

SteadyHand Progress Report #2

Date: 9/17/2026

Client: Dr. James Sohn

Advisor: Dr. Shawn Gomez

Team:

Anna Wood

Tess Brazee

Mara Van Dyke

Sam Anderson

Ben Pytlik

Miti Patel

Problem statement

Severe joint pain in the hands due to arthritis and other inflammatory conditions is now frequently treated using low-dose radiation therapy (LDRT). Current LDRT protocols require high setup reproducibility across 6 treatment sessions. Existing positioning systems are overly complex, use complicated indexing systems, and compress digits 2-5 together. This causes significant discomfort for patients and creates unnecessarily long setup times.

This project aims to develop a hand positioning device to be used in a clinical setting that minimizes setup time and patient discomfort while ensuring exact hand placement for each treatment session.

Brief status update

This week, the team created the Product Design Specifications document using their personal research and information from Dr. Sohn. Expectations for the project were discussed and weekly meetings were scheduled with Prof. Gomez and for the team. Our preliminary PDS will be sent along with this document.

Difficulties / advice requests

None

Current design

The Dexalign Hand Positioner is pictured below. We will be trying to create a simpler solution for faster setup times.



<https://cqmedical.com/Products/radiotherapy/Functional--Low-Dose-RT/Dexalign-Hand-Positioner.htm>

Goals

Major team goals for the next week

1. Brainstorm design ideas individually and then discuss them as a group.
2. Complete design matrix with 3 possible designs.
3. Begin materials research.

Next week's individual goals

- Anna Wood
 - Continue research on attenuation and dosage effects of radiological accessories, and begin looking into the effects of specific 3D printing materials
 - Brainstorm a few preliminary designs and draw sketches of them to present to the team.
 - Schedule a time for the team to meet to discuss design ideas and fill out a design matrix.
- Mara Van Dyke
 - Look into additional devices and strategies for hand immobilization and continue supplementary background research on the procedure.
 - Brainstorm 1-2 preliminary design ideas, discuss them with the team, and select a final design using a design matrix.
 - Research applicable standards and existing patents.
 - Revise PDS based on feedback.
- Tess Brazee
 - Continue research on current designs and where they are in need of improvement.
 - Revise PDS as needed
 - Brainstorm design ideas to collaborate and create 3 possible designs for the design matrix
- Sam Anderson
 - Continue to edit the PDS and revise it as needed

- Conduct more research about the FDA standards regarding this type of medical device and how existing products confronted these standards
- Start thinking about new ideas for the product design
- Work on the next progress report
- Ben Pytlik
 - Begin brainstorming design ideas for the device
 - Continue research into standards, materials, and current designs regarding the device
 - Further revise PDS, adding necessary changes
- Miti Patel
 - Edit and revise the PDS as more research is completed
 - Continue research on designs and materials that best fit our design requirements & brainstorm ideas for our device
 - Work on progress report #3

Timeline

Task	Aug.	Sept.					Oct.				Nov.					Dec.
	30	6	13	20	27	4	11	18	25	1	8	16	22	29	6	
Project R&D																
Empathize	X	X	X													
Background...																
Prototyping																
Testings																
Deliverables																
Progress Reports			X													
Prelim presentation																
Final Poster																
Meetings																
Client		X														
Advisor	X															
Website																
Update	X	X	X													

Filled boxes = projected timeline

X = task was worked on or completed

Detailed accomplishments

Previous week's goals and accomplishments

- Anna Wood
 - Completed research on relevant standards related to the design which can be found in the standards and specifications section of the PDS.
 - Looked into customer/patient demographics.
 - Helped the group to assign sections of the PDS and sent reminders/guidance throughout the week.

- Mara Van Dyke
 - Completed performance requirements, safety, and accuracy and reliability sections of the PDS.
 - Additional background research on LDRT and osteoarthritis, focusing on procedural guidelines and hand sizes and weights.
 - Looked into some existing hand immobilization strategies.
- Tessa Brazee
 - Completed PDS sections: operating environment, ergonomics, and size.
 - Researched LDRT processes and operations, osteoarthritis treatment styles, and the effects of osteoarthritis.
 - Created a new communication with client
- Sam Anderson
 - Completed assigned sections of the PDS
 - Reviewed the slideshow provided by the client and rewatched some of our initial client meeting
 - Conducted research on the different kinds of materials that might be used in our design and are safe for radiation contact as well as how other companies might have created a similar device
- Ben Pytlik
 - Finished assigned sections of the PDS
 - Completed research on osteoarthritis as well as standards for 3D printing and how it is affected by radiation therapy
 - Researched low-dose radiation therapy to better understand the procedure
- Miti Patel
 - Researched LDRT and other competitors that are used currently
 - Completed assigned sections of the PDS
 - Reviewed client presentation as well as other sources to understand the type of product requested by the client

Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Anna Wood	9/13/26	Conducted research on standards and specifications for the project and completed my assigned portion of the PDS. Also researched attenuation and dosage effects of radiation accessories.	3	3	4.5
Mara Van Dyke	9/17/26	Background research on LDRT and current devices. Completed PDS sections.	3	3	5
Tessa Brazee	9/17/26	Researched many different technologies that are used for LDRT and the logistics of this project. Completed PDS sections and communicated with client.	3	3	5
Sam Anderson	9/14/26	Conducted research on the different kinds of materials that might be used in our design and are safe for radiation contact, completed assigned PDS sections	2.5	2.5	4
Ben Pytlik	9/17/26	Completed PDS sections, researched standards and low-dose radiation therapy	2	2	4

Miti Patel	9/17/26	Completed PDS sections, researched competitors, reviewed client presentation	2.5	2.5	4
------------	---------	--	-----	-----	---