

Cadence II: Athleisure Designed for Female with Diabetes

Jaxson Metzler, Kansas State University
Martha Hill, Kansas State University
Allison Nigg, Kansas State University
Yingying Wu, Kansas State University

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Mentor Statement

The look presented here was completed in an apparel pre-production technology course by a team of three undergraduate students in fall 2020. The mentor was the only instructor of this course. In this course, students learned advanced digital technologies and obtained an understanding of the apparel pre-production process for mass production.

The final project of this course, which was a collaboration with an industrial partner, was designed to simulate the pre-production process in an industrial environment and required students to work professionally under constraints. Specifically, there were three constraints. First, a design theme was assigned to students. Students were required to identify a target market and then develop a mini collection for their chosen market. They had to create at least one full-scale look and complete a technical packet for each item. Second, the use of both 2D and 3D OptiTex was mandatory. Additionally, they had to use at least one additional technology, including but not limited to digital printing, laser-cut, 3D printing, and innovative materials. Third, students were grouped into teams with team leaders elected by themselves.

This female look was completed with high quality in every design and product development stage. It demonstrated that the undergraduate design team had acquired abundant apparel pre-production knowledge and digital techniques. It also showcased their capability in conducting successful market research and their understanding of textiles. Therefore, the mentor highly recommends Cadence II to the 2022 ITAA design exhibition.

Design Statement

The design theme, Athleisure with an Emphasis on Sustainability, was assigned to the designers by the industrial partner. Three undergraduate designers conducted market research and found adaptations of athleisure wear for people with diabetes are missing (Kostiak, 2021; Metzler et al., 2021). Regular exercise helps lower the risk of many diseases, including diabetes (American Diabetes Association, n.d.). However, exercising is difficult and inconvenient for people with diabetes, particularly people with type 1 diabetes as they must wear insulin pumps all the time. There are two types of insulin pumps. A traditional type is when a tube connects the insulin

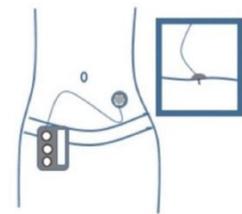


Figure 1 Traditional Insulin Pump (adapted from Berget, 2019)

reservoir to an infusion cannula inserted into body tissue (Figure 1). The designers found wearing a traditional type of insulin pump when exercising requires four types of adaptations in exercising outfits (Saygi, 2021; Metzler et al., 2021). First, there must be many pockets at common insulin infusion sites such as the upper thighs, abdomen, lower back, buttock, and triceps. Second, holes hidden inside pockets must be made so that the tubing of a pump is internal and does not catch external objects. Third, the waistbands must allow the pumps to clip. Fourth, the materials used must be of high quality to hold a pump for the duration of intense activities.

Accordingly, the designers created a diabetic-friendly and sustainable athleisure collection for people who wear an insulin pump. However, the designers also focused on creating versatile and fashionable designs that appeal to a mass market. Cadence II, the female look presented here, is one of the six looks in this sustainable athleisure collection. Cadence here means working with what the needs of your body and the planet rather than against them. This idea was recurring in this look through color, line, shape, form, and various design details.

Cadence prioritizes two things: 1) the functions that people with diabetes want and need, and 2) environmental sustainability. First, Cadence addresses common inconveniences that people with diabetes face daily and blends them with contemporary elements. Cadence features technical elements in specific locations for ease of use for pump-users, as well as high quality, compressive, and custom-printed fabrics (Figure 2). Second, with Cadence, the researchers incorporated both environmental and social sustainability. Most of the fabrics utilized in the collection were made from recycled materials or was dead-stock fabric. For instance, the designer used Carvico Vita Recycled Matte Nylon Lycra made from a 100% recycled nylon/lycra blend and deadstock power mesh for this look. Besides, the designers utilized various advanced apparel design and development technologies, such as digital print design, digital pattern drafting, and 3D virtual simulation, when developing this collection (Figure 3). The adoption of technology significantly reduced textile and paper waste and increased design efficiency and effectiveness.

Furthermore, the designers embraced current trends in color. They intentionally developed a color palette to make the collection be versatile and appealing to various customers. Thus, the color story of Cadence II included dark and light neutrals, split-complementary harmonies, and pops of neon.

Regarding the process, technique, and execution, the patterns of Cadence were first digitally drafted and virtually fitted using Optitex. Based on the virtual fitting results, the



Figure 2 Sports Bra Pocket Details



Figure 3 3D Virtual Simulation of the Look

designers modified digital patterns before printing. Mock-up samples were then constructed, and wear trials with people with type 1 diabetes were conducted. The designer revised patterns and mock-ups several times until satisfaction was achieved. When wearing the final prototypes, fit models reported to the designers that comparing to conventional active apparel available in the market, the final prototypes of Cadence II were more suited to their needs while providing confidence and utility.

To sum up, Cadence II forms a cohesive whole, integrating content, concept, aesthetic properties, process, technique, and execution. With ‘athleisure’ and ‘sustainability in mind, the designers focused on providing an original, innovative, and aesthetically appealing design solution to an underserved population. The designers utilized various apparel design and production technologies and sustainable materials to achieve this goal. Cadence II addressed common inconveniences that people with diabetes face every day and blended them with contemporary elements. On the other hand, Cadence II is unique as it is diabetic-friendly but not exclusively made for females with diabetes. It is fashionable and appealing to a wide range of consumers by featuring current athleisure trends. Because of this, this line is unlike anything that is on the market today. Lastly, Cadence II brings awareness of the lack of inclusion in the fashion industry. There is a lack of apparel designs, particularly athleisure wear, for people with diabetes.

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