

Hope College

Hope College Digital Commons

23rd Annual A. Paul and Carol C. Schaap
Celebration of Undergraduate Research and
Creative Activity (2024)

The A. Paul and Carol C. Schaap Celebration of
Undergraduate Research and Creative Activity

4-12-2024

A Comprehensive Musical Model for Stroke Recovery

JaneEllen Altevogt
Hope College

Follow this and additional works at: https://digitalcommons.hope.edu/curca_23



Part of the [Music Commons](#)

Recommended Citation

Repository citation: Altevogt, JaneEllen, "A Comprehensive Musical Model for Stroke Recovery" (2024).
23rd Annual A. Paul and Carol C. Schaap Celebration of Undergraduate Research and Creative Activity
(2024). Paper 2.

https://digitalcommons.hope.edu/curca_23/2

April 12, 2024. Copyright © 2024 Hope College, Holland, Michigan.

This Poster is brought to you for free and open access by the The A. Paul and Carol C. Schaap Celebration of Undergraduate Research and Creative Activity at Hope College Digital Commons. It has been accepted for inclusion in 23rd Annual A. Paul and Carol C. Schaap Celebration of Undergraduate Research and Creative Activity (2024) by an authorized administrator of Hope College Digital Commons. For more information, please contact digitalcommons@hope.edu, barneycj@hope.edu.

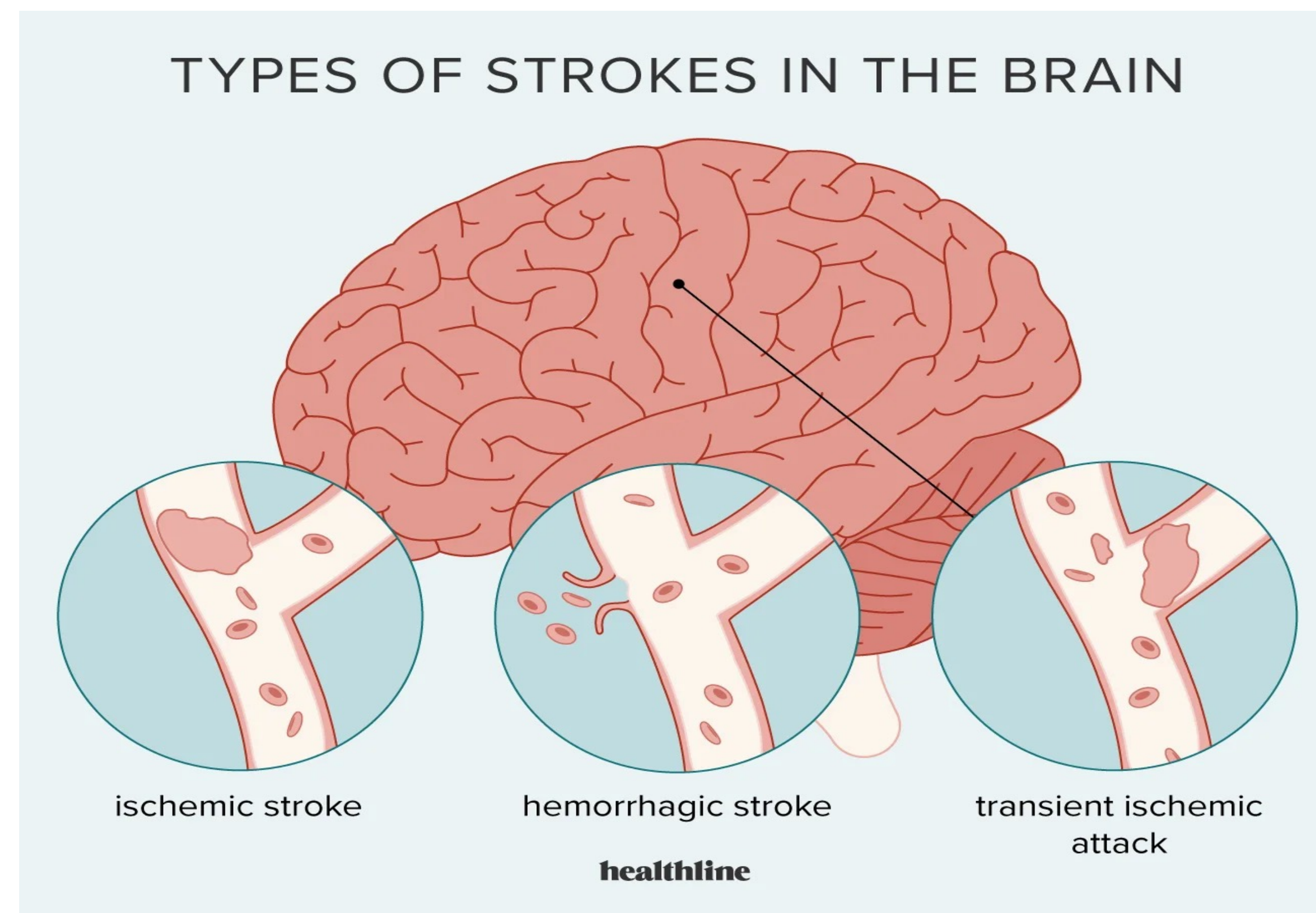
Using Music to Mold a Comprehensive Method of Stroke Recovery

JaneEllen Altevogt, Dr. David Keep

Department of Music

Background: Stroke

- Stroke – blood supply to brain is interrupted or drastically reduced.
- Brain Tissue unable to receive oxygen and essential nutrients
- Neurons die, daily function impacted
- Common Effects – Partial or total paralysis, Difficulty Swallowing, Memory Loss, Cognitive Impairment, Aphasia

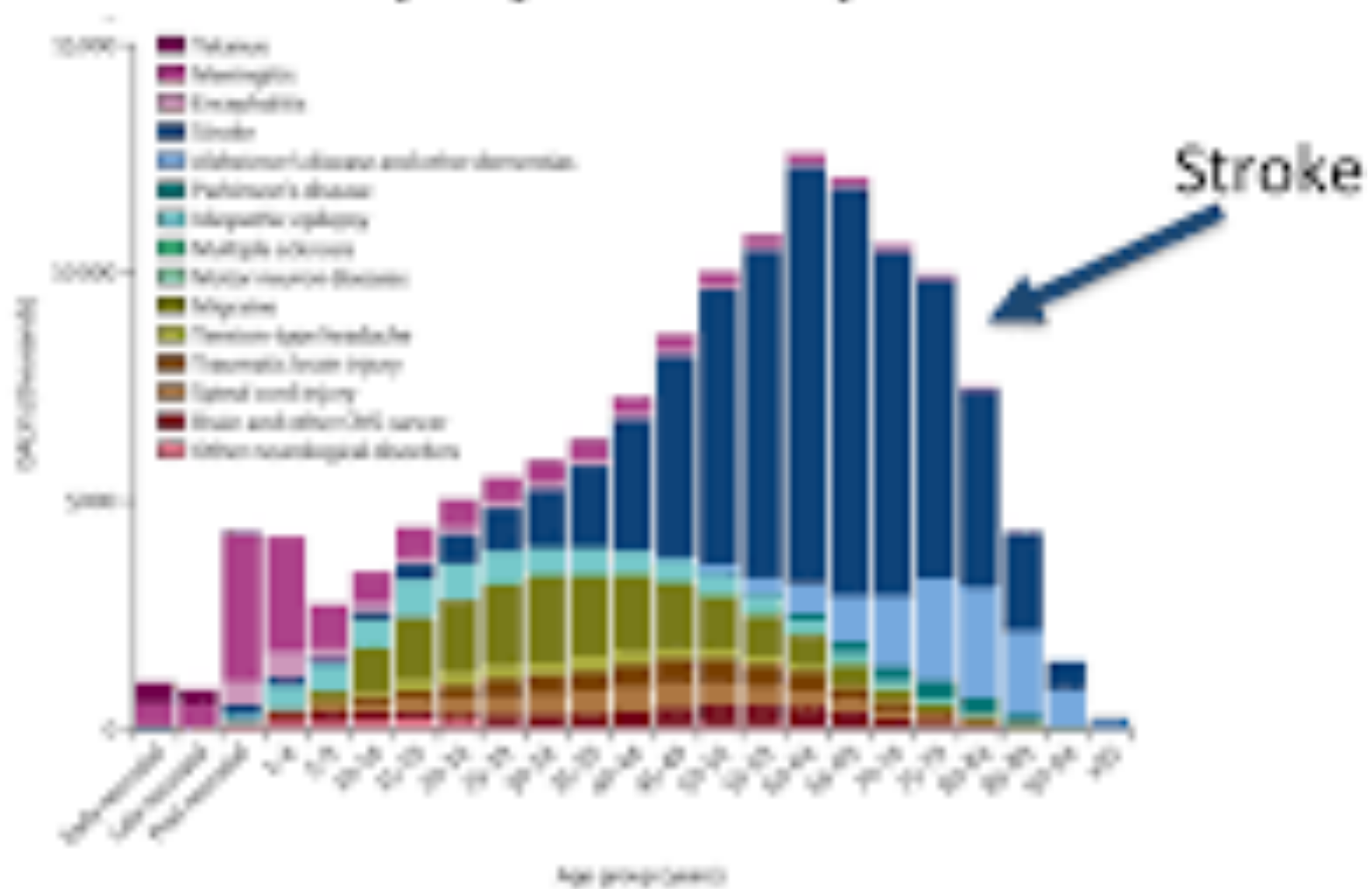


<https://www.healthline.com/health/stroke>

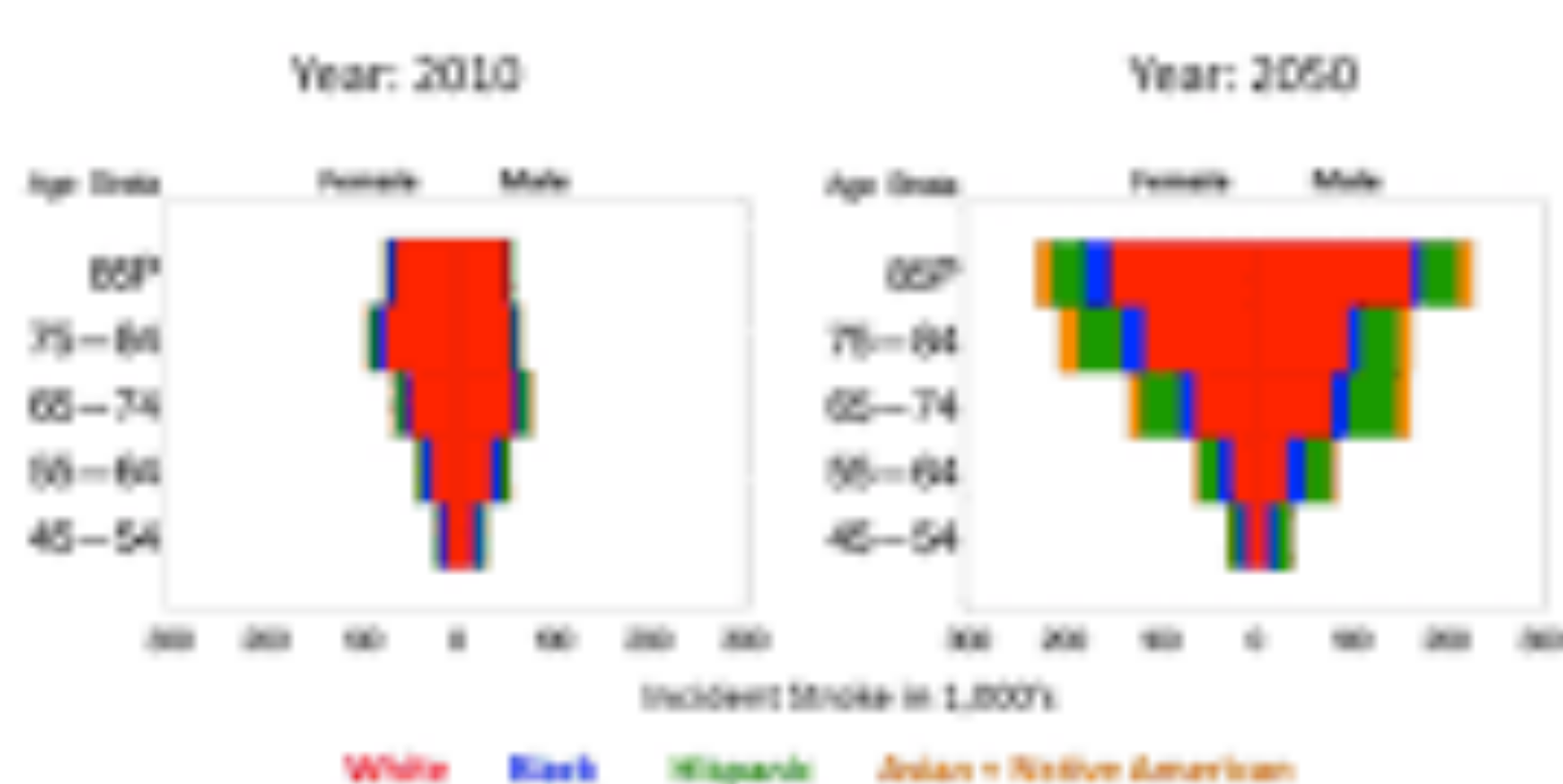
Current State of Stroke Recovery

- Shortage of Healthcare Workers
- Inconsistent Treatment Plans
- Lack of Personal Patient Motivation
- No Comprehensive Structure for tacking multiple stroke effects simultaneously

A Disability adjusted life years worldwide



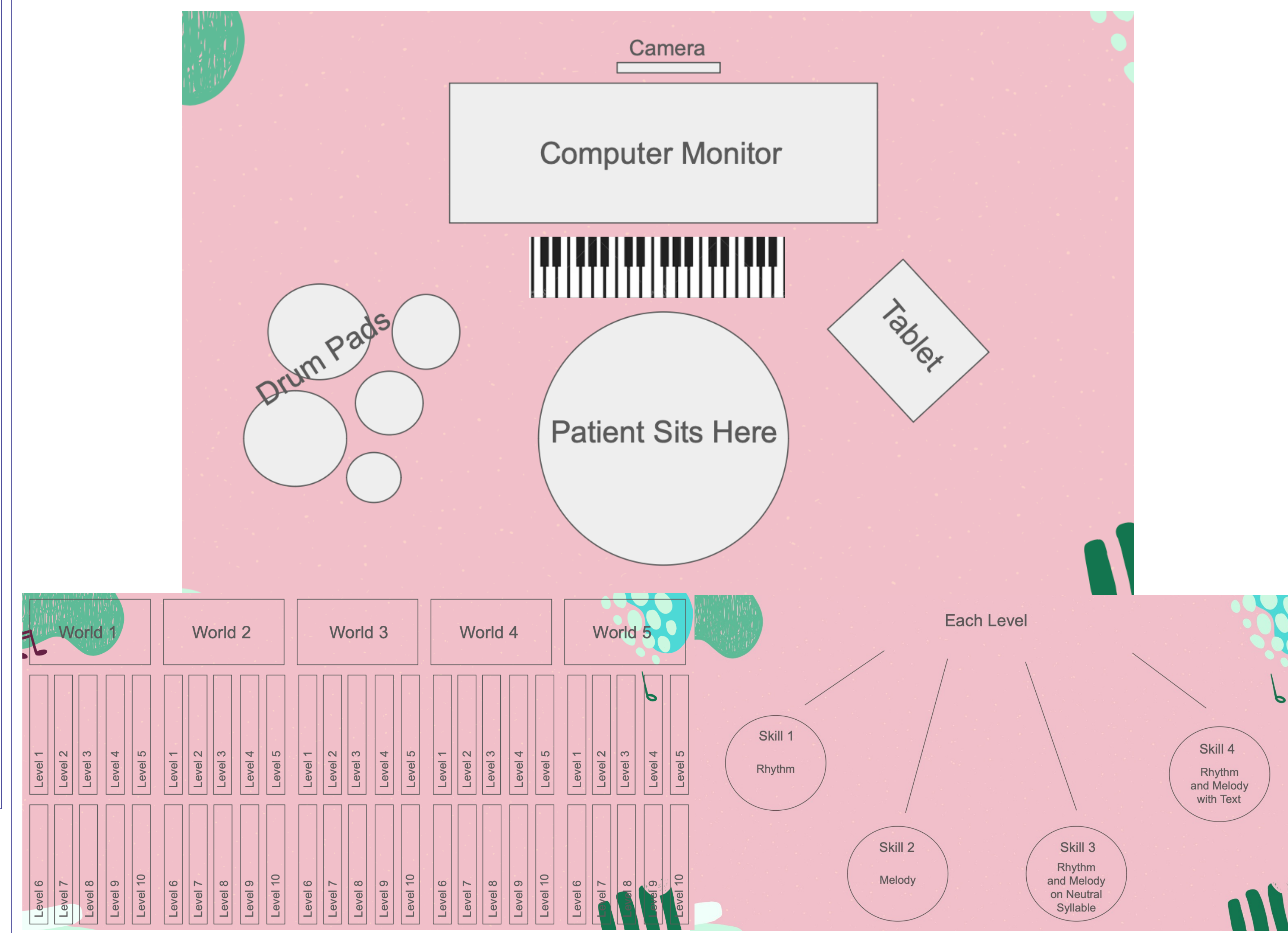
B Stroke Incidence Forecast USA



<https://neurorespract.biomedcentral.com/articles/10.1186/s42466-020-00060-6/figures/1>

Game Design

Hypothesis: A video game based in musical therapeutic techniques can decrease permanent disability experienced by stroke patients

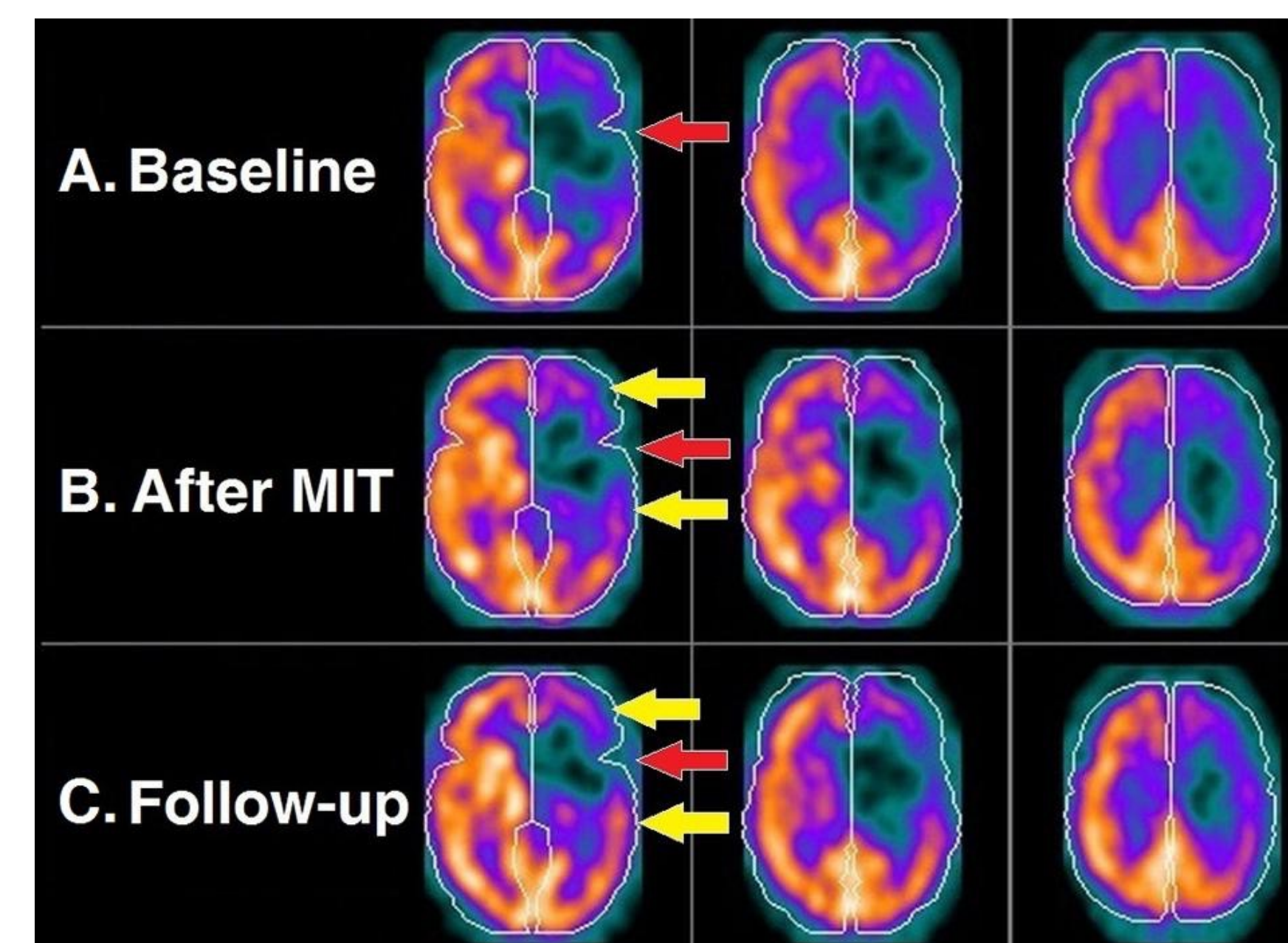


Why this Design?

- Melodic Intonation Therapy to correct aphasia
- Neurocognitive Rhythmic Therapy to advance neuroplasticity
- Technical Piano exercises to improve motor function and regain loss of function due to paralysis

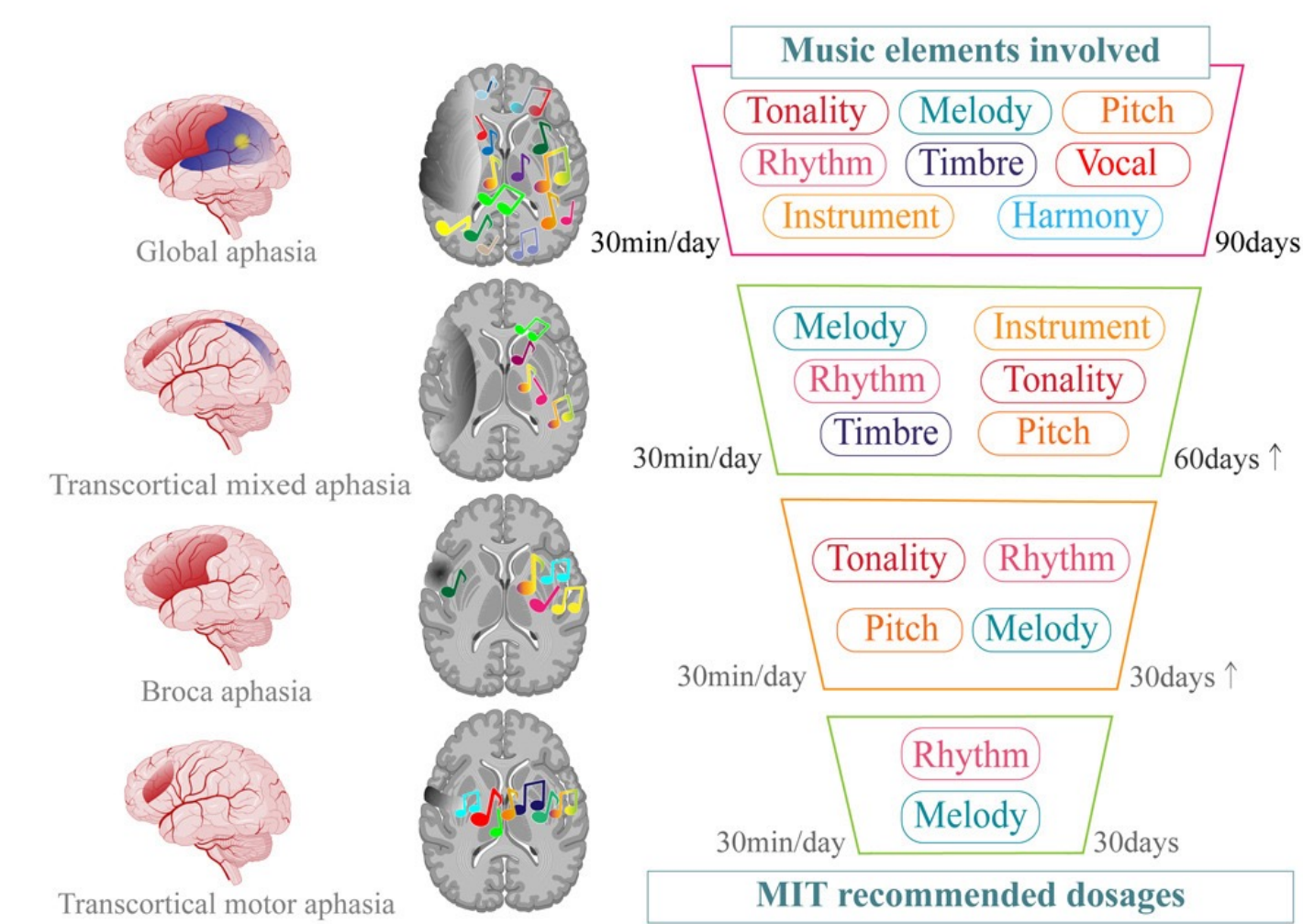
What's for din - ner?
(x2)

What did you say?



<https://www.frontiersin.org/articles/10.3389/fnagi.2021.664581/full>

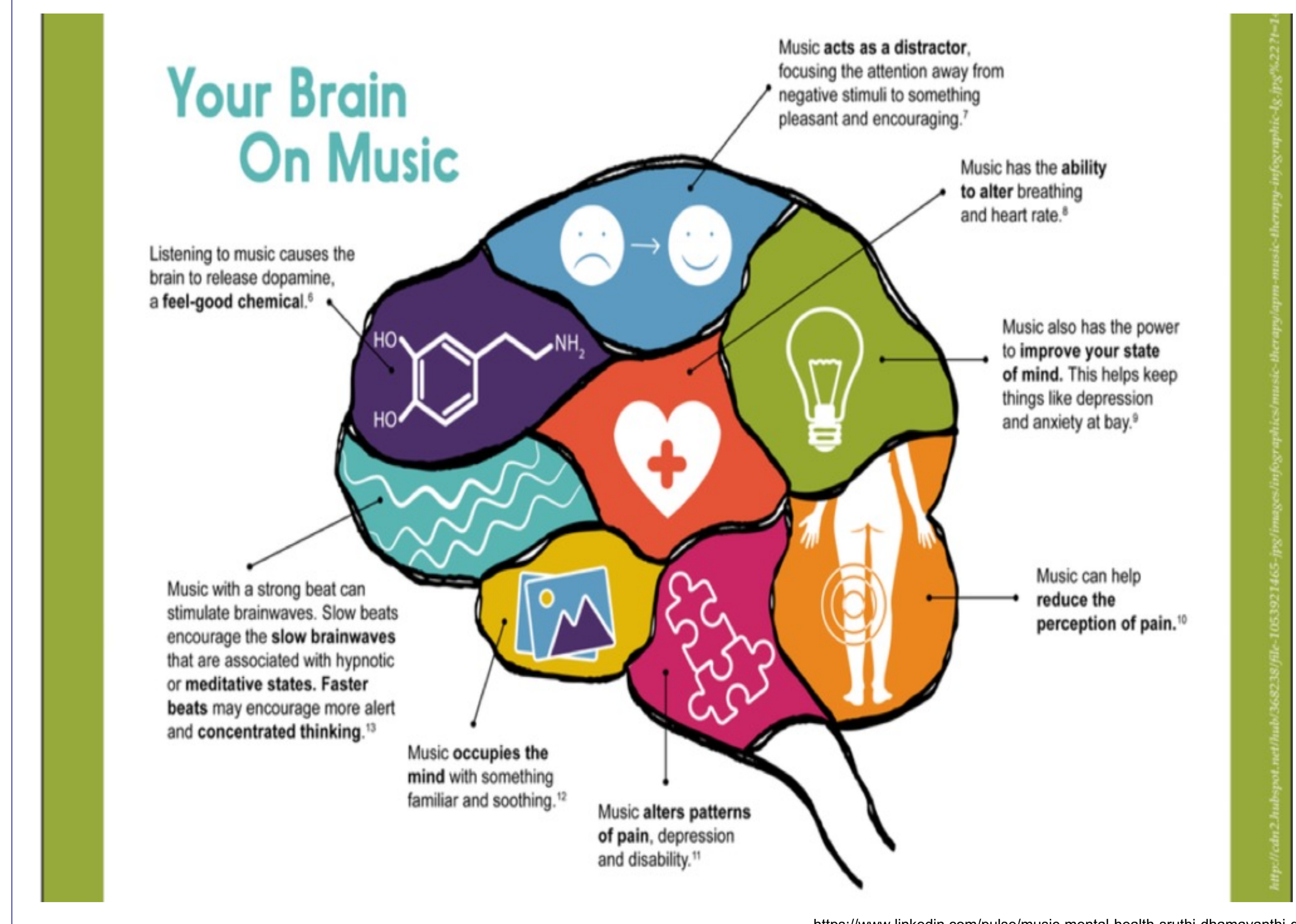
Clinical practice recommendations



<https://www.sciencedirect.com/science/article/pii/S258904223015304>

Why a Game?

- Brain Activity during play vs work
- Increased Mental Health
- Patient Motivation
- Inherent Repetition
- More Independent Recovery Process
- Ability to Learn Music



<https://www.linkedin.com/pulse/music-mental-health-sruthi-dhamayanthi-g/>

Summary of Study

- Stroke is a debilitating medical event that affects many individuals around the world
- A video game was designed using musical therapy techniques to aid stroke patients in their recovery
- Melodic Intonation Therapy and Neurocognitive Rhythmic Therapy have been shown to correct the effects of stroke
- The aspect of a game increases emotional outlook on recovery as it can internally motivate the patient and improve mental health

Future Plans

- Continue to develop game software up to completion
- Design official clinical trial with stroke patients to gather initial data
- Continue to meet with experts in the field of neuromusicology to learn what further measures can be added to ensure the highest positive outcome

Acknowledgments

- Hope College Music Department
- Dr. David Keep, Hope College Music Department
- Dr. Larry Todd, Duke University School of Neuromusicology
- Dr. Betsy Marvin, Eastman School of Music
- Hope College Seminar in Music Class – MUS 491

