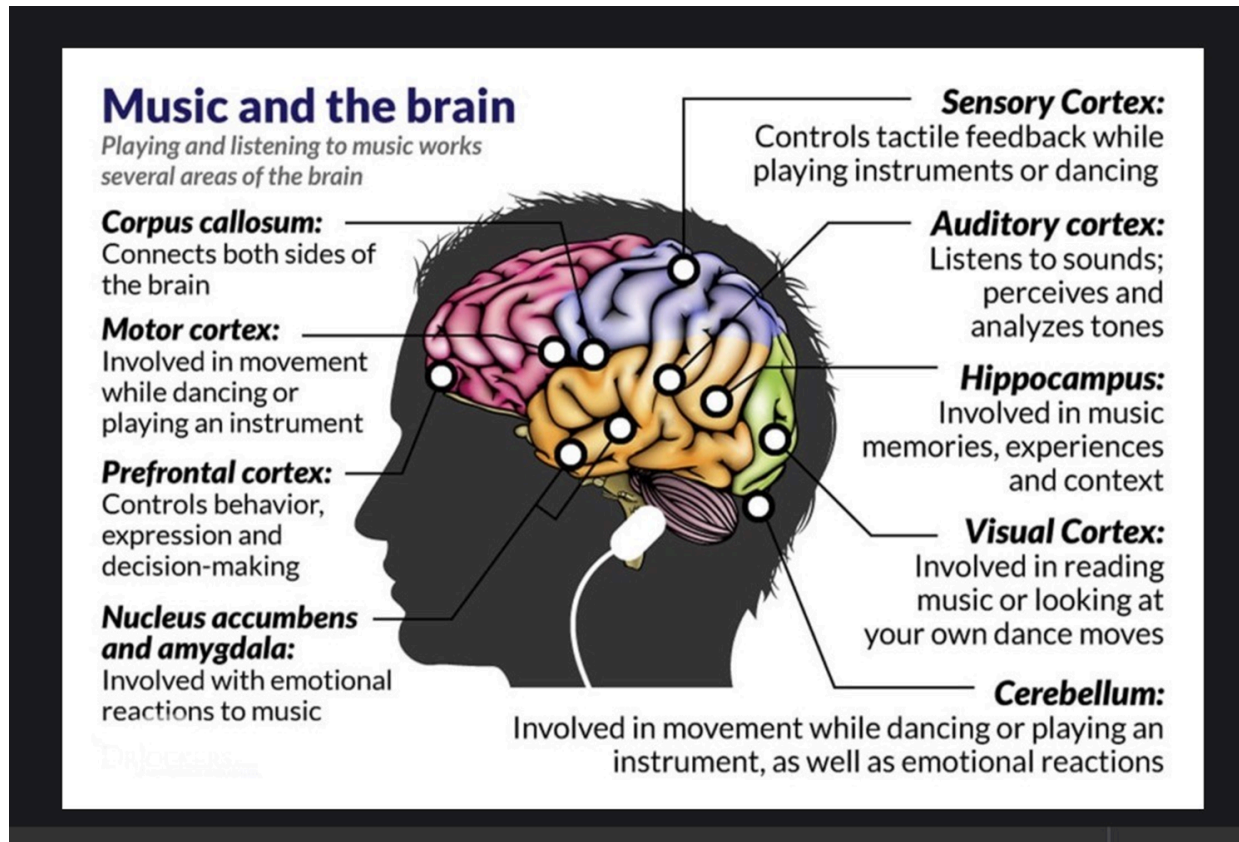


# We Got The Beat: The Impact of Music on ADHD

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**“Nothing activates the brain so extensively as music.”**  
**Neurologist, Dr. Oliver Sacks**



## **Research Findings:**

- **Increased attentional and inhibitory control because of procedural performance techniques developed while practicing musical instruments (Hallberg et al., 2017).**
- **Practice and performance reveals that expert musicians shift their focus of attention between levels of musical structure as they practice, which allows attentional skills to develop (Joret et al., 2017).**
- **Managing several kinds of visual stimuli such as reading the score, interpreting the body language of the conductor and accompanying musicians, and playing an instrument may contribute to the development of divided attention (Rodrigues et al., 2013).**
- **Musicians must constantly start, stop, and repeat (inhibition) as they practice and review their technique and performance (Chaffin & Logan, 2006).**
- **The inhibition of impulses is also required to perform with other musicians as it involves group cooperation (Joret et al., 2017).**
- **Zemestani et al (2023):**
  - **Increase in adaptive emotion-regulation strategies (cognitive reappraisal)**
  - **Decrease in maladaptive emotion-regulation strategies**
  - **Pre- and post-intervention, and 6 months later**
  - **Results demonstrated significant intervention effects across the three time points for school readiness, self-regulation, and inhibition.**
- **Kasuya-Ueba et al (2020):**
  - **30-minute interactive music intervention**
  - **Test of Everyday Attention for Children**
  - **Significant improvement in attention control/switching after controlling for the children's intellectual abilities**

- **Serrano et al (2018):**
  - ADHD children randomly assigned to experimental or control group
  - 12-week music intervention program, 30-min sessions twice a week
  - Singing, playing instruments and movement activities
  - Child Behavior Checklist (CBCL) and Test of Variables of Attention (TOVA)
  - Program led to significant improvements in attention and emotional regulation
  
- **Marchetti et al (2018):**
  - 61 children between 7-12, who were randomly assigned to music therapy or control.
  - 12 weekly 45-minute music therapy sessions, while the control group received no intervention.
  - Playing instruments, singing, improvisation and listening to music.
  - Individualized according to the needs and preferences of each child.
  - Significant improvements in sustained attention, selective attention, inhibition of impulsivity, social skills (communication, cooperation and empathy) for ADHD group.
  
- **Park et al (2023):**
  - ADHD music therapy group vs. ADHD Control
  - Active music therapy and receptive music therapy for 50 minutes, twice a week, for 3 months: a total of 24 times.
  - Changes in depression and stress tracked by measuring 5-HT secretion, cortisol expression, blood pressure (BP), heart rate (HR), and Depression scales.
  - ADHD music therapy group: 5-HT secretion increased ( $p < 0.001$ ), whereas cortisol expression ( $p < 0.001$ ), BP ( $p < 0.001$ ) and HR ( $p < 0.001$ ) decreased.
  - Depression scales also showed positive changes ( $p < 0.01$ ).
  - Opposite findings for control group
  
- **Madjar et al (2020):**
  - Music and reading performance of ADHD pre-teens compared with non-ADHD
    - 1) No background music
    - 2) Calm music without lyrics
    - 3) Calm music with lyrics

#### **4) Rhythmic music with lyrics**

- **Reading comprehension assessed (before, during, after) using validated instruments.**
  - **Reading comprehension significantly improved under the music conditions in ADHD group and deteriorated among non-ADHD.**
  - **Music may improve attentive skills of preadolescents with ADHD, but degrade non-ADHD skills**
  - **The need to identify an optimal fit between individual and contextual characteristics.**
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- **Woods et al, 2021: Heavily-modulated music improves sustained attention for subjects with more ADHD symptoms. FMRI showed music elicited greater activity in attentional networks in this group only, and EEG showed greater stimulus-brain coupling for this group in response to the heavily-modulated music.**
  - **Darvishi et al (2021): Twelve 60-minute music therapy sessions of music therapy vs. controls. Effective in improving sustained attention and selective attention in ADHD children.**
  - **Robust findings on ADHD symptoms, including reduction in impulsivity and aggression, increase in academic skills, working memory, mood regulation, reduced anxiety, and temporal processing, as well as an aid for sleep onset.**
  - **Rhythmic entrainment - Using strong, steady rhythms to imprint structure and consistency. This assists with regulation of attention and behavior.**

### **Recommended Books:**

**Levitin, D. J. (2006). This is your brain on music: The science of a human obsession. Dutton/Penguin Books.**

**Mannes, E. (2011). *The power of music: pioneering discoveries in the new science of song*. New York, Walker & Company.**

**Sacks, O. (2008). Musicophilia: Tales of Music and the Brain. New York, Alfred A. Knopf**

### **Recommended Film:**

**Alive Inside: A Story of Music and Memory**