

Wearable Light Logger to Facilitate Full Spectrum Light Dosing for Mood Disorders

Date: September 6 to September 12, 2024

Client: Dr. Jean Riquelme

Advisor: Dr. Brandon Coventry

Team:

Molly Wilhelmson mwilhelmson@wisc.edu (Team Leader, BSAC)

Ella Eklund ereklund@wisc.edu (Team Leader, Communicator)

Neel Srinivasan nsrinivasan8@wisc.edu (BPAG)

Kate Briesemeister kbriesemeist@wisc.edu (BWIG)

Problem Statement

There are no affordable wearable light logging devices on the market currently. Full spectrum light therapy has been proven to be successful in treating mood disorders, especially seasonal affective disorder, but patient response studies are lacking. A wearable allows for accurate representation of light intensities which reach the retina, the presumed site of action. A wearable light logger would provide convenient research into what correct dosages for optimal patient response look like for patients suffering from mood disorders.

Brief Status Update

Our first client meeting is scheduled for Friday September 13th. We have been collecting background information from articles and websites provided from our client to curate a list of questions to focus on during our meeting.

Summary of Weekly Team Member Design Accomplishments

- Team:
 - Met as a team for the first time, assigned team roles, and established weekly meeting times and weekly advisor times.

- Molly Wilhelmson:
 - Began researching existing designs, and bright light therapy's effects on mood disorders (3 hours)
 - Brainstormed questions for the client

- Ella Eklund:
 - Began researching existing competing designs and physiology on mood disorders (2 hrs)
 - Communicated with client to set up meeting times and brainstormed questions for the client (1 hr)

- Neel Srinivasan:
 - Began reading scientific literature on the absorption of various wavelengths of light, and its relationship to mood disorders (1 hour)
 - Began researching alternative options for mood disorder therapy and noted areas of potential improvement the wearable light logger could make possible (1 hour)

- Kate Briesemeister:
 - Began research by reading publications highlighting the positive effects of bright light therapy (2 hours)
 - Investigated the current wearable light loggers that are on the market and how they function (1 hour)

Weekly/Ongoing Difficulties

N/A

Upcoming Team and Individual Goals

- Team:
 - Hold the first meeting with our client Dr. Jean Raquelme to get to know more specific details about the project, and what we will need to research further
 - Divide research between group members
 - Begin brainstorming design ideas
 - Use the information from our client, and our research to draft the PDS
- Molly Wilhelmson:
 - More in-depth research regarding the HOB0 light logger's inner electronic system, eye anatomy, and how light therapy impacts the brain.
 - Begin working on assigned section of the PDS draft

- Ella Eklund:
 - Begin working on assigned section of the PDS draft.
 - Continue research on mood disorders to gain further knowledge on how light therapy impacts mood disorders.
- Neel Srinivasan:
 - Continuing in-depth research on the brain's physiology & response to wavelengths of light
 - Begin researching alternative products & noting potential price points for materials
- Kate Briesemeister:
 - Complete assigned section of the PDS
 - Research the physiological effects of bright light on different areas of the brain
 - Identify the pros and cons of each wearable device already on the market

Project Timeline

Project Goal	Deadline	Team Assigned	Progress	Completed
Meet with client	09/13	All		
→ Product Design Specification	09/20	All		
Preliminary Presentations	10/4	All		
Preliminary Deliverables	10/9	All		
Show and Tell	11/01	All		
Poster Presentations	12/06	All		
Final Deliverables	12/11	All		

Expenses

Item	Description	Manufacturer	Part Number	Date	QTY	Cost Each	Total	Link	
Component 1									
Component 2									
Component 3									
TOTAL:							\$0.00		