



Unobtrusive Wearable

LIFT



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Domestic Violence

Domestic violence or Intimate Partner Violence is the leading cause of mortality amongst pregnant women in the United States

Not only does it affect the pregnant women involved, but the unborn child they are carrying with them.

DV can cause premature birth rates to increase, low birth weights and even miscarriage

Mission

Our goal is to develop an **unobtrusive wearable** product that will change the future for **survivors** of domestic violence with simple **data collecting sensors**

End the silence, Stop the violence

Sensors

Today's sensors can fit on the tip of your finger and can easily be hidden in plain sight

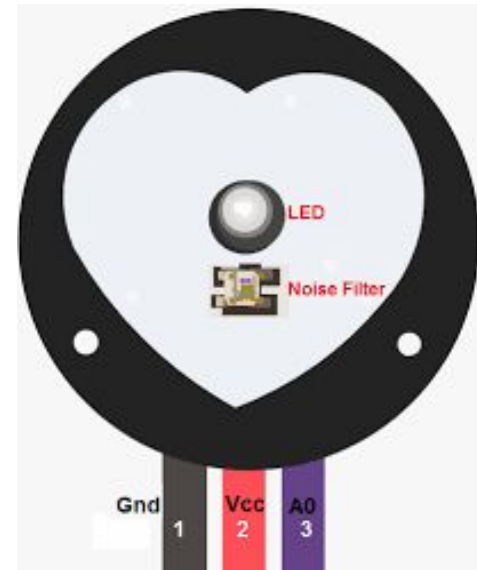
LED light is the main component of the sensor to conduct data research by measuring reflected light and can measure a range in information from

Heart Rate

Blood oxygen levels

Respiration rate

Other components would consist of an accelerometer and bluetooth connection



Ideation

The original premise was to place the device on the upper body where it could record data of domestic violence. The device sensor has to remain in constant contact with an artery via LED to collect the most crucial data.

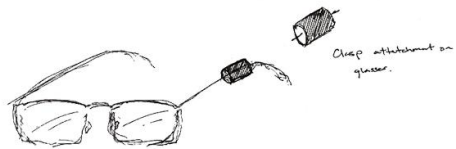
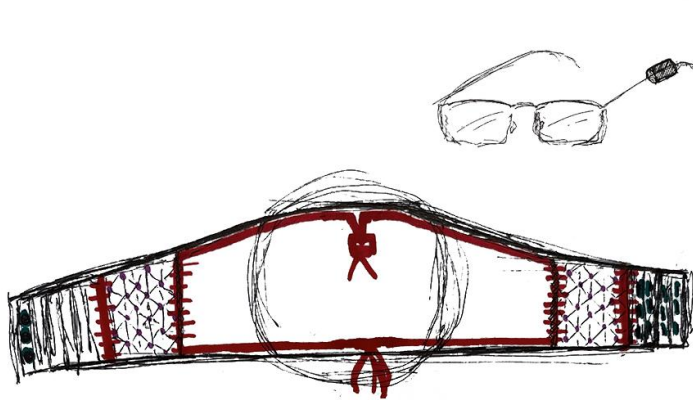




Consideration

Designing to solve a problem faced by pregnant women became my new goal. The baby bump weight affects most women during pregnancies. The baby bump weight causes pain and stress all throughout the woman's body. A simple bump support belt would emotionally support the user by providing a win in their day.

The sensor could be applied to the product wherever an artery intersected later as to keep comfort a main priority.



Device
Hidden under branding.

Soft material
that still holds tension.



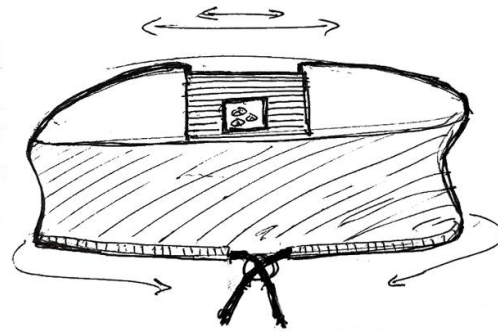
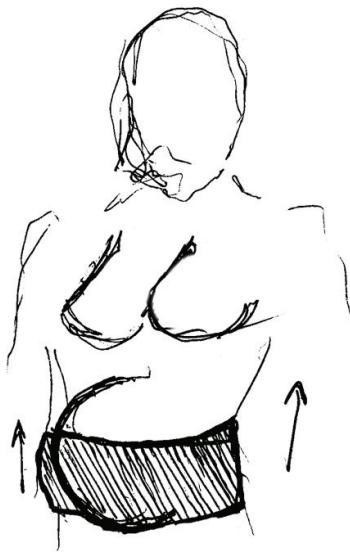
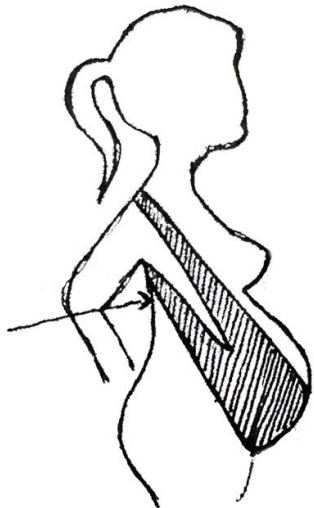
more secure band.

goes behind more securely to
support the bottom.

Scrunchy finish to fabric.

Elastic material that is adjustable
clip for length Δx

Velcro? too painful if not worn
correctly?



Support belt ideation

Market research

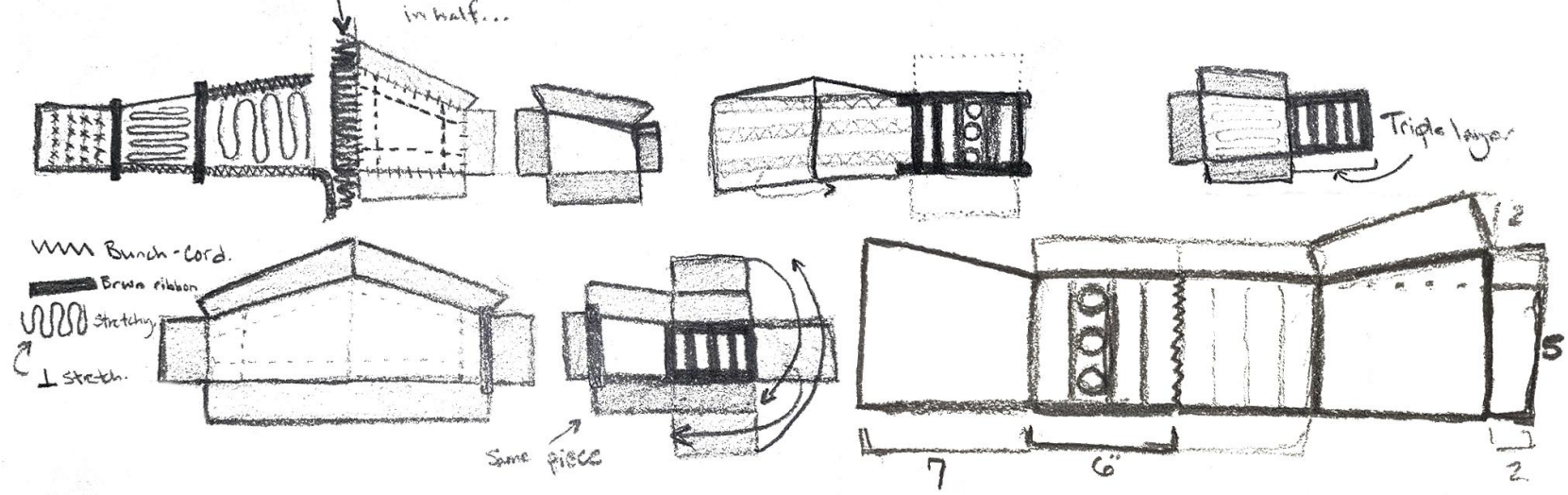
Current market products appear-
stiff, rough, heavy, blan,



Designing for comfort

The product is intended to relieve the stress of carrying a baby, so it should be-

soft, stretchable, supportive, reliable

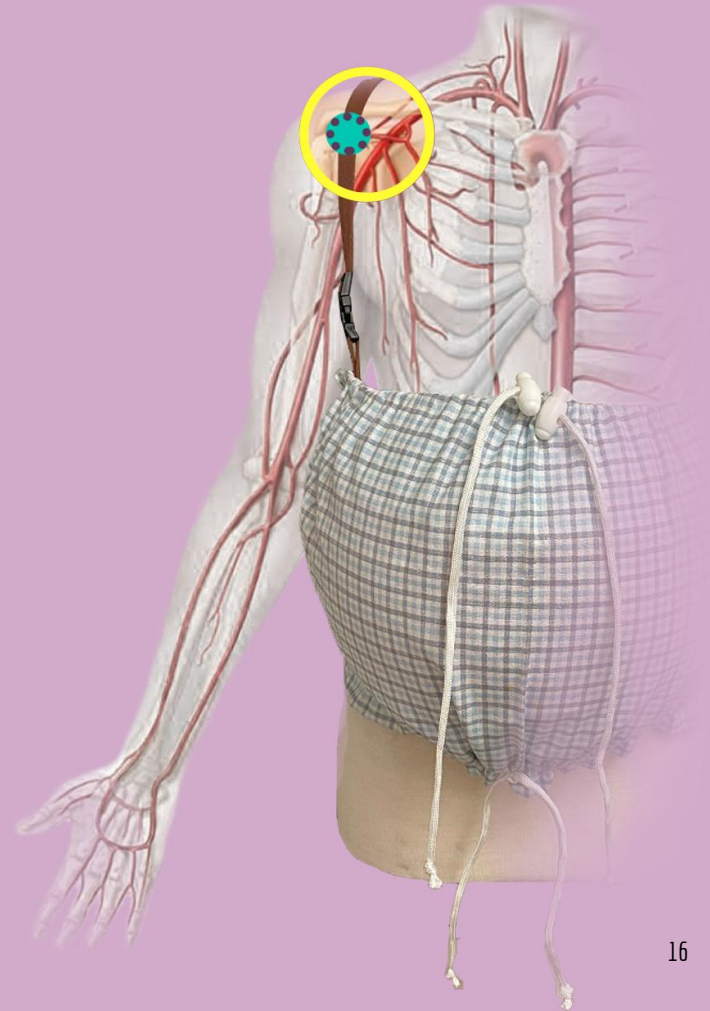


Axillary Artery

The axillary artery is the main artery that supplies blood flow to your arms and hands

They are very prominent in your shoulder and you can see them with the naked eye; thus making it very easy for the LED sensor to collect data

This artery is located on both sides of your body allowing for an easy switch-up to avoid raising questions



Consideration

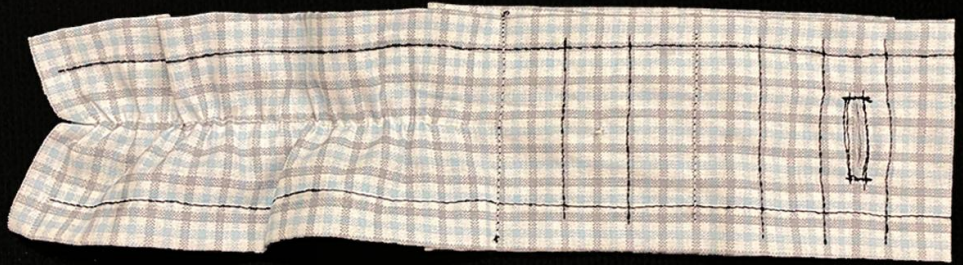
The first set of arteries looked at were the Lumbar arteries located in the small of the back. These proved to be too deep in the body and the LED sensor would not be able to record data. Also, it seemed safer for the baby to place the sensor device away from the stomach region.

CMF study

Material studies were conducted to figure out what works best for comfort and support.

Stretchable materials, while soft, did not offer support, so more stable fabrics would be used, paired with elastic to give them that extra mobility when needed.

CMF STUDY



Final concept

The sensor device would sit on either shoulder strap to read the Axillary artery. The removable straps connect to the belt to support the ever-growing bump. Elastic bands on the side allow for stretching to occur. Buttons on the back allow for a supportive yet comfortable sizing. Finally, drawstrings would give the user the ability to change the amount of support provided.





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