Rhythmic Auditory Stimulation and MS

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Multiple Sclerosis

Relapses and Impairment
MRI Activity
MRI Burden of Disease

Preclinical
RR-MS

Disease Duration (Years)
0 0 5-10 15-20+

SP-MS
Rhythmic Auditory Stimulation

• Rhythm activates different motor areas of the central nervous system
• RAS = neurological music therapy technique using rhythm and timing cues to improve the rhythmic movements of gait.
• Improves gait in Parkinson’s disease, stroke, traumatic brain injury, and Huntington’s disease.
RAS Music
Research Idea

Walking is frequently affected by MS

Exercise is beneficial to persons with MS.

Walking is a form of exercise.

RAS improves gait in some neurological conditions.

What if RAS is combined with walking exercise?
Clinical Results

- 3 pilot studies over a 5-year period
- Findings:
  - A home walking exercise program enhanced with RAS improves gait parameters and is enjoyed by individuals with MS and walking limitations.
  - Walking with RAS leads to immediate improvement of gait.
fMRI Results

Changes in brain activation with mental imagery of walking with or without RAS
Conclusion

• RAS:
  - is a low cost intervention, potentially available to a large number of individuals.
  - needs to be scientifically validated in order to be used appropriately.

• Institutional support from Arts and Medicine Institute was instrumental in initiating the research and getting external funding.
Cleveland Clinic

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