Self reflection on impact of daily occupation



What brings joy and stimulates intrinsic motivation?



Impact of symptom and environmental influence

Exercise

- **General Physical Activity Guidelines:**
 - <64 years old
 - Minimum of 150 minutes/week of moderate intensity aerobic activity OR
 - Minimum of 75 minutes/week of vigorous intensity aerobic activity
 - Minimum of 2 days/week of strength training (major muscle groups)
 - >65 years old
 - Minimum of 150 minutes/week of moderate intensity activity
 - Minimum of 2 days/week of strength training
 - Balance activities



Note: From Microsoft 365 Stock Images

Note: Always consult with your referring provider or rehabilitation specialist before exercising.

Balance Exercises

- **Goal:** prevent falls, improve safety/participation in meaningful occupation
- **Types of balance:**
 - **Static:** stable position
 - **Dynamic:** with movement
 - **Sitting vs. standing** adaptations
 - With or without **upper extremity support**
- Coordination of the limbs and trunk
- Good home exercise program compliance

Posture and Coordination



Exercise to promote stabilization of the neck Improvement in postural control and fine motor dexterity



Scapular exercises



Core stabilization and trunk control



Benefits:

Improve ataxia in trunk, upper and lower extremities
Improve tremor and balance



Higher frequency and repetition of movement

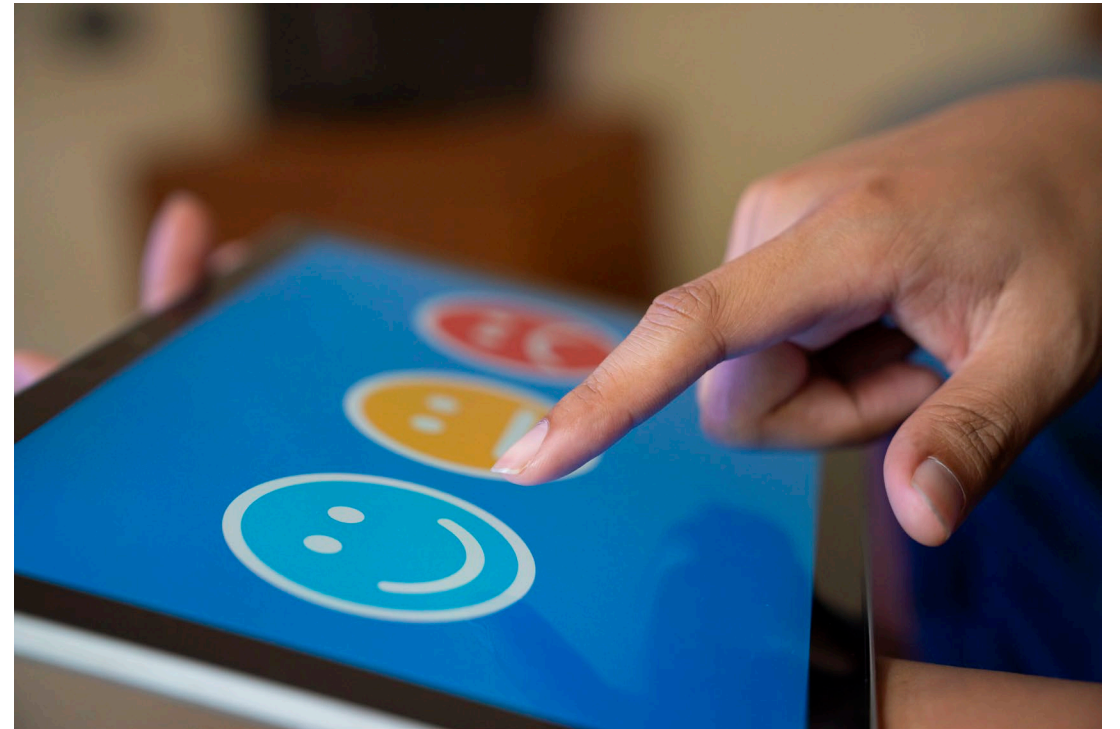


Exercise positions:

Quadruped, supine, kneeling, sitting, or standing

Coordination Training for the Upper Extremities

- Use of functional everyday objects
- Emphasis on movement and accuracy
 - Slow and controlled movement
- High repetition
- Target training
- Building with use of everyday objects
 - E.g., Jenga
- Eye-hand coordination training
- Manage dysdiadochokinesis



Note: From Microsoft 365 Stock Images

Other: Symptom Management

- Energy conservation strategies and fatigue management
- Strategies to manage bowel or bladder dysfunction
- Health management: hypotension and safety
- Functional cognition: strategies for executive function and planning
 - Compensatory strategies for memory changes
- Management of spasticity and muscle tightness
- Self regulation techniques: anxiety and depression

Is OT right for me?



Discuss your symptoms with your referring provider or other therapy provider



Consider how your symptoms limit occupational engagement



Can I complete my daily activities?



Look for an OT with experience treating neurological conditions

Thank You!



References

Adabi, K., & Ondo, W. G. (2024). Shaking Up Essential Tremor: Peripheral Devices and Mechanical Strategies to Reduce Tremor. *Tremor and other hyperkinetic movements (New York, N.Y.)*, 14, 55. <https://doi.org/10.5334/tohm.930>

American Occupational Therapy Association (AOTA). (2024). *What is Occupational Therapy?* Aota.org; American Occupational Therapy Association. <https://www.aota.org/about/what-is-ot>

Blurred lines: how spinocerebellar ataxia type 7 impacts vision. (2022, July 7). National Ataxia Foundation. <https://www.ataxia.org/scasourceposts/blurred-lines-how-spinocerebellar-ataxia-type-7-impacts-vision/>

Cavalcanti A, Amaral MF, Silva e Dutra FCM, Santos AVF, Licursi LA, Silveira ZC. Adaptive Eating Device: Performance and Satisfaction of a Person with Parkinson's Disease. *Canadian Journal of Occupational Therapy*. 2020;87(3):211-220. doi:[10.1177/0008417420925995](https://doi.org/10.1177/0008417420925995)

Centers for Disease Control and Prevention. (2024, May 7). *Physical Activity for Older Adults: An Overview*. Physical Activity Basics. <https://www.cdc.gov/physical-activity-basics/guidelines/older-adults.html>

Centers for Disease Control and Prevention. (2024, April 19). *What You Can Do to Meet Physical Activity Recommendations*. Physical Activity Basics. <https://www.cdc.gov/physical-activity-basics/guidelines/index.html>

References

- Cleveland Clinic. (2022, June 28). *Essential Tremor: Symptoms, Causes, Treatment and Prevention*. Cleveland Clinic. <https://my.clevelandclinic.org/health/diseases/11886-essential-tremor>
- Chien, H. F., Zonta, M. B., Chen, J., Diaferia, G., Viana, C. F., Teive, H. A. G., Pedroso, J. L., & Barsottini, O. G. P. (2022). Rehabilitation in patients with cerebellar ataxias. *Arquivos de neuro-psiquiatria*, 80(3), 306–315. <https://doi.org/10.1590/0004-282X-ANP-2021-0065>
- de Silva, R. N., Vallortigara, J., Greenfield, J., Hunt, B., Giunti, P., & Hadjivassiliou, M. (2019). Diagnosis and management of progressive ataxia in adults. *Practical neurology*, 19(3), 196–207. <https://doi.org/10.1136/practneurol-2018-002096>
- Cooper, C., Evidente, V. G., Hentz, J. G., Adler, C. H., Caviness, J. N., & Gwinn-Hardy, K. (2000). The effect of temperature on hand function in patients with tremor. *Journal of hand therapy : official journal of the American Society of Hand Therapists*, 13(4), 276–288. [https://doi.org/10.1016/s0894-1130\(00\)80019-8](https://doi.org/10.1016/s0894-1130(00)80019-8)

References

- Elizabeth A. Pyatak, Kristine Carandang, Chantelle Rice Collins, Mike Carlson; Optimizing Occupations, Habits, and Routines for Health and Well-Being With Lifestyle Redesign®: A Synthesis and Scoping Review. *Am J Occup Ther* September/October 2022, Vol. 76(5), 7605205050. doi: <https://doi.org/10.5014/ajot.2022.049269>
- Feys, P., Helsen, W., Liu, X., Mooren, D., Albrecht, H., Nuttin, B., & Ketelaer, P. (2005). Effects of peripheral cooling on intention tremor in multiple sclerosis. *Journal of neurology, neurosurgery, and psychiatry*, 76(3), 373–379. <https://doi.org/10.1136/jnnp.2004.044305>
- Foss, E., (2023). The evaluation and treatment of upper limb ataxia [Online continuing education course]. Continued [Accessed on 2/9/25] *HealthyBrains.org - Cleveland Clinic Education Nevada*. (2023, October 23). Cleveland Clinic Education Nevada. <https://clevelandcliniceducationnv.org/healthybrains/>
- He, M., Zhang, H. N., Tang, Z. C., & Gao, S. G. (2021). Balance and coordination training for patients with genetic degenerative ataxia: a systematic review. *Journal of neurology*, 268(10), 3690–3705. <https://doi.org/10.1007/s00415-020-09938-6>
- Hewer, R. L., Cooper, R., & Morgan, M. H. (1972). An investigation into the value of treating intention tremor by weighting the affected limb. *Brain : a journal of neurology*, 95(3), 579–590. <https://doi.org/10.1093/brain/95.3.579>
- Ilg W, Synofzik M, Brötz D, Burkard S, Giese MA, Schöls L. Intensive coordinative training improves motor performance in degenerative cerebellar disease. *Neurology*. 2009 Dec 1;73(22):1823-30. doi: 10.1212/WNL.0b013e3181c33adf. Epub 2009 Oct 28. PMID: 19864636
- Karamesinis, A., Sillitoe, R. V., & Kouzani, A. Z. (2021). Wearable Peripheral Electrical Stimulation Devices for the Reduction of Essential Tremor: A Review. *IEEE access : practical innovations, open solutions*, 9, 80066–80076. <https://doi.org/10.1109/access.2021.3084819>
- Keller, J. L., & Bastian, A. J. (2014). A home balance exercise program improves walking in people with cerebellar ataxia. *Neurorehabilitation and neural repair*, 28(8), 770–778. <https://doi.org/10.1177/1545968314522350>
- Mandolesi, L., Polverino, A., Montuori, S., Foti, F., Ferraioli, G., Sorrentino, P., & Sorrentino, G. (2018). Effects of Physical Exercise on Cognitive Functioning and Wellbeing: Biological and Psychological Benefits. *Frontiers in psychology*, 9, 509. <https://doi.org/10.3389/fpsyg.2018.00509>

References

- Menevşe, O., Bilgin, S., Gültekin, M. (2021). Results of Special Neck Exercises in a Patient with Cerebellar Ataxia and Axial Myoclonus Due to ADCK3 Mutation. *Turkish Journal of Neurology*, 27, 334-339. DOI:10.4274/tnd.2021.24196
- Miyake Y, Nakamura S, Nakajima M. The effect of trunk coordination exercise on dynamic postural control using a Core Noodle. *J Bodyw Mov Ther*. 2014 Oct;18(4):519-25. doi: 10.1016/j.jbmt.2013.12.005. Epub 2013 Dec 11. PMID: 25440201.
- NeuroLaunch editorial team. (2024, October). *Compensatory Strategies in Occupational Therapy: Enhancing Daily Living Skills*. NeuroLaunch.com. <https://neurolaunch.com/compensatory-strategies-occupational-therapy/>
- Occupational Therapy Practice Framework: Domain and Process-Fourth Edition. (2020). *The American journal of occupational therapy : official publication of the American Occupational Therapy Association*, 74(Supplement_2), 7412410010p1–7412410010p87. <https://doi.org/10.5014/ajot.2020.74S2001z>
- Pelton, T. (2013) Hand and arm coordination during reach and grasp after stroke. The University of Birmingham
- Physical Activity Guidelines for Americans 2 nd edition*. (n.d.). https://www.cdc.gov/physical-activity/media/pdfs/Physical_Activity_Guidelines_2nd_edition.pdf
- Priya, V. (2015). EFFECTS OF WRIST WEIGHING IN REDUCING UPPER LIMB TREMORS IN PATIENTS WITH CEREBELLAR LESIONS

References

- Redar, M. (2025). *Adapted Pens* [Photograph].
- Redar, M. (2025). *Adapted Utensils* [Photograph].
- Redar, M. (2025). *Bath Bench* [Photograph].
- Redar, M. (2025). *Built Up Foam Tubing* [Photograph].
- Redar, M. (2025). *Button Hook*. [Photograph].
- Redar, M. (2025). *Drop Arm Commode* [Photograph].
- Redar, M. (2025). *Elastic Shoelace* [Photograph].
- Redar, M. (2025) *Magnetic Shoelace* [Photograph].
- Redar, M. (2025) *Plate Guard* [Photograph].
- Redar, M. (2025) *Weighted Cup* [Photograph].
- Redar, M. (2205) *Weighted Glove and Sleeve* [Photograph].

References

- Rehman, M. U., Wali, A. F., Ahmad, A., Shakeel, S., Rasool, S., Ali, R., Rashid, S. M., Madkhali, H., Ganaie, M. A., & Khan, R. (2019). Neuroprotective Strategies for Neurological Disorders by Natural Products: An update. *Current neuropharmacology*, 17(3), 247–267. <https://doi.org/10.2174/1570159X16666180911124605>
- Sabari, J., Stefanov, D. G., Chan, J., Goed, L., & Starr, J. (2019). Adapted Feeding Utensils for People With Parkinson's-Related or Essential Tremor. *The American journal of occupational therapy : official publication of the American Occupational Therapy Association*, 73(2), 7302205120p1–7302205120p9. <https://doi.org/10.5014/ajot.2019.030759>
- Sarauli, D., Costanzi, M., Mastrorilli, V., & Farioli-Vecchioli, S. (2017). The Long Run: Neuroprotective Effects of Physical Exercise on Adult Neurogenesis from Youth to Old Age. *Current neuropharmacology*, 15(4), 519–533. <https://doi.org/10.2174/1570159X14666160412150223>
- Stavrou, A. (2024, January 2). *The Compensatory Approach vs Remedial Approach in Occupational Therapy*. Myotspot.com. <https://www.myotspot.com/remedial-approach-occupational-therapy/>
- Ustinova KI, Chernikova LA, Dull A, Perkins J. Physical therapy for correcting postural and coordination deficits in patients with mild-to-moderate traumatic brain injury. *Physiother Theory Pract*. 2015 Jan;31(1):1-7. doi: 10.3109/09593985.2014.945674. Epub 2014 Aug 1. PMID: 25083579.
- Vecchio, L. M., Meng, Y., Xhima, K., Lipsman, N., Hamani, C., & Aubert, I. (2018). The Neuroprotective Effects of Exercise: Maintaining a Healthy Brain Throughout Aging. *Brain plasticity (Amsterdam, Netherlands)*, 4(1), 17–52. <https://doi.org/10.3233/BPL-180069>
- Widener, G. L., Conley, N., Whiteford, S., Gee, J., Harrell, A., Gibson-Horn, C., Block, V., & Allen, D. D. (2020). Changes in standing stability with balance-based torso-weighting with cerebellar ataxia: A pilot study. *Physiotherapy research international : the journal for researchers and clinicians in physical therapy*, 25(1), e1814. <https://doi.org/10.1002/pri.1814>
- Widener, G. L., Conley, N., Whiteford, S., Gee, J., Harrell, A., Gibson-Horn, C., Block, V., & Allen, D. D. (2020). Changes in standing stability with balance-based torso-weighting with cerebellar ataxia: A pilot study. *Physiotherapy research international : the journal for researchers and clinicians in physical therapy*, 25(1), e1814. <https://doi.org/10.1002/pri.1814>
- Yang, J. S., Xu, H. L., Chen, P. P., Sikandar, A., Qian, M. Z., Lin, H. X., Lin, M. T., Chen, W. J., Wang, N., Wu, H., & Gan, S. R. (2020). Ataxic Severity Is Positively Correlated With Fatigue in Spinocerebellar Ataxia Type 3 Patients. *Frontiers in neurology*, 11, 266. <https://doi.org/10.3389/fneur.2020.00266>
- Zimmet, A. M., Cowan, N. J., & Bastian, A. J. (2019). Patients with Cerebellar Ataxia Do Not Benefit from Limb Weights. *Cerebellum (London, England)*, 18(1), 128–136. <https://doi.org/10.1007/s12311-018-0962-1>