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## TheraShield, LLC a Company Designing Products to Increase Comfort and Maintain Skin Integrity

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TheraShield, LLC a Company Designing Products to Increase Comfort and Maintain Skin Integrity

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**Abstract**

TheraShield, LLC is a company producing products designed to increase comfort and maintain skin integrity while utilizing an unweighted harness system. TheraShield, LLC developed the product Harness Mates, which increase the surface area of contact points between the harness and skin reducing friction and shear, resulting in decreased risk of wounds and increased comfort for the client, as well as improved tolerance to time spent in the harness, allowing for an improved therapeutic response. Harness Mates come in 4 different sizes (long, wide, thick, narrow) to increase the versatility of usage. Harness Mates are designed to be impermeable, allowing to be washed and cleaned throughout usage. TheraShield, LLC is currently being used at all 3 locations of an outpatient neuro clinic called, The Recovery Project, located in southeast Michigan. TheraShield, LLC was created to design and develop products created to fill the need of protecting the largest organ on our body while increasing comfort for clients using harnesses.

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## **Introduction**

My capstone experience included the focus area of Product Design. The population I served consisted of but is not limited to SCI, TBI, Stroke, Parkinson's disease, and Cerebral Palsy at The Recovery Project (TRP), located in Livonia, MI. My capstone mentor, Charlie Parkhill, CEO and CFO of The Recovery Project has a large business background. Therefore, due to my focus area, it was the right choice for my mentor. Charlie was able to expand my understanding and knowledge in how to not only create a product and market it but also, how to start a company. The reason behind completing my capstone at The Recovery Project and having Charlie Parkhill has a special meaning for myself. I was previously a rehabilitation technician at The Recovery Project where Charlie Parkhill was the client I was trying to create this product for. Charlie Parkhill sustained an incomplete SCI at C4/5 due to an ocean wave accident. As a tech at, The Recovery Project, I was constantly working with Charlie Parkhill, using an unweighted harness system where we used towels and sheets to increase comfort and protection around the groin. The towels and sheets never sustained their placement or protected the skin. Therefore, sores were developed, and treatment designed to increase his functionality and independence were postponed. In the idea of this product, it was found there was a need. To complete my objectives and reach my goals, there were immense tasks I never realized I had to complete and would of not known if it wasn't for my mentor. Due to this, I was able to complete my 12 objectives and 2 goals. The aim of this capstone was to develop a product to improve comfort and maintain skin integrity when utilizing an unweighted harness in therapy sessions, and over the last 14 weeks, that has been completed.

## **Literature Review**

There is currently no product on the market that promotes skin comfort and protection that is customizable to individuals while in use, and able to return to its original state after use. That is where the need for a new product came into effect. Harness Mates use a contoured, open-cell memory foam that's used for skin protection in rehabilitation treatment sessions. The product has the ability to shape and fit to products without altering normal body mechanic functioning. Skin integrity is important for all

individuals, at all ages yet especially in spinal cord injury (SCI) patients as it has been stated that the decreased volume of muscles underlying the bony prominences in individuals with SCI increases vulnerability to pressure ulcers (Yalcin et al., 2013). Working in the rehabilitation field, it is important to always assess skin integrity before and after a treatment session. TheraShield is currently being used for SCI patients around body weight support (BWS) harnesses but has the ability to be used in many other situations. Since the design has been created and implemented in rehabilitative treatment sessions, the need to complete a Product Development Process is next to transition the product onto the market.

### **Tissue integrity**

The skin and soft tissues over bony prominences has been a subject of concern in patients with spinal cord injury (Yalcin et al., 2013). Pressure injury (PI) is a common yet serious health complication following SCI where up to 66% of individuals with SCI experience a PI in their lifetime (Flett et al., 2019). A PI is defined as an area of localized damage to the skin and underlying tissue mainly caused by pressure, or pressure combined with shear. Shear is a mechanical force created from a tangential load that causes the body to slide against the resistance between a contact surface and the skin (Bai et al., 2020). The importance of this new product not only protects bony prominences in SCI to decrease the development of PI, but it decreases the chances of shearing from its ability to form around the body part(s) needed on the patient. When a patient develops a PI, their therapy sessions whether it is physical therapy or occupational therapy, may have to pause due to the PI. Pressure injuries are associated with several significant physical, psychological, and social difficulties for individuals, a negatively affected quality of life (QOL) and increased mortality (Bai et al., 2020). If we can decrease the chances of developing a PI through the use of TheraShield, the likelihood of canceled therapy sessions will decrease, increasing strength and mobility in SCI patients, and increasing QOL.

### **Product Development Process**

The Product Development Process encompasses all the steps necessary to turn an initial idea into a final product (Sharma, 2019). According to Sharma, there are seven steps that must happen in order to produce a product. This process has evolved in recent years and is now commonly used by dividing each

step into six separate phases (Raeburn, 2022). The six stages of the Product Development Process are idea generation, product definition, prototyping, initial design, validation and testing, and commercialization (Raeburn, 2022). Completing a marketing strategy falls in the second step, product definition.

Marketing strategy is defined as, encompassing the “what” strategy decisions and actions and “how” strategy-making and realization processes concerning a firm’s desired goals over a future time-period, and the means through which it intends to achieve them by selecting target markets and customers, identifying required value propositions, and designing and enacting integrated marketing programs to develop, deliver and communicate the value offerings (Morgan et al., 2018). To have a successful marketing strategy, the five “Ps” of marketing need to be covered which are product, price, place, promotion, and people (Kristina, 2021). When deciding what platforms to use, it is important to consider the location of customers (Kristina, 2021). Marketing strategies are what is going to get your product on the map. Therefore, choosing the right one is important. Social Media Marketing Strategy is an organization integrated pattern of activities that, based on a careful assessment of customers’ motivations for brand-related social media use and the undertaking of deliberate engagement initiatives, transform social media connectedness (networks) and interactions (influences) into valuable strategic means to achieve desirable marketing outcomes (Li et al., 2020).

### **Market for TheraShield, LLC**

As discussed in the introduction, there are no products out like Harness Mates. There are companies that provide products similar to TheraShield, LLC product that increase skin integrity such as open foam seat cushions and mattresses sold by Restorative Therapies, Litegait, Binsons, Quality Home Medical, National Seating & Mobility, and Drive Medical. Pressure redistributing foam mattresses (PRFM) utilize viscoelastic, polyurethane foam material (Bai et al., 2020). This foam material is what allows the ability for pressure redistribution as it conforms to the individuals body and assumes its original state once the body has moved. Open foam can be called memory foam, viscoelastic foam, or polyurethane foam as they all have the same open foam component that allows for the breathability and movement when on or using. Understanding this information expresses the importance and need for

Harness Mates. Due to the ability of easy replication from an outside source, understanding patent information and licensing is needed.

**Licensing** is the process of a licensor giving the permission to a licensee to obtain the rights to sell your product (2020). The licensee is required to pay the licensor a royalty fee, payments that are provided to a licensor by a licensee in exchange for the right to operate under your idea. (Zipkin, 2014).

**Patents** give protection to the intervention. The 3 different types of patents are utility, design, and plant. Utility patents protect the way an article is used and works whereas a design patent protects the way an article looks (USPTO., 2020). The negative outlook on patents are that they can take a long time to receive after filing, and the expensive. Murray gives information on how to receive a patent quickly, applying for the Accelerated Examination program. This program is completed within 1 year after filing and has a 71% rate of issue (Murray., 2010).

### **Gaps Analysis**

The gap for Harness Mates is the lack of knowledge in skin tissue and tissue integrity in individuals other than SCI patients. To gain a better understanding of the gap requires collaboration with individuals without SCI and the use of Harness Mates to get a larger understanding of the benefits that open foam has on individuals without SCI.

The concept the capstone student aimed to address was understanding Product Development Process. The capstone student will incorporate the marketing strategies as well as the patent to improve TheraShield, LLC vision and mission. To address this statement, the capstone student performed research surrounding the consistent theme of product development, marketing strategies, skin integrity, open foam, and product management. Ideally, the completed Product Development Process of TheraShield, LLC will significantly benefit individuals skin integrity when in rehabilitation session that will improve their QoL, as well as their comfort when participating in interventions involving BWS harnesses.



## **Needs Assessment**

The need for TheraShield, LLC to develop Harness Mates was long overdue. More than less clients were having comfort and skin integrity complaints when using unweighted harness systems. Through my time at three different outpatient neuro clinics, each clinic had their own way of protecting skin and increasing comfort when on these systems. These solutions ranged from using gel pads, towels, small foam sheets, and none fulfilled the job of comfort and protection. Since TheraShield, LLC has products that are so versatile, they can adapt to almost any machine or harness. If skin is not protected, there is a chance of developing a pressure sore. Depending on the type of pressure sore developed, it can take weeks to months to heal. This increasing the amount of caregiver support needed, which leads to a larger financial expense required, as well as postponed treatment that is evidenced based to increase function and independence. Since TheraShield, LLC has developed Harness Mates and they have been used at all of The Recovery Project locations, clients have had increased satisfactory performance on the LiteGait, RT600, and while wearing AFOs. TheraShield, LLC is now known and used by clients, physical therapists, occupational therapists, and rehab technicians. TheraShield, LLC product Harness Mates give relief to clients, and caregivers in protecting the largest organ on the body and increasing comfort while in a harness. Harness Mates allow therapists to continue their interventions using unweighted harnesses while receiving an improved therapeutic response from their clients.

## **Goals and Objectives Achieved**

The purpose of this capstone experience was to create and market a product to increase comfort and maintain skin integrity while on an unweighted harness system. To complete this purpose, I created goals and objectives to guide myself. My goals and objectives are listed below.

Long term goal 1: By the end of 14 weeks, the capstone student will have TheraShield fully marketed at all three Recovery Project locations in Michigan

- a. Discuss websites that therapists trust and commonly use to order their supplies from by

the end of week 1.

- b. Document clients using TheraShield via pictures and videos to show the difference of this product and other commonly used items such as towels, sheets, and pillows by the end of week 4.
- c. Hold a meeting with TRP employees to discuss opinions of TheraShield and any weaknesses/improvements that could be made by the end of week 6.
- d. Spend 2 full days at TRP Lansing and TRP Clinton Township to promote and demonstrate TheraShield on multiple different harnesses by the end of week 10.
- e. Create a location to keep, store, and identify TheraShields in each TRP location by the end of week 10.
- f. Create a marketing video at The Recovery Project Livonia location showing the variety of harnesses TheraShield is used on by the end of week 12.
- g. Finalize marketing video to be posted on The Recovery Projects social media account and clinic TVs by the end of week 14.

Long term goal 2: By the end of 14 weeks, the capstone student will have TheraShield in the process of being marketed at a key harness manufacturer.

- a) Complete Logo design of TheraShield by the end of week 1.
- b) Design multiple packaging options to allow TheraShield to be sold in a bundle as well as singular by the end of week 4.
- c) Create a website for TheraShield using pictures and videos from Long Term Goal #1, objective 2 by the end of week 8.
- d) Reach out to harness manufacturers and specific DME's via LinkedIn/Networking to set up phone, virtual or in-person meetings to market TheraShield by the end of week 10.
- e) Have a meeting in place with a harness manufacturer to talk about the process of marketing TheraShield on their website by the end of week 14.

Throughout my 14 weeks, I created weekly plans to follow my objectives ensuring the achievement of each objective. Below I discuss in detail how I achieved objective 1 c), 1 d), and 2 a).

### **Objective 1c**

Throughout my entire capstone experience, it was my obligation to make TheraShield, LLC the best it could be. It was extremely important to get feedback from the therapists using the product as well as the clients. An objective I set was to, “Hold a meeting with TRP employees to discuss options of TheraShield and any weaknesses/improvements that could be made by the end of week 6.” The first thing I did my first week in the clinic was ask therapists what wasn’t working with the product. Below are multiple concerns found from therapists and clients:

- a. Currently, it doesn’t always stay in place when in use, requires wraps to be placed around it in specific locations
- b. Additional sizes are needed because right now there are limitations in the locations it can be used at
- c. Having a product of it that can be placed in smaller areas such as around the feet or around the knee while blocking would be extremely helpful. Creating a foam to place in AFOs to increase the comfort when trialing in the beginning.
- d. Finding a foam that is more sustainable when in use multiple times due to this one coming apart or breaking after so many uses.

From these concerns, I decided the most important components were to allow the foam to stay in place while being protected. Multiple ideas were created but one idea was felt to be best suited for this product. I decided placing fabric around the foam would be the best choice for the products success rate. The fabric then required multiple components, it needed to be hypoallergenic, washable, and resistant to perspiration. Multiple fabrics were trialed before landing on the chosen fabric. Having the fabric around the foam allowed for the decrease rate in foam tears, and breakage. Next was to figure out how the product could be cleaned. I came up with a design that allowed the fabric to be taken off of the foam

when wanted to be washed in between clients. Next came allowing the product to stay in place while in use. I used Velcro before and knew it wasn't going to sustain as long as I wanted it to. Therefore, I decided to trial out snaps around the entire product edges. This then allowed the product to stay in the designed area of protection while in use. Multiple sizes were cut to allow for increased location placements. When finishing the final design of the product, it came to realization that the product needed a new name, due to the idea that, TheraShield was going to be the company name. After days of brainstorming, my mentor came up with "Harness Mates". Therefore, each product created was now known as Harness Mates created by the company, TheraShield, LLC.

### **Objective 1d**

Promoting TheraShield, LLC was at the utmost importance of my capstone experience. Branching out of the location I was implementing TheraShield, LLC at was a large factor in marketing the product. A way I was able to complete this was to complete my objective of, "Spend 2 full days at TRP Lansing and TRP Clinton Township to promote and demonstrate TheraShield on multiple different harnesses by the end of week 10." Promoting the product at the other clinics was important for marketing and to demonstrate the versatility of it as the other sites do not have the same equipment my capstone site does. While at the clinics, I first gave a 5-minute presentation on exactly what Harness Mates are and what it can be used on. I demonstrated the different sizes and expressed how it is currently being used in Livonia. I asked if there are currently any clients that are having discomfort or skin integrity issues while on any harness or equipment. Therapists started recommending multiple clients who would benefit from the usage of Harness Mates. I then discussed Harness Mates were going to be stored in their original packaging, in a TheraShield, LLC box. The box was going to be stored in a frequently seen area that is easily accessible area to all. While visiting the other clinics, I talked to multiple clients and caregivers who stated they have been waiting for a product like this to come out on the market due to the frequent need. Implementing and achieving this objective demonstrated the want and need from clinics to retrieve a product that TheraShield, LLC now creates.

### **Objective 2a**

A logo is what pulls consumers in. I wanted the logo to be simple, yet a large statement. I decided I wanted very basic color scheme but wanted the logo to be able to catch the eye. To create the logo, I found a graphic designing website, Fiver, and looked for a designer who created simple, yet complex logos. Once I found a designer, I expressed my want and vision, and he created 10 different logos. From the 10, I narrowed it down to one that was different, unique, yet simple. From there, the designer came up with my final logo design. I was then handed over all the rights to the design. The most important aspect of having a graphic designer create your logo is ensuring you are able to have the rights once completed therefore you are not obligated to give them anything at the end. My logo for TheraShield, LLC is now known around all Recovery Project clinics due to its sharp look and design. Once clients or therapists see the logo, they know exactly what it is, and what it does.

### **Outcomes**

Completing my objectives and goals allowed the fulfillment of TheraShield, LLC to produce a product that created comfort and maintains skin integrity while using an unweighted harness system. Allowing clients to have an improved therapeutic response during treatment increases their occupational performance in their daily tasks. TheraShield, LLC has grown and developed in many ways at The Recovery Project. Clients are now excited to complete treatment on the RT 600 and LiteGait, therapists have multiple options to increase comfort and maintain skin integrity and are relieved that there is finally a product like this in the field. TheraShield, LLC is located at all 3 Recovery Project clinics where they are being used on the daily. My site mentor not only will continue to assist the capstone student as more business opportunities come up but continues himself to use Harness Mates weekly. The Recovery Project has an upper hand in being able to provide a product that is specifically designed to increase comfort and maintains skin integrity.

### **Summary**

The lessons learned over this 14-week DCE while creating and implementing TheraShield, LLC were not easy and are the reason why TheraShield, LLC is where it is now. When implementing product

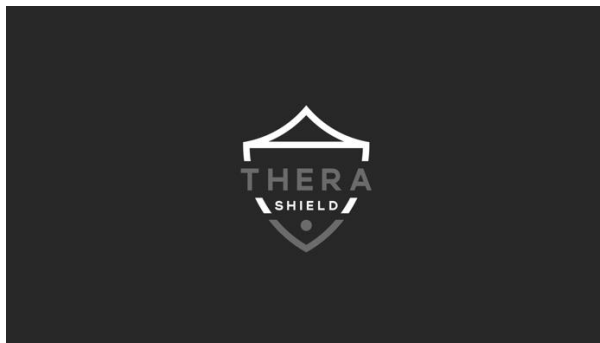
design, more than half of the work is focused on the business aspect. Having a mentor who was able to guide me in specific business applications such as creating an LLC and EIN, writing up an NDA, consent form, creating a yearly expense log, understanding the importance of insurance, and product liability are only pieces of the background that go into product design. It was found that the need for a product that TheraShield, LLC designed and developed was long overdue due to the subjective information gathered from clients, therapists, and caregivers. Ultimately, this experience highlighted the importance of fulfilling the product need of comfort and skin integrity for the neuro population.

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## Appendix

### Logo



### TheraShield Products & Packaging

TheraShield comes in a box with 2 long, 2 wide, 2 thick, and 2 narrow Harness Mates. TheraShield boxes can be customized to supply different amounts of Harness Mates depending on what the individual or company is looking for.





### TheraShield Placement on the LiteGait

TheraShield is currently being used on the LiteGait around the groin, ischial tuberosity, glenohumeral joint, and cervical area.



### TheraShield Placement on the RT600

TheraShield is currently being used on the RT600 around the groin, ischial tuberosity, glenohumeral joint, and cervical area.

