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A Comprehensive Musical Model for Stroke Recovery

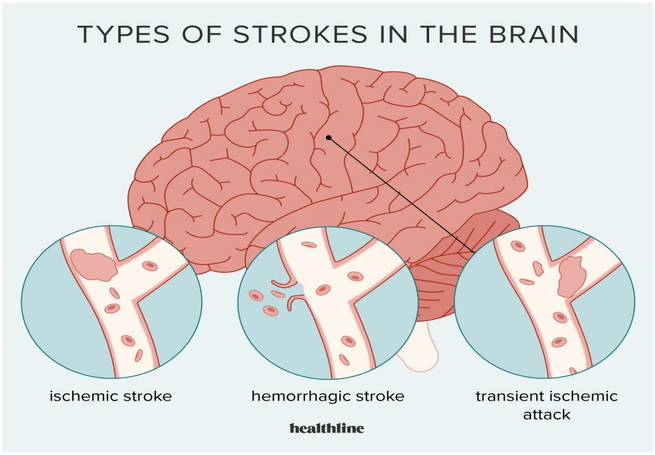
JaneEllen Altevogt
Hope College

Using Music to Mold a Comprehensive Method of Stroke Recovery

JaneEllen Altevogt, Dr. David Keep
Department of Music

Background: Stroke

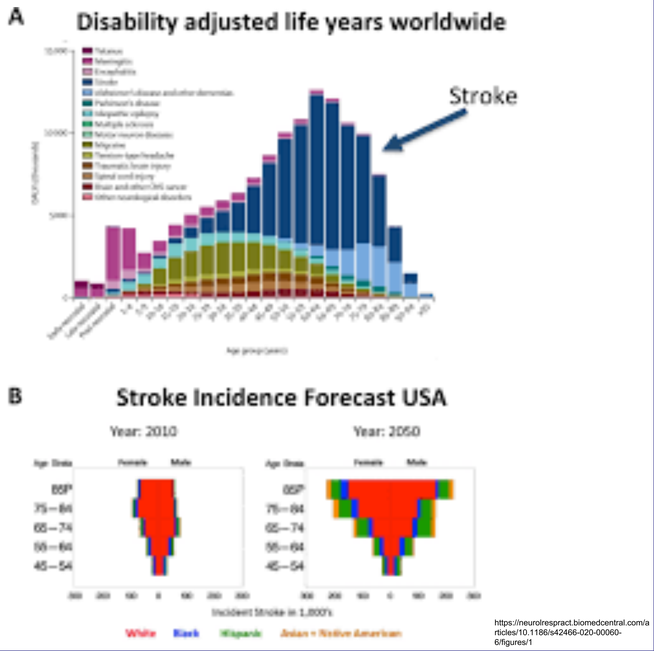
- Stroke – blood supply to brain is interrupted or drastically reduced.
- Brain Tissue unable to receive oxygen and essential nutrients
- Neurons die, daily function impacted
- Common Effects – Partial or total paralysis, Difficulty Swallowing, Memory Loss, Cognitive Impairment, Aphasia



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

Current State of Stroke Recovery

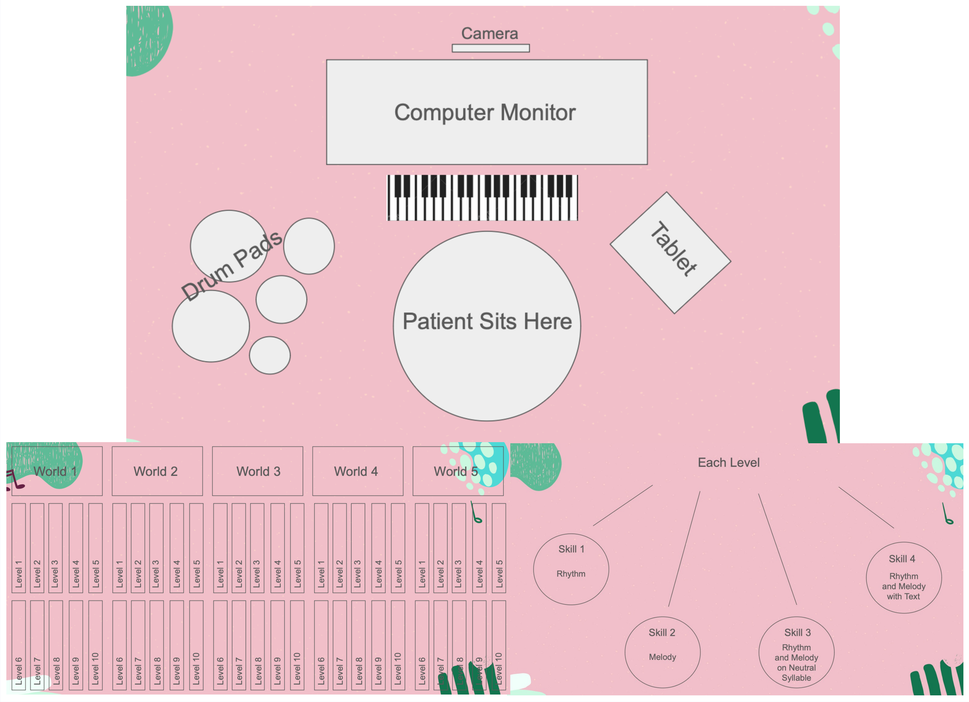
- Shortage of Healthcare Workers
- Inconsistent Treatment Plans
- Lack of Personal Patient Motivation
- No Comprehensive Structure for tacking multiple stroke effects simultaneously



https://neurolrespract.biomedcentral.com/articles/10.1186/s42466-020-00060-6/figures/1

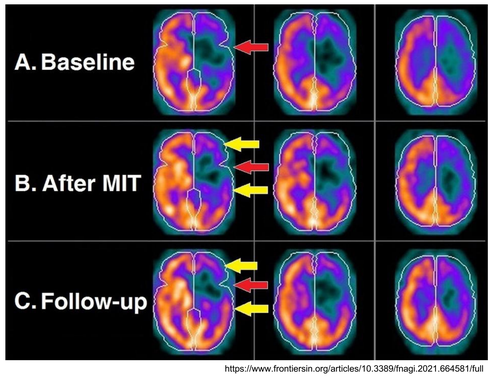
Game Design

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

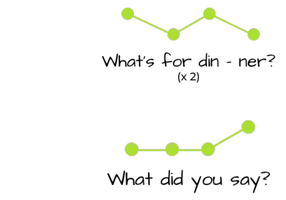


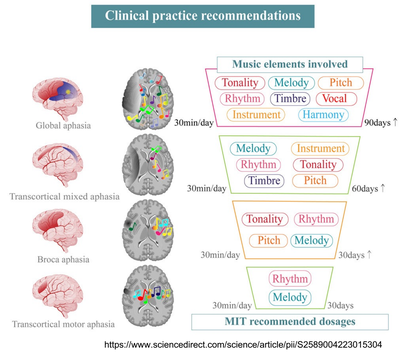
Why this Design?

- 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



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

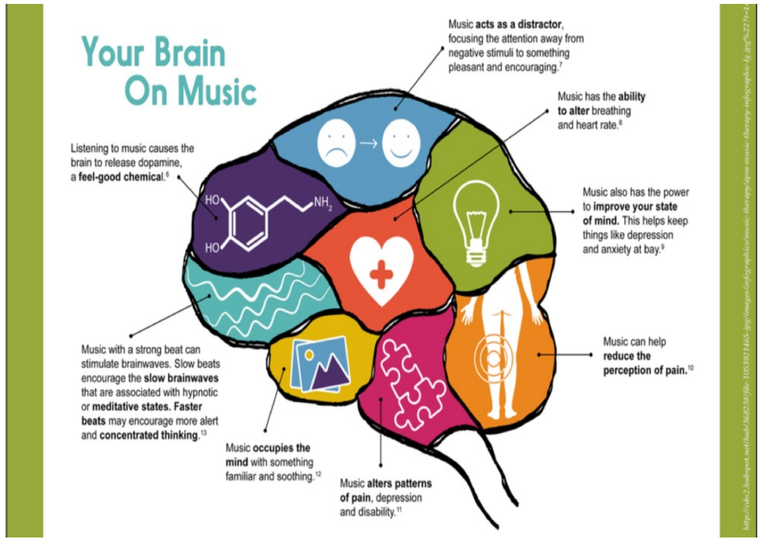




https://www.sciencedirect.com/science/article/pii/S2589004223015304

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

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