

Executive Summary for Interview Questions

With this research study, we conducted in-person interviews at the CU Boulder Rec Center. The interviewers were Hua-Pei Yen, Nick Bender, and Ryan Hoffman. Participants for this research interview consisted of two male students between the ages of 18-25 and one male non-student age 60. Some of the key data collected from this user research study includes participant's level of involvement in Muay Thai, their initial impressions of our product, and insight about how our product could help or hinder their training. From the results of this study, we learned some interesting and valuable information that could help us with our design in several ways. These are things such as cost barriers, range of motion issues, and added weight and balance stress. The findings recorded during these interviews are presented below along with other data pertinent to our research.

For the in-person interviews, our group travelled to the CU Boulder Rec Center on a Monday afternoon to meet with students taking a "Level I (Basics)" Muay Thai class. Following the script we presented in our Data Collection Plan, we were able to successfully interview three participants.

The first, whom we will call 'Harry', provided us with positive feedback about our product and his interest in using it to help train. When asked about how he feels about the data collection aspect of our product, Sam replied "I really like the idea of knowing how hard I get hit and where it hit me". We feel that this is an important part of our product's design and we now know it should be included in all future revisions, if any.

Our next participant, 'Ron', has only been practicing Muay Thai for about 14 months. He doesn't compete in tournaments currently, but he is considering it in the future. Ron told us that "I'm just a beginner but I guess it's kind of useful because, if you know where you get hit, probably you can work on how to protect those places." When asked if he thought there were any concerns about the product, Ron was primarily worried

about the ability to move around freely while wearing it. Specifically, Ron said “If it’s like chainmail armor then that’s probably not very useful”. This is an excellent point that we would be sure to address during our design process.

The last participant in our interview will go by the name, ‘Hagrid’. Hagrid was a very interesting subject because of the length of time he has been involved in Muay Thai and other martial arts. We believe this makes Hagrid’s insight incredibly valuable to our research. Hagrid told us that, if the product was comfortable, he would wear it to all his trainings but at the very least the important trainings like when he coaches the US Olympic team. Main concerns for Hagrid were price and durability. For him, durability meant, “wear and tear you know, am I going to have to replace it every month or is it something that’s going to last for a while.” This was a great point that he made and we feel that this is one aspect that cannot be compromised because, not only is it important for the material, but also for the technology.

Group Members:

Hua-Pei Yen

Nick Bender

Ryan Hoffman

Executive Summary for Contextual Inquiry

David chen: When I train I am normally get to train after working at a martial arts studio. Normally I change my gi top and that's about it. Maybe depending on what we are practicing I might change my pants too, sparring in a full heavy gi is difficult and gets in the way, but wearing that heavy gi is great when we practice some of the more traditional stuff where we might need to grab clothes or just for being formal. We're allowed to wear anything reasonable but it's more expected that you wear that full gi. The clothes you train in is actually really important, doing judo stuff in a workout shirt sucks, sparring in a full gi sucks, wearing the right clothes is so important when I train in so many different disciplines.

Marc prince: I train muay thai almost every day. I wear roughly the same thing to every session. I wear short shorts and a tight t-shirt. I never really wear anything else to train in. I don't really train in anything else besides muay thai anymore so it simplifies my clothing choice. I don't think my coach would like it if I showed up in a full gi and not in my normal training gear.

Nick contacted some old friends who he used to train with to get this information. Both of the people contacted have a decade or more of martial arts training experience. David has two black belts and Marc has three black belts. Both are exceptional martial artists and teachers. Marc and David are both about 30 and from the same area of New York.

Between the two of them it's clear that this format of device would be accepted as its based off of current training clothes. What is a little concerning is that marc is more of the customer we are aiming to sell to and he

has a trainer who might be able to do some, if not all, the work of the shirt we propose. Alternatively the coach might not trust or want to use the new technology. Moving forward, asking coaches about how they feel about the technology because the product is designed to be an evolution of what these fighters already wear. Convincing the coaches might be something that is more important to actually get our product into the market.

A new potential for the product might be more general motion tracking. Seeing how a fighter punches, kicks, and how they block. Allowing for deeper analysis of a fighter and aiding a coach to see what the eye can not.

Group Members:

Hua-Pei Yen

Nick Bender

Ryan Hoffman

Design Research Summary

Body Impact Response Detection Project

Project idea: Develop data collection protective gear for people involved in martial arts.

Motivating questions

- Who needs data about their Muay Thai training?

Fighters and coaches

- What devices do people currently use to assist in Muay Thai training?

Sometimes force plates - devices to quantify how hard a fighter can hit a bag

- What are some barriers to using data collection gear?

General acceptance, durability, ease of use, usefulness of the data. If the data doesn't really add any useful information or add insight to how a fighter is doing, there is no real point to using our device.

- When would this information be useful to the user and how can it help them?

This is really useful for users who want to empirically check their defense. More casual users might not get the same advantage as a more competitive user. Stiff suspension makes sense when a car is racing, not when it's going to the shops. This data could also help get a user from a novice level to a more competitive level faster through the extra data that is provided. Seeing where and how hard you are being hit can make a big difference.

Research methods

- In-person interviews with 3 Muay Thai students, recruited from the CU Rec Center. The interview covered participants' training habits and what types of devices (if any) they currently use to aid their training.

- Contextual inquiry with 2 martial artists to understand their training routine and how they might use a device like the one we propose to assist them.

Design recommendations

1. Durability of material and technology.

Although only one participant brought up the durability issue, we feel that it is a key attribute to the success of our product. Therefore, we should look for high-quality materials that are commonly used in the Muay Thai and martial arts industry to ensure a standard of durability that accommodates our product.

2. Comfort.

When asked about possible drawbacks to our product, all participants were concerned about how comfortable a device like ours will be. To this point, we need to have our device be no more restrictive than what the user is already comfortable with and should mimic the design of current training wear as much as possible.

3. Range of motion and weight.

Our participants all shared the same concerns about range of motion and weight of our device. Being that this device is meant to be worn during training sessions and rarely, if ever, used during competition, we understand the need to have this device not hinder the user in any way. We plan to use light-weight materials and have an even distribution of weight over the wearer's body to accomplish the intended goal.