



Brain Fitness Research Report

MIND YOUR BRAIN: NEUROPLASTICITY FOR EVERYDAY LIFE

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Activities

For this research report, I focused on two Brain Fitness Activities from the course:

1. Online Brain Memory Games (from Module 2):

This involved using websites like humanbenchmark and brainhq. Specifically, I tried the reaction time test (clicking when the screen turns green) and the brain speed hawk eye challenge (remembering the hawk's fast-flashing location). This activity is very interactive, requires quick visual processing and physical response (clicking), and gives immediate feedback on performance scores

2. Mindfulness Meditation (from Module 10):

This was more internal. I practiced two types: mindful breathing (focusing on breath and observing thoughts without judgment) and mantra meditation (repeating a phrase like "I am focused. I am disciplined. I am growing."). This activity is about cultivating awareness, managing thoughts, and achieving a calmer state, requiring sustained attention rather than quick reactions.

These activities are quite different. The brain games are fast-paced, externally focused (on the screen), competitive (even against myself or averages), and rely on reaction speed and visual memory. Mindfulness is slow-paced, internally focused (on breath or a mantra), non-competitive, and aims for emotional/cognitive regulation and awareness.

Hypothesis

Before starting, I had a few thoughts about each activity:

1. Online Brain Memory Games:

Expectation: I expected my reaction speed on humanbenchmark to be pretty good, maybe under 180ms, because I'd done it before and I play FPS games. I didn't have strong expectations for the hawk eye game since it was new, but I figured my gaming experience might help.

Desire: I definitely had a desire to get a good score, especially on the reaction test. I wanted to see how I stacked up and maybe even improve.

2. Mindfulness Meditation:

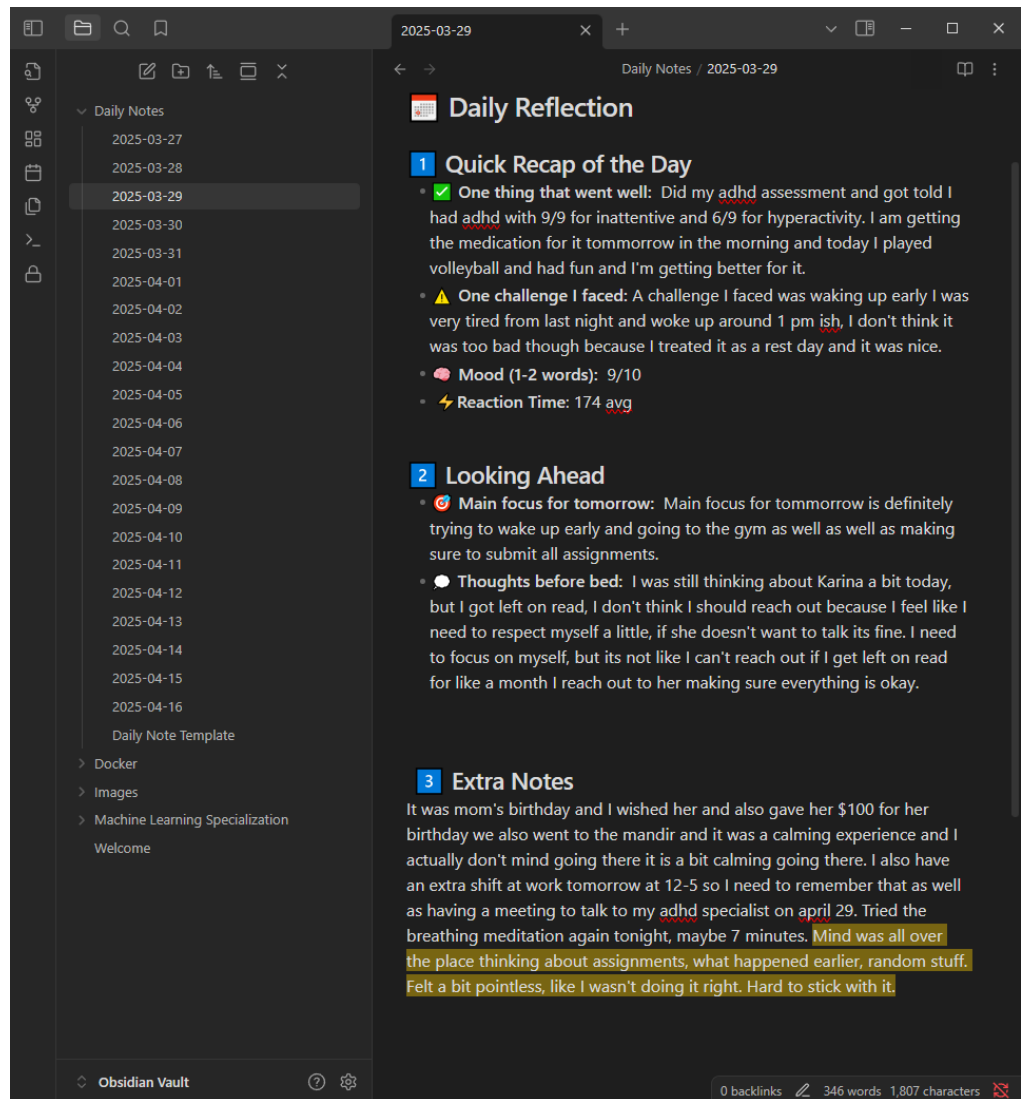
Expectation: I expected mindfulness would be helpful for lowering stress and maybe stopping some of the negative or overthinking thoughts I sometimes have, like I mentioned in my daily notes sometimes feeling anxious or frustrated. I thought the mantra meditation might help more with focus specifically.

Desire: My main desire was just to feel calmer and less stressed or anxious. I also hoped it would improve my concentration, especially knowing about my ADHD diagnosis later on (mentioned in daily notes).

Time and Frequency

1. Online Brain Memory Games:

- a. Like I said in Discussion 2, I spent about 15 minutes total trying out the games aiming for 3-4 times per week over 2 weeks. My performance really depended on the how my mood was for the day mostly and if I was tired or not and what time I took it.



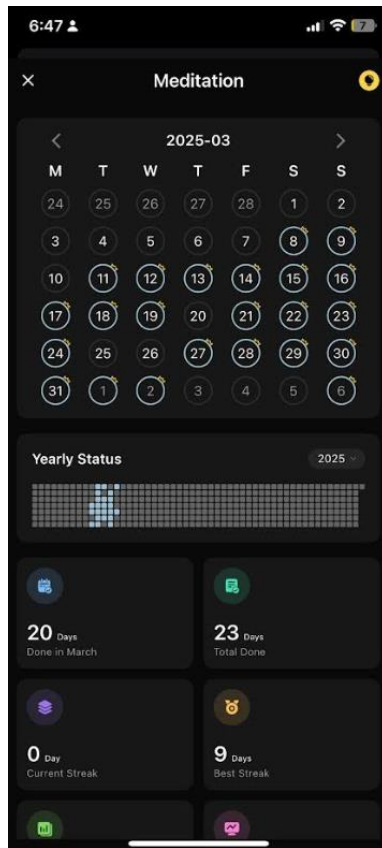
b.

I have added a screenshot of my daily notes where I included a reaction time category, if I did for the day I added my average for there.

2. Mindfulness Meditation:

- a. As I mentioned in Discussion 5, I aimed for 10 minutes daily for 10 days, usually trying to fit it into my night routine. Looking back at my daily notes, maintaining consistency with routines was a challenge sometimes (e.g., waking up, gym). I aimed for 30 days, I managed it for 23. Some days I did the full 10 minutes, other days maybe only 5 because I felt restless or like it wasn't working, especially at the start. I mostly stuck to the

breathing or the mantra I created.



b.

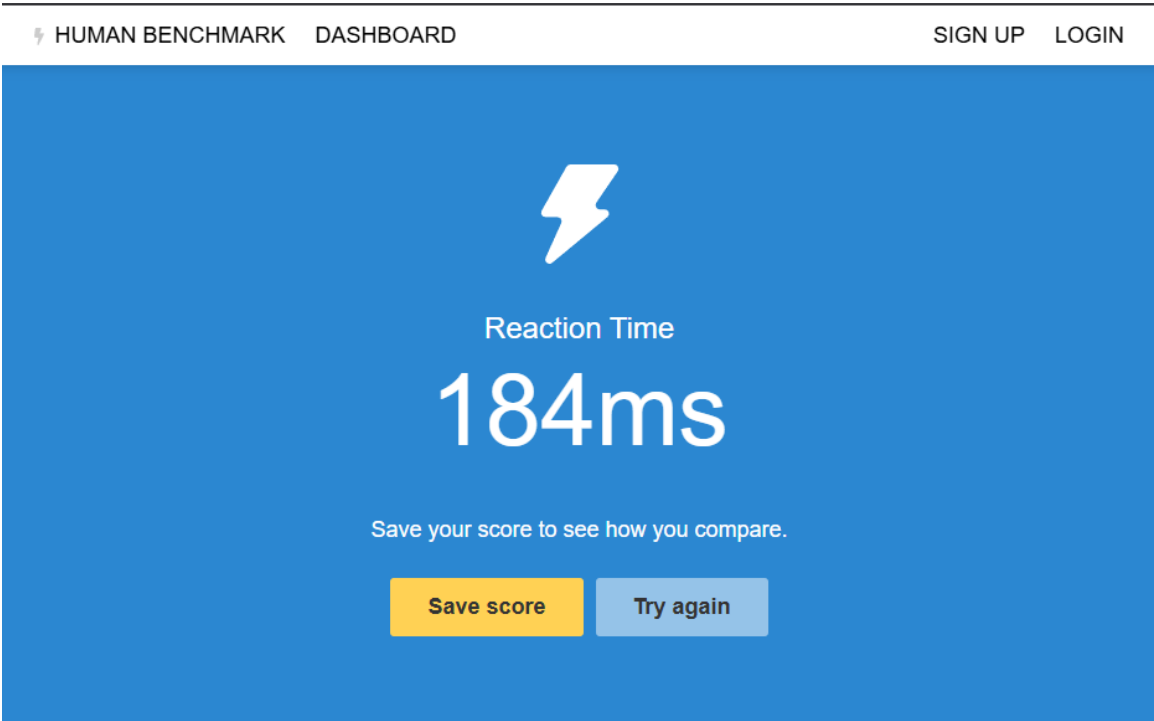
When I was first tracking I used a habit tracking app to track, but around late march I switched over to tracking in my journal and daily notes because it made it easier for me, and I also started to write more fully on how it made me feel like shown in the journal screenshot above (highlighted).

Document Effects/Experiences

1. Online Brain Memory Games:
 - a. Cognitive: Very high focus needed. I felt really zoned in on the screen, trying to anticipate the change. It felt like my brain was working fast. I noticed improvement wasn't always straight line and sometimes I'd do worse than before.
 - b. Emotional: Mostly feeling focused, a bit of pressure to perform well. Sometimes frustration if I missed or got a slow score. A little bit of

satisfaction when I did well.

- c. Physical: I noticed myself holding my breath slightly during the reaction test, trying to be perfectly still. My body felt more tense, ready to click. My eyes were definitely working hard tracking the screen.
- d. Sense: Sight was obviously dominant, watching for the green light



- e. This was the latest reaction time I have gotten, and I also created a table of my reaction time over the course of documentation.

Date	Avg Reaction Time (ms)	Notes from the Day
2025-03-27	192ms	Good start, morning gym, felt sharp
2025-03-28	248ms	Very tired & frustrated, drained
2025-04-02	196ms	Good mood, focused study

2025-04-03	233ms	Meh day, low motivation, skipped gym/alarm
2025-04-05	261ms	Lowest mood, off track with habits
2025-04-08	217ms	Productive morning, energy dip/lonely later
2025-04-09	208ms	Improved day, productive evening,
2025-04-11	184ms	Highly productive flow state (peak performance)
2025-04-13	242ms	Physically productive, but high overthinking
2025-04-15	229ms	Long day, evening anxiety spiral

2. Mindfulness Meditation:

- a. Cognitive: My mind definitely wandered, like I said in Discussion 5. Thoughts about the day, past conversations (like maybe with Karina mentioned in notes), or just random things popped up. The mantra helped anchor my focus a bit better than just breathing sometimes. Refocusing was the main cognitive effort. Maybe connected to my ADHD, the focus part was the challenge.
- b. Emotional: At first felt a bit impatient or like I was wasting time. After a few days, especially noted in my reflections (like daily notes mentioning feeling anxious/lonely), I started to feel slightly less anxious *during* the practice. It didn't magically solve overthinking (which I mentioned in notes), but it created a brief space from it. Sometimes I felt calmer afterwards, sometimes just the same but maybe more aware of my thoughts.
- c. Physical: I noticed my breathing pattern more. I became aware of small physical sensations, the position of my hands, or even background noises like the computer fan or rain (as mentioned in Discussion 5).
- d. Sense: I noticed a lot more ambient sounds around me while I was trying to focus.

Areas of Brain Involved

1. Online Brain Memory Games:

a. Connections:

The intense focus, fast reaction, and visual processing likely involved the frontal lobe especially the prefrontal cortex for processing the visual information like seeing the green light. The cerebellum was crucial for the fine motor control and hand-eye coordination needed to click the mouse accurately and quickly and the temporal lobe helped with remembering the hawk's location briefly.

b. Synaptic Activity/Neurotransmitters:

Practicing these games probably strengthened synaptic connections in these pathways through repetition and getting a good score might trigger a small release of dopamine, related to reward and motivation, making me want to play again.

2. Mindfulness Meditation:

a. Connections:

The effort to focus attention, manage mind-wandering, and regulate emotion involves the prefrontal cortex for attention control and emotional regulation becoming aware of sensations like breathing, tiredness connects to the parietal lobe. The emotional aspects relate to the limbic system, particularly the amygdala for processing emotions and the hippocampus for recalling past events that wander into thoughts. The temporal lobe was active in processing ambient sounds I noticed.

b. Synaptic Activity/Neurotransmitters:

Regular practice is thought to strengthen connections in the prefrontal cortex, potentially improving attention regulation. It might also modulate activity in the amygdala, helping with emotional reactivity. Neurotransmitters like GABA (calming) or serotonin (mood regulation) could be involved in the feelings of reduced anxiety or calm sometimes experienced. The process of noticing thoughts and refocusing is itself a form of brain training.

Self Perception:

This research resonated with me in a few ways connecting to Module 11 (Learning Styles) and Module 14 (Social Brain):

1. Learning Style: The brain games felt aligned with maybe a kinesthetic/visual learning style learning by doing and seeing. Mindfulness felt more introspective, maybe connecting to a different way of processing information internally. My struggles with focus during meditation, possibly linked to my ADHD (mentioned in notes), also reflect on my individual learning/attentional profile. Trying both showed me different ways my brain engage.
2. Social Identity/Culture: Mindfulness felt relevant to managing some of the social/emotional stuff I mentioned in my daily notes like overthinking interactions, feeling lonely sometimes, or dealing with frustration. It's a tool to potentially regulate my internal state in response to social situations. My Discussion 6 idea for a gaming club to address racism also connects here understanding my own reactions and the social dynamics is important for creating inclusive spaces. Visiting the mandir (mentioned in notes) is part of my cultural background, offering a different kind of reflective/calming space, maybe showing a cultural resonance with practices that involve inner focus, similar in aim to mindfulness.

Hypothesis Return and Plan for Future Use

1. Hypothesis Return:

What stood out most after doing this was how much my *internal state* (tiredness, mood, focus level, as seen in daily notes) affected performance in the external brain games it wasn't just raw skill. For mindfulness, what stood out was that it wasn't a quick fix for anxiety or focus; it was more about *awareness* of my thoughts and feelings, which is different from just making them disappear. The challenge of consistency, reflected in my notes about habits, was also a big factor in getting results from either activity. The connection I learned about in Module 6 (Sleep) also felt very relevant days I felt tired both game performance and ability to focus in meditation suffered.

2. Plan for Future Use:

- a. Online Brain Memory Games: I don't plan to use these super regularly like a strict training regime. It was interesting, but maybe more as a fun thing to do occasionally to check in on my reaction time or focus.
- b. Mindfulness Meditation: I do plan to continue this, maybe not every single day perfectly, but more consistently. My daily notes show I'm trying to build better habits, and this feels like a useful one for managing stress, overthinking, and maybe helping with ADHD focus. The plan is to try for 5-10 minutes most days, maybe in the morning or before bed, integrated into my routine. This seems doable, I might explore different types, like guided meditations. I think it has long term benefits, even if the day-to-day change feels small sometimes.

References:

- Course Modules & Materials (specifically referencing concepts from Modules 2, 5, 6, 10, 11, 14).
- Article: "Making Changes for Brain Health" (mentioned in Discussion 3 regarding sleep).

- Humanbenchmark.com (for Reaction Time Test).
- BrainHQ.com (mentioned in Discussion 2, though Hawk Eye wasn't the final focus).
- Personal communication/discussions within the course (Research Study Circles).