

## Development of Sweatshirts for Long Haul Travel

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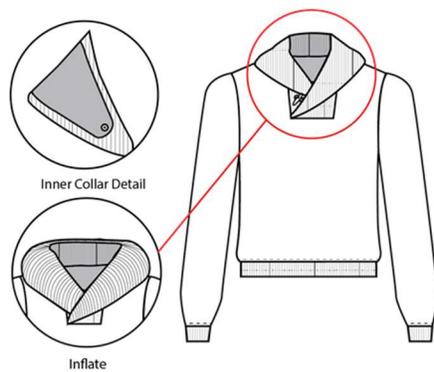
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**Introduction:** The COVID-19 restrictions have loosened worldwide from mid-2021, and people started traveling for business, tourism, and other required purposes. According to the World Tourism Organization, one billion or fewer people traveled during the 2020-21 fiscal year. In the recent future, the number of travelers will increase more and more. In 2019, around 466.2 million domestic business trips and 1779.7 million leisure travel were taken by US travelers only. Traveling is fun unless it is long and hectic. Due to frequent travel, travelers suffer from different physical and mental health concerns like back pain, insomnia, obesity, drinking issues, etc. (la Gorce, 2017). A travel pillow makes travel more comfortable by supporting the head sideways during the journey, and sometimes it can also be used as lumbar support (Heller, 2019). Frequent travelers use various travel pillows while they are traveling. The travel pillow is a particularly useful tool to make the journey more comfortable as it helps get the much-needed rest (Godio, 2021). In the recent market, all the travel pillows are sold separately as an accessory. Travelers need to carry them by hand or hook it on their backpacks or in the carry-on, and during the journey, the pillow needs to be carried all the time whether they are reading a book or watching a movie which sometimes irritates them (Conaboy, 2019). This study aimed to develop a travel pillow that can eliminate the need to carry a physical pillow and convert the sweatshirt collar or hoodie into a functional travel pillow. This study followed two steps of the three-step design process proposed by LaBat and Sokolowski (1999): 1) Problem Definition and Research; 2) Creative Exploration, and 3) Development and Implementation, and the three steps FEA design model by Lamb and Kallal (1992): 1) Functional; 2) Expressive; and 3) Aesthetic.

**Problem Definition and Research:** Long traveling hampers sleeping time which is related to other underlying health problems. Travel pillows support the traveler's neck and help get some sleeping time. Carrying a travel pillow sometimes makes the travelers' personal outfit outlandish, and sometimes the travel pillow gets misplaced. The travel pillow is an essential element for travelers, and losing it hampers travel comfort. So, the outfit change and loss of the travel pillow is an important topic to discuss. **Creative Exploration:** To outclass the outfit and the misplacing problem of the travel pillow, the main objective is to make the pillow a part of the existing garment of the traveler, which will also eliminate the externally carrying a neck pillow. The idea was to convert the hood of the sweatshirt into a functional travel pillow when needed.

Functional, Expressive, and Aesthetic aspects were considered to develop new designs of traveler pillows. **Functional:** The new collar/pillow must provide the required comfort to the traveler to relax and support their neck when needed. At the same time, the makeshift collar or hood would be comfortably fit with the outfit. The functionality of the newly designed hoodie come travel pillows also includes easy to carry, easy to use, easy to transfer, and it can also serve

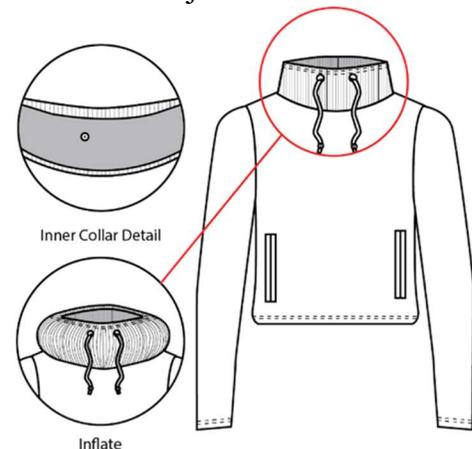
as the standard hoodie. **Expressive:** The sweatshirts adopted the functional travel pillow option also can be a tool to express the traveler's fashion choice. The different color combinations and diverse body fabric can make the travel shirt with a functional collar more expressive. As three unique designs are proposed, the travelers also can select the collar of their choice to express themselves. **Aesthetic:** This design can eliminate the use of current travel pillows, which are now being carried by hand. So, the travelers do not need to carry the extra product, and their outfits would be more perfect. The newly designed sweatshirts can be explored in many ways by using trendy colors, textures, and design elements as per market trends. So, the product would be appealing at the same time it will also act as normal clothing without any sight of a travel pillow. According to the FEA aspects, three different prototypes were developed.

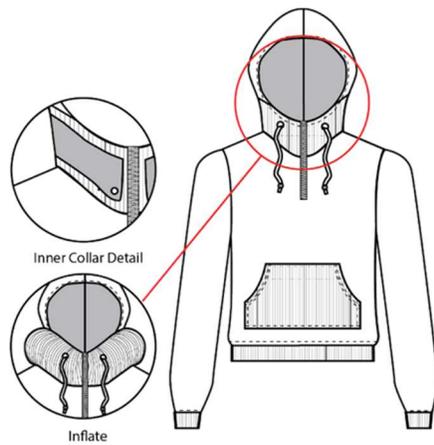


**Design 1** includes a shawl collar sweatshirt with a rib-knit fabric onto the shawl collar, sleeve cuff, and shirt hem. This rib-knit will assist with the amount of stretch needed to inflate the collar. Inside the shawl collar, an inflatable thermoplastic polyurethane coated nylon or polyester tube was attached and closed with an automatic air inflator device. To provide a better fit for the neck contours, the inflatable plastic tube was designed with a wide section at the back of the neck, and it narrows as it reaches the front of the neck. This design also features a decorative horn button closure at the front of the shawl collar to further adjust the fit of the

neckline to the wearer.

**Design 2** features a sweatshirt with a wide stand collar. The wide stand collar consists of rib-knit fabric to ensure enough stretch to inflate fully. As per design 1, the same inflation system was also used in design 2. The inflatable tube is tapered slightly in the middle to ensure it is comfortable for the wearer and fits the natural contour of the neck. The wide stand collar also has drawstrings attached to the front, which aid in the wearer's comfort. A pocket on each side of the sweatshirt is placed on the front of the garment to make it more functional.





**Design 3** includes a hooded sweatshirt with a rib-knit fabric used for the base of the hood, cuffs, kangaroo pocket, and shirt hem. This rib-knit will assist with the amount of stretch needed to inflate the collar. Inside the base of the hood, the inflation mechanism discussed above was used. To provide a better fit for the neck contours, the inflatable nylon/polyester tube was designed with a wide section at the back of the neck and is slightly smaller at the front. A  $\frac{3}{4}$  zipper is sewn into the front of the hoodie to allow more comfort and a better fit to the neckline. The base of the hoodie also has drawstrings attached to the front, which continue to aid in the wearer's comfort. A kangaroo pocket is placed on the front of the garment as well to make it more functional.

**Conclusion:** Three designs have been proposed to develop a functional convertible sweatshirt to convert into a travel pillow for frequent travelers. Designs 1 and 2 focused on converting the shawl and wide stand collar into a travel pillow. In design 3, the base of the hoodie converts into the neck pillow, and the hoodie can still be used while the base is inflated. In this paper, only the first two steps of the three-step design process were discussed without prototype development. Researchers will continue this study by implementing and evaluating the designs into prototypes in future studies.

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