Changing human focus levels by altering brain wave activity through sound

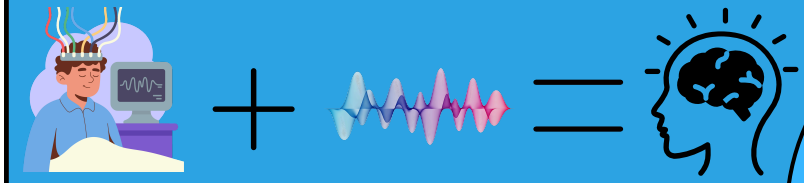
Luke Lee, Massachusetts Academy of Math and Science

Research Question

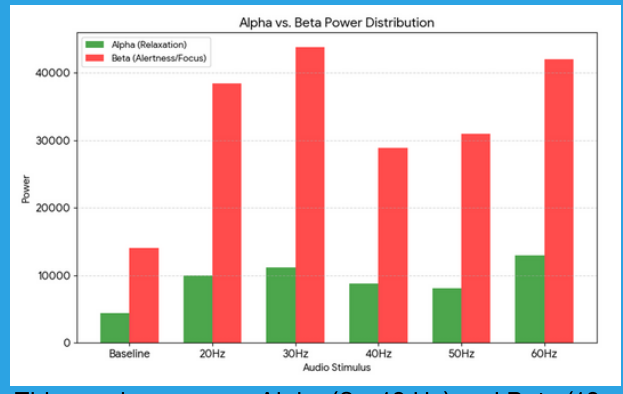
How do external stimuli, such as sound, affect brain waves and overall focus in the brain?

Hypothesis

As sound frequency levels change, human arousal levels will also change, leading to improved performance tasks.



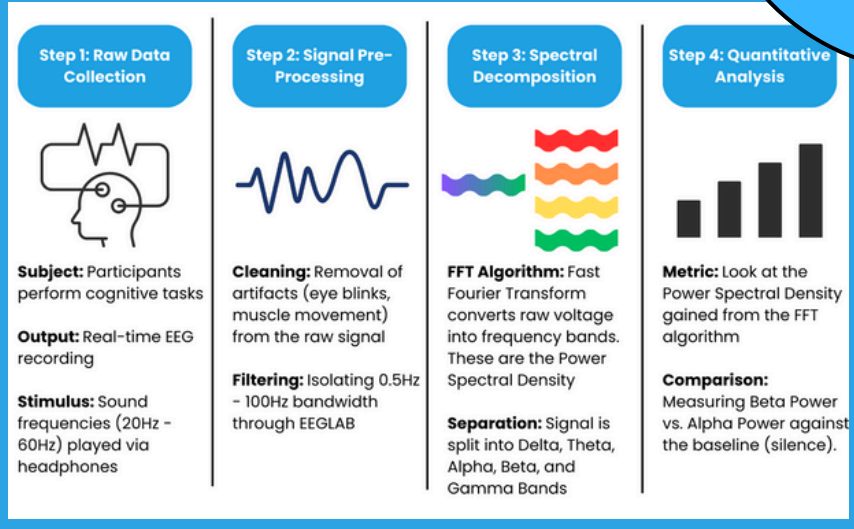
Data Analysis and Results



This graph compares Alpha (8 – 12 Hz) and Beta (12 – 30Hz) power levels recorded during each sound frequency. Higher Beta and lower alpha indicate greater focus and reduce relaxation. The results show that Beta power increases the most at 30Hz

Beta power increased the most at 30Hz suggesting improved focus at this frequency

Methodology Infographic



Interpretation and Conclusions

- The increase in Beta power confirms that sound is a viable tool for regulating arousal.
- The data shows a nonlinear trend that aligns with the Yerkes-Dodson Law.
- Peak Beta activity was at 30Hz
- While 60Hz showed high Beta power, this is likely due to interference from outside electrical frequencies.