PROJECT FOUR: MILESTONE 2 – COVER PAGE

Team Number: Thurs-18

Please list full names and MacID's of all *present* Team Members.

Full Name:	MacID:
Vaisnavi Shanthamoorthy	shanthav
Jianhao Wei	weij50
Sarah Youssef	yousss6
Chengyao Liu	liuc169

MILESTONE 2.1 – CLIENT NOTES

Team Number: Thurs-18

You should have already completed this task individually prior to Design Studio/Lab B for Week 8.

1. Compile your team's notes from the client Q&A visit.

Client Visit #2:

- likes working with very big canvases (needs to be quite mobile in order to work on these)
- flares cause heightened sensitivities
- easier to grip larger brushes (wide grips of any kind are easier)
- struggles with the grip on smaller brushes
- can bear about 5 to 10 pounds
- believes was given a wrong instruction to stop weight bearing
- large flat objects easiest to grip
- stairs are sometimes hard
- pliers could be good

- Current assistive device aiding with the client's grip
  - What aspect does and doesn't work?
    - Grabbing device was made of a lot of plastic components & then her children turned it into a weapon, so she didn't use it anymore
      - Devices that she uses her kids also have access to, so it is important to ensure it is not easily breakable
    - lymphedema garment is not made holistically
      - It is difficult for her to wear it in all situations as it does not consider her other conditions.
      - It is important to note that we should take this into account to essentially provide the client with a device that is not solely specified towards targeting one condition but is also not aiding the client in a manner where this device is creating further complications in terms of another one of her conditions

What size canvas do you prefer?

- Prefer giant canvases (would need to increase mobility in order to work around the large canvas)
- Also works with smaller canvases likes working with square canvases
- If working with smaller

Only uses left hand to support right hand when painting, cannot paint with left hand at all

- Focus on relieving the pain from her right side so she does not need to bear it with her left

Allergies/sensitivities to certain fabrics/materials

- Fibromyalgia (when it is active) what is against her skin feels comfortable
  - Soft and seamless is ideal for when it is active

What kinds of things that are easier to grip?

- Certain brushes with wide grip → helps it to be easier to use
- Working with brushes with fine tip but wider handle

Where does pain rooted from?

- When fibromyalgia flares and feels like fire and predominantly in upper torso and arms
- Also is where lymphedema from vasectomy
    - With everything Alanna has mentioned, in order to provide a solution that accounts for her fibromyalgia flares, we could potentially create a device that has larger areas of contact with skin over smaller points of contact

Height: 5 foot one and a half

Large flat objects are better (paintbrushes)

- Since they allow her to have a better grip due to the wideness of the surface available

Knowing when to stop

- Constant learning process
- When Alanna mentioned this, it really showed to us how much of a fighter she is, she has overcome so many roadblocks and we are hoping to provide her with a device that will allow her to be able to continue to take part in her daily activities in a comfortable manner

Lives in a three-story home

- Stairs are hard at times, rails on one side, utilizes cane

Bears weight on stool to create stability

She is right handed, which small hand and small finger

She likes large flat brushes rather than round brushes

She is not allergic to fibre

She can't drive car, because it makes her very painful

She rather like round-tip handles

MILESTONE 2.2 – RESEARCH ASSIGNMENT

Team Number: Thurs-18

You should have already completed this task individually prior to Design Studio/Lab B for week 8.

1. Copy-and-paste each team member's research assignment on the following pages (1 assignment per page)
   → Be sure to indicate each team member's Name and MacID

See individual worksheet for assignment specification.

We are asking that you submit your work on both the team and individual worksheets. It does seem redundant, but there are valid reasons for this:

1. Each team member needs to submit their research assignment with the **Milestone Two Individual Worksheets** document so that it can be ***graded***
2. Compiling your individual work into this **Milestone Two Team Worksheets** document allows you to readily access your team member's work
   a. This will be especially helpful when completing the rest of the milestone

Team Number: Thurs-18

Name: Sarah Youssef	MacID: yousss6

Include your research assignment below.

Research Question: *How do people with compromised upper-body mobility maximize movement in the compromised areas?*

Answer:

There are many skills and art forms that have been barred to people living with disabilities due to the skill required to make art and an environment in which necessary accommodations have not been given. Sculpting especially is an art form that is incredibly difficult, due to the strength and fine motor ability required to effectively be able to make a sculpture. In recent years, however, some accommodations have been made for people who may not have the strength and fine motor skills required be able to sculpt. Many of these adaptations include modified tools that aid with the movements and strength in sculpting, like the modified carving tool CanAssist modified for Alistair Green [1]. Engineers at CanAssist were able to modify the electric chisel that was aiding Green in his sculptures as Green was struggling with the circular grip and the overheating metal base of the tool [1]. To solve these issues, mechanical engineering student Rick Clark designed a square aluminum tube that could detach and reattach from the electric chisel, with a curved handle that insured Green's hand would not slip [1]. This design was proven to be incredibly effective for Green, as the handle was able to keep his hand from slipping and protected him from the overheating handle [1]. Alanna, the client of this project, could greatly benefit from an added handle design like this, that allows her to have a grip she can hold on to, as smaller tools and paintbrushes for her are difficult. Alanna even mentioned looking for a grip she could add to her tools, but unfortunately could not find a good one, so designing a custom grip, with the wide, flat handle that she prefers and can be added to any tool she would want to use, has potential to be a very simple but effective solution.

Another possible solution is one that would give Alanna the ability to grip objects by improving her fine motor abilities. An example of an effective device that increased mobility enough for efficient fine motor abilities was the pneumatically driven prehension orthosis by Moromugi et al. [2]. The device is a mechanical glove that the client wears and it uses a series of linkages and muscle sensor input in order for the device to aid the thumb and first three fingers in pinching and grabbing motions [2]. The device was proven to be effective in aiding craniocervical instability (CCI) in various pinching, holding, and grabbing motions [2]. This device or something similar has a strong potential to be incredibly useful for the current client, as pinching and grabbing motions are something she struggles with due to her conditions. It could be very useful in her art, with the motions required of holding small brushes and tools being aided by a mechanical glove that would bear some of the load and alleviate the pain that she associates with these motions. A mechanical glove would also be very helpful in her everyday life, aiding in her cooking and parenting, which is something she wishes she could do more of.

References

[1] "Modified Carving Tool", https://www.canassist.ca, 2021. [Online]. Available: https://www.canassist.ca/EN/main/programs/technologies-and-devices/test-1/modified-carving-tool.html. [Accessed: 10- Mar- 2021].

[2] S. Moromugi, T. Tanaka, T. Higashi, M. Feng and T. Ishimatsu, "Pneumatically Driven Prehension Orthosis with Force Control Function", *Journal of Robotics and Mechatronics*, vol. 25, no. 6, pp. 973-982, 2013. Available: 10.20965/jrm.2013.p0973 [Accessed 10 March 2021].

Team Number: Thurs-18

Name: Vaisnavi Shanthamoorthy	MacID: shanthav

Include your research assignment below.

Research Question: *What are some current devices available that can assist individuals to cope with fibromyalgia?*

Answer to your Question:

Fibromyalgia is a disorder characterized by widespread musculoskeletal pain accompanied by fatigue, sleep, memory and mood issues [1]. Researchers demonstrate that fibromyalgia amplifies painful sensations by affecting the way the brain and spinal cord process painful and non-painful signals [1]. The principal symptoms of fibromyalgia include widespread pain, fatigue, and cognitive difficulties [1].

Figure 1: Tender Points

Source: Adapted from [2]

As the pain caused by fibromyalgia varies in both its location and intensity, it is imperative that the technologies available are most effective on an individual basis [3]. Figure 1 showcases the common tender points where several individuals with fibromyalgia feel pain when pressed [2]. Some common technologies to consider include the following: anti-vibration seats and gloves, chairs with head support, forearm supports, speech recognition software, and writing aids [3]. Aids such as walkers or wheelchairs have also been available to aid individuals who experience decreased stamina and fatigue. In addition, individuals suffering from fibromyalgia often deal with anxiety and increasing levels of stress, which can heavily impact their performance at work or in school [3]. Some helpful technologies for managing these symptoms include the following: apps (such as Stop, Breathe, Think), fitness trackers, simulated skylights, and windows, and more [3].

As mentioned in the client visit, Alanna states that holding smaller objects such as her more precise paintbrushes are harder to grip, and that she prefers something with a wider surface for an easier grip. When researching the current devices available to potentially provide a solution

for this roadblock, the Grip-Aid was an option that minimized the client's issues. The Grip-Aid is designed to ease the pain and difficulty of holding smaller objects such as eating utensils, or writing tools, by providing a built-up grip for a greater graspable area [4]. To use the Grip-Aid, you simply squeeze the side to make the opening larger, insert the object of your choice into the Grip Aid, grasp however it is comfortable, and begin use [4]. With its compact size, it is deemed as a highly portable device, which will be an incredible benefit for the client to have. The one challenge is the inability of the Grip-Aid to securely hold all objects equally because of the variance in the size of the objects used [4]. This is something we could potentially adapt to any size tool the client wishes to use.

Another available device is the Avacen 100 Class II medical device which provides relief throughout the entire body through an Avacen treatment method. This device is non-invasive as it safely infuses heat into the circulatory system to relax muscles and increase microcirculation in the body [5]. A study testing the efficiency of Avacen 100 consisting of 22 people who had fibromyalgia revealed that there was a reduction of widespread pain of over 40% and in the average tender touch points from 15% to 9% [5]. Incorporating a heat infusion device to relax the body's muscles while the client takes part in her daily activities could potentially play a part in our device. All in all, these findings will aid in developing a device that offers a solution to prioritizing pain minimization for the client through a comfortable, adaptable, and portable device. As a team, we hope to use these findings to produce a potential solution while taking into account the successful and unsuccessful aids present in society today.

References:

[1] "Fibromyalgia-Symptoms and causes - Mayo Clinic." https://www.mayoclinic.org/diseases-conditions/fibromyalgia/symptoms-causes/syc-20354780 (accessed Mar. 10, 2021).

[2] "Fibromyalgia Pictures: Flare Ups, Rash, Trigger Points, and More." https://www.webmd.com/fibromyalgia/ss/slideshow-fibromyalgia-overview (accessed Mar. 10, 2021).

[3] "Common Assistive Technologies - Fibromyalgia - LibGuides at University of Illinois at Urbana-Champaign." https://guides.library.illinois.edu/c.php?g=1019918&p=7388256 (accessed Mar. 10, 2021).

[4] "Get a Grip on Your Hand Mobility – ND Assistive." https://ndassistive.org/blog/get-a-grip-on-your-hand-mobility/ (accessed Mar. 10, 2021).

[5] "Avacen receives Health Canada nod for fibromyalgia pain relief device | Medical Design and Outsourcing." https://www.medicaldesignandoutsourcing.com/avacen-health-canada-nod-fibromyalgia-pain-relief-device/ (accessed Mar. 10, 2021).

Team Number: Thurs-18

Name: Jianhao Wei	MacID: weij50

Research Question:

What is Autoimmune Disease? How it impacts a person's life? And what can we do to help?

What is your answer?

An Autoimmune Disease is a condition that your immune system mistakenly attacks your body. Normally, your immune system will identity the foreign cells such as bacteria. But if a person has autoimmune disease, the immune system will recognize your own cell as foreign cell, making it to kill your own cells and cause abnormal conditions. Until now, doctor still don't know what exactly cause the autoimmune disease. Some people are more easily get an autoimmune disease than others. The symptoms associated with autoimmune disease include fatigue, achy muscles, swelling and redness, fever, numbness and tingling of hands an feet and skin rashes. Autoimmune disease can't be completely treated, but certain treatment methods can bring down the overactive immune responses and thus reduce the level of inflammation and pains. There are many different type of autoimmune diseases, commons one include type 1 diabetes, inflammatory bowel disease, Addison's disease, Psoriasis arthritis, and etc.[1]

When your disease is hard to name and doesn't have visible symptoms, it's hard for others to understand you are sick. The majority of people with autoimmune disease lives in this way everyday. This is particularly true for people who have lupus or multiple sclerosis, where the condition is chronic but achieve a specific diagnosis may take a long time. In a research analysing how people live with autoimmune illnesses, researchers found that doctor often use the word "autoimmune" in addition to a specific diagnosis, like Celiac, to talk about their health. The reason doctors are doing this is because it can be easier to provide continuity, even when there was a change in their specific diagnosis. [2]

The true cause of autoimmune disease is not yet to be discovered and still being an ongoing research topic. The treatment of autoimmune disease depend on the condition but most autoimmune disease are treated with medications that suppress or alter the immune system hoping to dampen it down enough to quiet the disease but not so much that side develop. Because the true cause of autoimmune disease is not yet to be known, it is hard to find a exact treating method to fight the disease. Human's immune system is very complex and sometimes certain method may not work on a specific patient. These are the challenges when dealing with autoimmune disease. [3]

To help the patient living better, here are some tips to help the patient:

1. **Eating healthy**. Make sure to include fruit, vegetables, grains, milk other than meats in patient's diet.
2. **Get regular physical activity everyday, but not overdo it.** Do some gentle physical activities such as tai chi or yoga which works well with muscle or joint pains.

3. **Get enough rest.** Rest allow your body to repair itself. If someone don't get enough sleep, the stress level and symptom will get worse. Most people sleep 7 to 9 hours to feel comfortable.
4. **Reduce stress.** Stress can trigger symptoms to flare up with some autoimmune disease. So find a way to reduce the stress-factor in your life. [4]

Reference:

[1] Stephanie Watson, "Autoimmune Diseases: Types, Symptoms, Causes, and More," Healthline, 26 March, 2019. [Online]. Available: https://www.healthline.com/health/autoimmune-disorders#treatment [Accessed: Mar. 15, 2021]

[2] "How autoimmune diseases impact patient experience," Health Europa, 25 March, 2020. [Online]. Available: https://www.healtheuropa.eu/how-autoimmune-diseases-impact-patient-experience/98882/ [Accessed: Mar. 15, 2021]

[3] "What's the deal with autoimmune disease?", Havard Health Publishing, Havard Medical School, May, 2018. [Online] Available: https://www.health.harvard.edu/diseases-and-conditions/whats-the-deal-with-autoimmune-disease [Accessed: Mar. 15,2021]

[4] "Autoimmune diseases", Office on Women's Health, U.S. Department of Health and Huamn Services. [Online] Available: https://www.womenshealth.gov/a-z-topics/autoimmune-diseases [Accessed: Mar. 15, 2021]

Team Number: Thurs-18

Name: Chengyao Liu	MacID: liuc169

Search question:

How the other artists overcoming physical limitation in their life or work?

Answers:

During the last 25 years of Pierre-Auguste Renoir (1841-1919), he suffered from severe rheumatism, which restricted his work and life. He believes that physical exercise can maintain good condition and maintain mobility, but walking does not provide the flexibility he needs as an artist. He doesn't believe in the benefits of walking, because walking only makes certain muscles work. He believes in ball sports more and starts juggling 10 minutes before going to the studio every morning. He also adjusted his painting method to adapt to his progressive deformity and inability to hold things. When it is difficult for him to hold the palette in his hand, he first balances it on his knees and the edge of the easel. Later, he asked to fix it, like a revolving table on a wheelchair armrest. [1]

Henry Matisse became a wheelchair user after undergoing cancer surgery. He did not depress him who was incapacitated. Matisse feels that as a wheelchair user, this period has allowed him to rethink his priorities and allow him to do what he wants to say freely. Matisse adjusted his artistic methods to fit his life in a wheelchair. He began to make art with colored paper. Matisse would cut out these shapes and then instruct his assistant to stick the picture on a large piece of paper on the wall. Matisse also used chalk to outline the initial pattern of the painting on the end of a stick. When talking about his works, Matisse mentioned that although his mobility is limited, he can walk in the garden through his art works. Matisse could not travel like before; he was able to experience the beauty around him through the art he created by himself. [2]

After a French artist JC Sheitan Tenet lost his right arm, he tried painting and tattooing with his left arm, but it was not easy. Tenet met the artist Gonzale at the tattoo convention. They discussed how Tenet used his right arm to get a tattoo. Gonzal installed the type of tattoo machine that Tenet was familiar with on an old prosthesis. Therefore, a new prosthesis was born. [3] **Gonzal said that he installed a rotating machine on the base of Sheitan Tenet's prosthesis. This machine can rotate 360 degrees with minimal vibration to ensure comfortable wearing. The tattoo gun is connected to the generator, but the cable connecting the two devices is long enough so that Sheitan Tenet can move around without restraint.** [4]

JC Sheitan Tenet*

All in all, we found that there are three ways for people with physical disabilities to balance life and work: sports, installation of auxiliary work equipment, and change the form of artistic creation. Therefore, we should look for solutions or give customers suggestions from these aspects.

References:

[1] **"Artists overcoming disabilities", Making A Mark, 2013. [Online]. Available: https://makingamark.blogspot.com/2013/02/artists-overcoming-disabilities.html [March 10th 2021]**

[2] **"5 World-Famous Artists That Had Disabilities", PASSIONATE PEOPLE. [Online]. Available: https://www.passionatepeople.invacare.eu.com/5-world-famous-artists-disabilities/ [March 10th 2021]**

[3] **"French Tattoo Artist Gets World's 1st Prosthetic Arm That Doubles as a Tattoo Machine", abcNEWS, Avianne Tan, 15 June 2016. [Online]. Available: https://abcnews.go.com/International/french-tattoo-artist-worlds-1st-prosthetic-arm-doubles/story?id=39844337 [March 16th 2021]**

[4] "JC SHEITAN TENET AND HIS PROSTHETIC TATTOO MACHINE ARM", Ripley's, JUNE 21, 2016. [Online]. Available: https://www.ripleys.com/weird-news/jc-sheitan-tenet/ [March 16th 2021]

*If you are in a team of 5, please copy and paste the above on a new page.

MILESTONE 2.3 – REFINED PROBLEM STATEMENT

Team Number: Thurs-18

1. Write your initial problem statement below. This is what you have submitted for Milestone 1.2.

Design a device that focuses on allowing Alanna to continue to take part in her daily activities whilst effectively managing any form of pain that she encounters as she is challenged with fine motor difficulties and unpredictable periods of pain.

2. Outline the Who, Where, Why, and What elements of your problem statement. Then write the refined problem statement below. Refer to the provided Refined Problem Statement rubric provided.

- Who? – Alanna, a client who sometimes struggles with creating her art as she deals with pain mostly concentrated in her arms, shoulder and torso
- Where? – In her home and art-studio, because this is the environment in which her daily activities take place.
- Why? – For Alanna to maximize the time and way she is able to create art, through a maximization of pain management
- What? – The functions that we are trying to accomplish is to manage the unpredictable periods of pain Alanna encounters as well as allowing Alanna to be able to continue to take part in the activities she loves (i.e. painting, sculpting, etc.)

Refined Problem Statement:

Design a non-restrictive and comfortable device for Alanna's hands, wrists and arms that effectively manages her pain so that she is able to continue working on her paintings and sculptures, within the comfort of her art studio whilst minimizing her unpredictable periods of pain.

MILESTONE 2.4 – FUNCTIONAL ANALYSIS

Team Number: Thurs-18

1. Identify your team's choice of design tool to perform Functional Analysis and the rationale behind choosing it. For examples of design tools, see lecture on Monday March 8th.

Choice: Morphological Chart

Rational:

A morphological chart would be the best option as a design tool in this stage of the design process, as it outlines a variety of potential solutions better than any of the other design tools. Having numerous potential solutions at this stage of the design process is extremely beneficial as it allows for a variety of ideas to be presented and tested, to see if they are effective enough to move onto later stages. It also minimizes the need to make substantial changes in later stages (through effective testing), which can be costly, inefficient and time consuming.

2. Include a copy of your team's functional analysis below.

Functions	**Means**				
Bears Load off Joint	Lever	Wheelchair	Using a custom brace	Rollers that conduct manual lymph drainage	Cane/Walker
Easy to Grip	Flat, wide handle	Gauntlet that wraps around hand	Flexible handle that fits around hand	Custom gripper that fits around objects	Gripper glove
Provides support for dominant arm	Moving arm rest/stand	Flexible arm sling	Portable dynamic connecting arm brace that mounts to any surface	Soft, heating wrist splint	Vest with arm support structure

Reminds Client to Take Breaks	Coded timer	Pressure sensor in body	Coded reminder app	Coded app to create a schedule to avoid overworking your body	Coded tracker app (in terms of fitness or activities)

MILESTONE 2.5 – CONCEPT EXPLORATION

Team Number: Thurs-18

Complete this worksheet during Design Studio/Lab B for Week 8.

1. Include multiple photos of your concept exploration, if needed
   → Include necessary annotations to help in the communication of your ideas
   → Include your Team Number, Name and MacID on *each* concept
2. Insert your photo(s) as a Picture (Insert > Picture > This Device)
3. **Do not include more than *two* concept photos per page**

Make sure to include photos of each team member's concept exploration

We are asking that you submit your work on both the team and individual worksheets. It does seem redundant, but there are valid reasons for this:

- Each team member needs to submit pictures of their concept with the **Milestone Two Individual Worksheets** document so that it can be ***graded***
- Compiling your individual work into this **Milestone Two Team Worksheets** document allows you to readily access your team member's work
  - This will be especially helpful when completing the next milestone

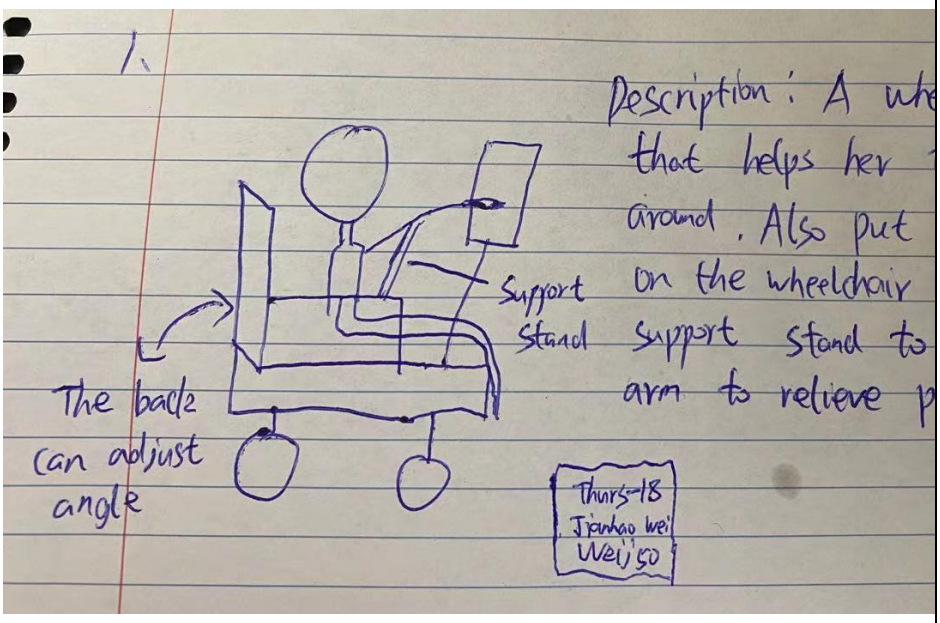
Team Number: Thurs-18

Concept 1

Name: Jianhao Wei	MacID: weij50

Insert screenshot(s) of your concept below.

Wheelchair

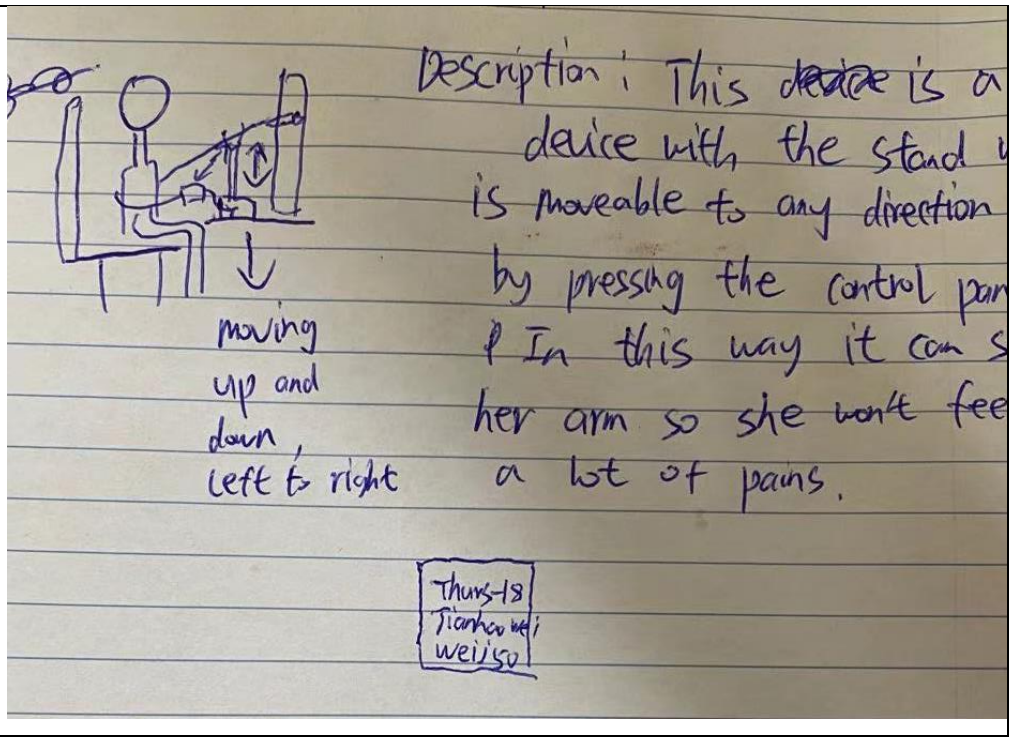


Concept 2

Name: Jianhao Wei	MacID: weij50

Insert screenshot(s) of your concept below.

Moving arm rest/stand


moving
up and
down,
left to right
Description: This device is a
device with the stand
is moveable to any direction
by pressing the control par
In this way it can s
her arm so she won't fee
a lot of pains.
Thursday
Tianhao Wei
weij50

Team Number:	THURS 18

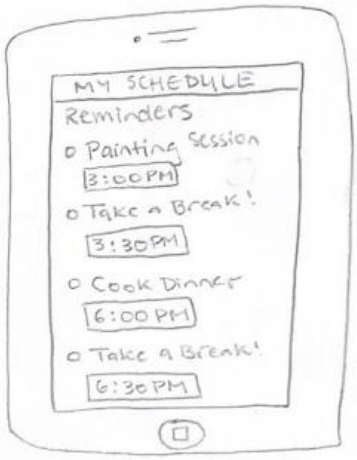
Concept 1

Name: Vaisnavi Shanthamoorthy	MacID: shanthav
*Insert screenshot(s) of your concept below. (*first sketch is on the next page)* *Means included: Coded reminder app, schedule app*	

STORYBOARD FOR OUR APP:

RemindME

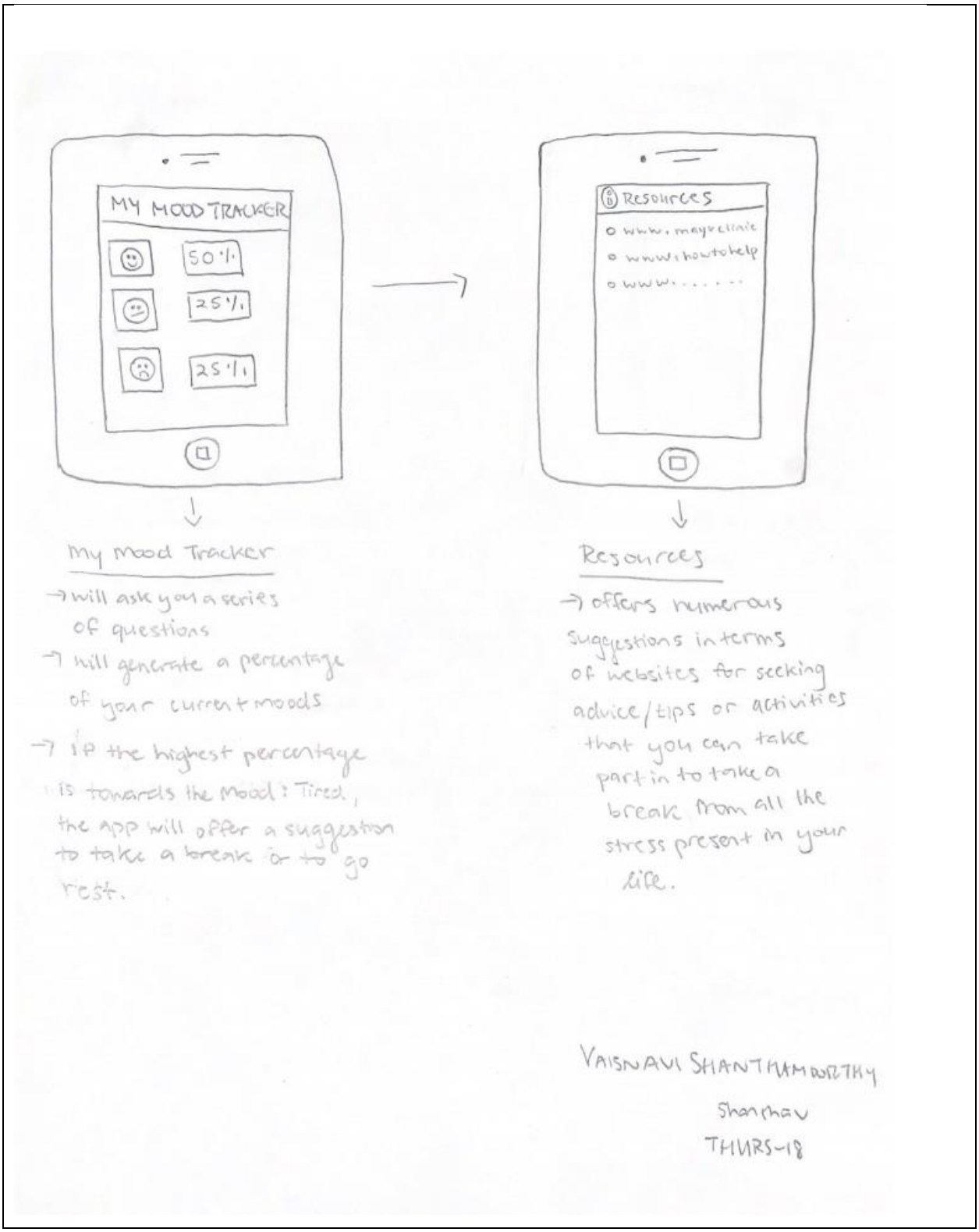
→ Software Approach



The RemindME App offers a variety of tools that consistently remind the user to take a healthy amount of breaks based on their specific tasks, mood, etc.

The "my schedule" portion allows the client to add their tasks for the day. The app will generate a schedule to add in breaks in between your tasks to ensure the client is not overworking their body.

Vaisnavi Shanthamoorthy
shanthav
THURS-18

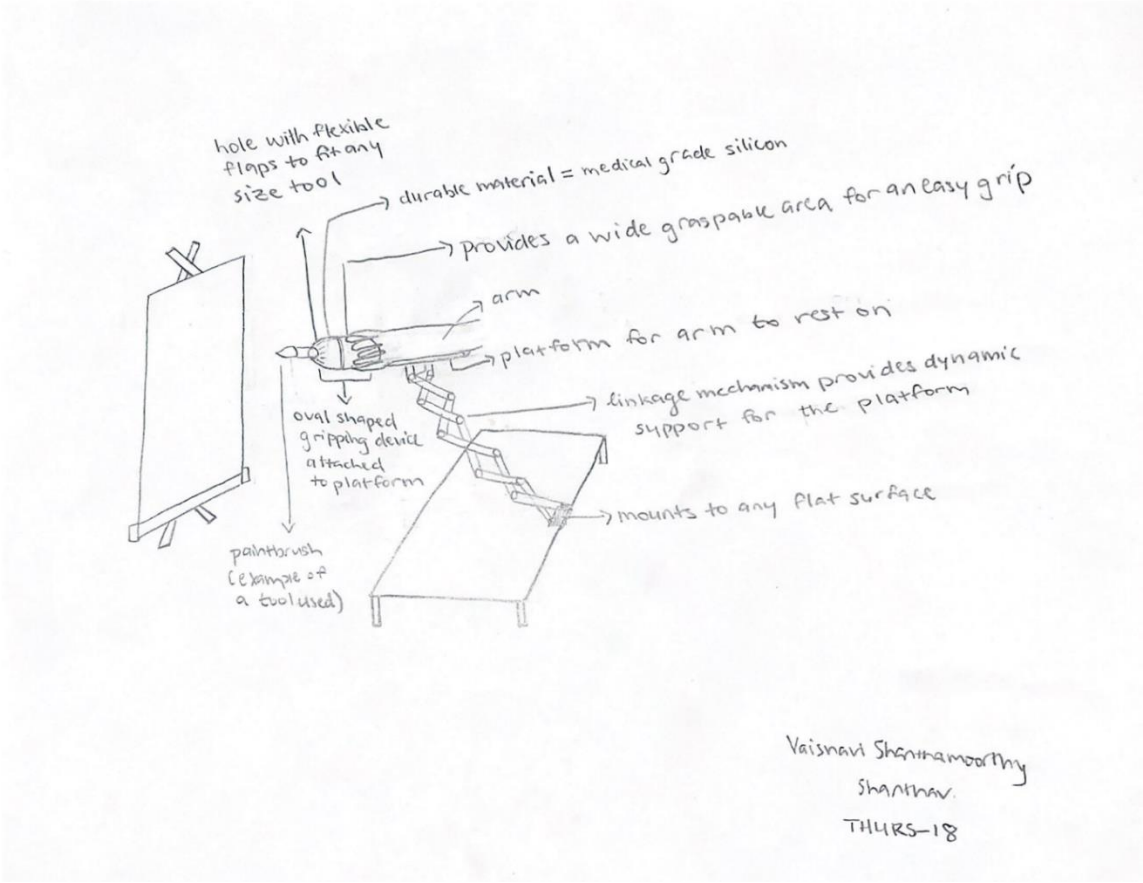

MY MOOD TRACKER
50%
25%
25%
Resources
www.mayoclinic
www.howtohelp
www.....
My Mood Tracker
→ will ask you a series of questions
→ will generate a percentage of your current moods
→ if the highest percentage is towards the mood: Tired, the app will offer a suggestion to take a break or to go rest.
Resources
→ offers numerous suggestions in terms of websites for seeking advice/tips or activities that you can take part in to take a break from all the stress present in your life.
VAISNAVI SHANTHAMOORTHY
Shanthav
THURS-18

Concept 2

Name: Vaisnavi Shanthamoorthy	MacID: shanthav

Insert screenshot(s) of your concept below.

Means included: Custom gripper that fits around objects with a *dynamic arm brace*

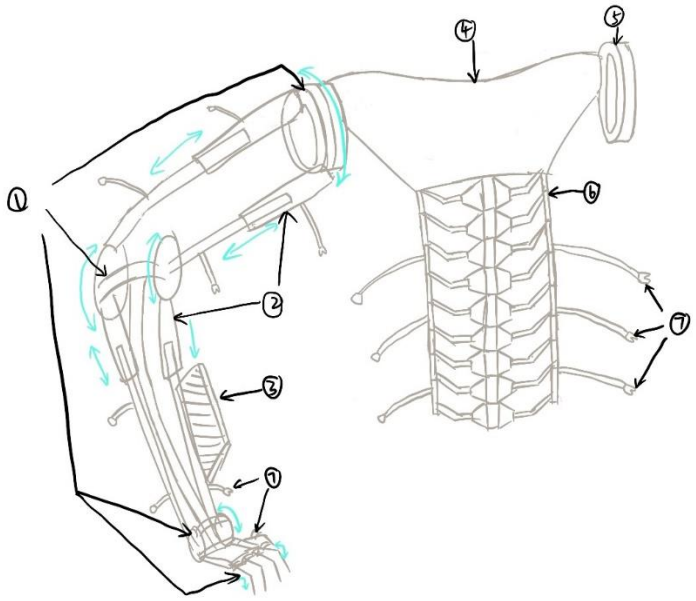


Team Number: THURS 18

Concept 1

Name: Chengyao Liu	MacID: liuc169

Moving assistant device



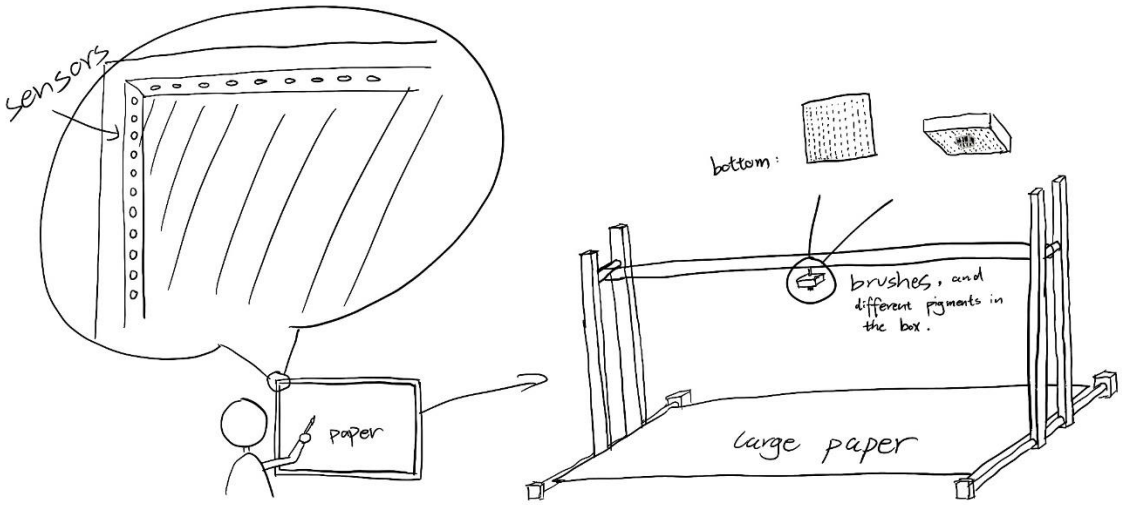
1. Bearing type transmission device is installed at the joint. When the joint rotates, the motor can provide assistance and reduce muscle pressure. When stability is required, such as drawing a straight line, the motors at the joints can provide resistance or lock directly to reduce tremor.
2. The hydraulic transmission is installed in these positions so that the joints can rotate freely when they move. The working theory is the same as (1).
3. A touch screen is installed on the forearm as a control center, which can adjust the degree of assistance or resistance, and also control which joints are locked.
4. A hard board is placed on the back for fixing.
5. Install a ring device at the left shoulder position, which is convenient to wear and can also fix the device.
6. A support device is installed on the back. It can conform to the shape of the back and at the same time relieve the pressure on the back muscles. If the customer needs to bend down to pick up something, it can help very well.
7. The buckle is used to fix the arms, waist and hands, but also for the convenience of wearing the device

Thurs-18 Chengyao Liu liuc169

Concept 2

Name: Chengyao Liu	MacID: liuc169

Alternative painting device



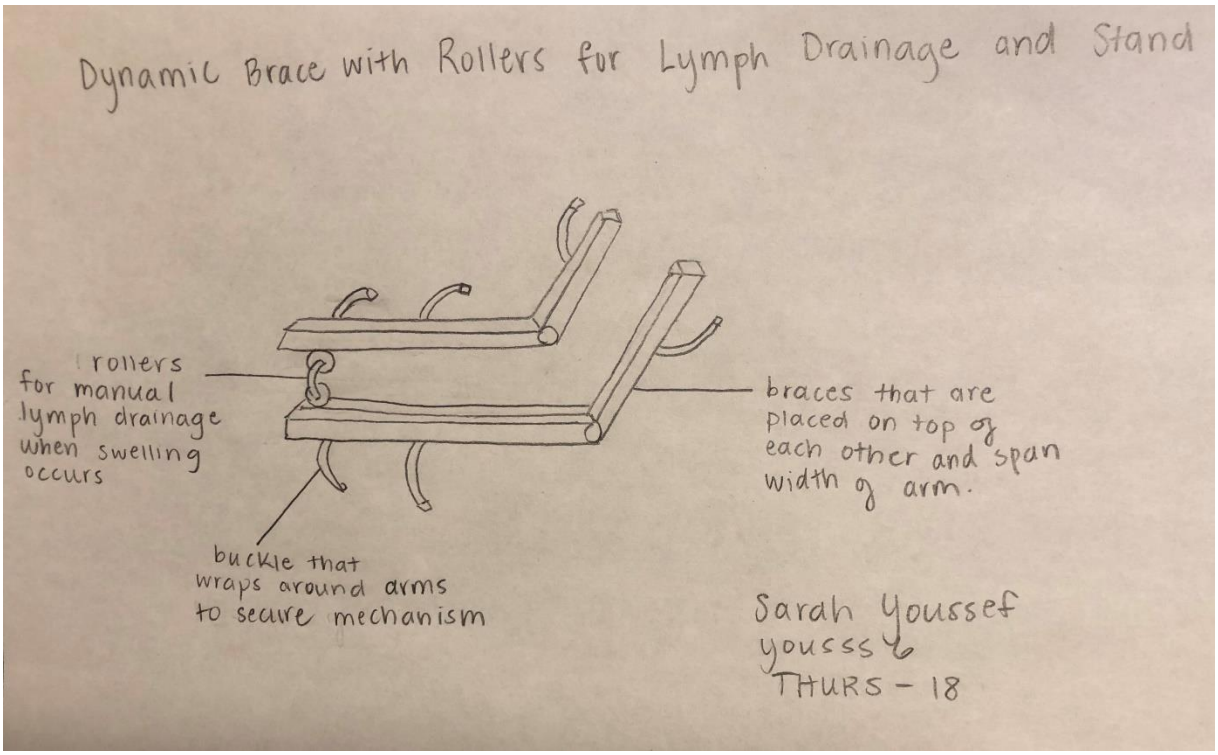
If the client needs to paint a large painting, it can be done by a machine instead. Install sensors around the standard drawing board to collect the position of the customer's pen on the paper. The data is transmitted to the machine, and the position data is used for two-dimensional drawing. At the same time, the machine is equipped with different pigments and can also choose different sizes of brushes.

Thurs-18 Chengyao Liu liuc169

Team Number:	THURS 18

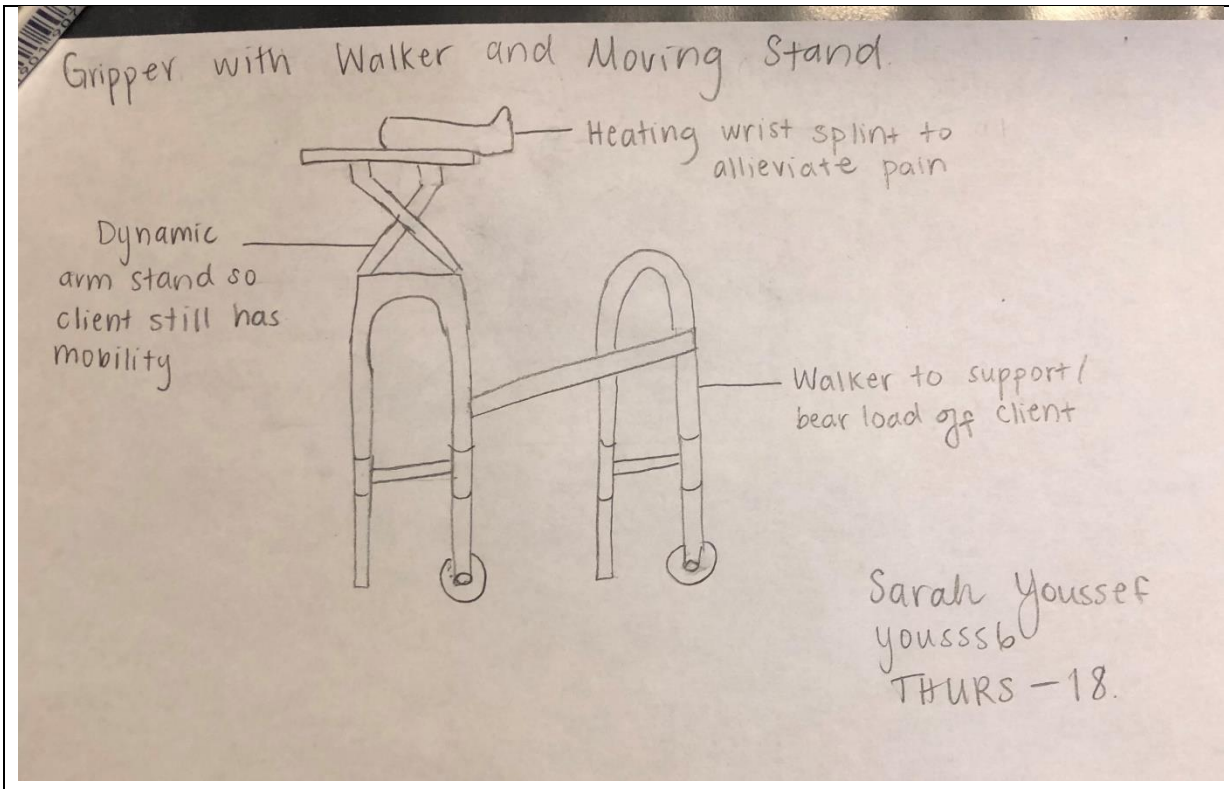
Concept 1

Name: Sarah Youssef	MacID: yousss6
Insert screenshot(s) of your concept below.	



Concept 2

Name: Sarah Youssef	MacID: yousss6
Insert screenshot(s) of your concept below.	


Gripper with Walker and Moving Stand
Heating wrist splint to alleviate pain
Dynamic arm stand so client still has mobility
Walker to support/ bear load of client
Sarah Youssef
youssf6
THURS – 18.