

Further Steps Towards Outdoor Clothing for People with Disabilities to Enjoy Sports

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This research highlights three essential phases in the process of developing outdoor clothing designs for people with disabilities so they can enjoy extreme sporting activities. It builds upon research that was completed and reported upon previously that characterized the use-scenario where the unique climate of Alberta Canada where temperatures range from +40°C to -40°C (Strickfaden, et al., 2011). The three phases reported here include reporting on: (1) an extensive search of academic and grey literature on specialized clothing for people with disabilities who engage in sporting activities, (2) research that examined clothing precedents that already exist for this purpose and market, and (3) the analysis of extensive visual data (photos) collected when observing people with disabilities engaging in extreme sporting activities.

Background: Literature on designing and designs for people with disabilities are linked to the seminal works of Anne Kernaleguen's on clothing designs for the handicapped (1978) and Susan Watkins' on functional clothing design (1974, 1984, 1995, Watkins & Dunne, 2015). There have been other key works that look into body identity (e.g., Lamb, 2001), physical limitations (e.g., Carroll & Gross, 2010), and even works focusing on clothing designs for specific situations such as business clothing for people with disabilities (e.g., Carroll & Kincade, 2007). Although there is an excellent foundation for developing outdoor clothing options for people with disabilities to engage in extreme sports it was essential to engage in a process that supported putting all available information together.

Method: Our three-phase process necessitated multiple methods appropriate to each phase. Phase one involved working closely with a library specialist to complete a detailed search of academic and grey literature. Various search methods were used that included numerous combinations of search terms through different resources. Phase two also involved working with library specialists combined with enquiries with industry specialists (those manufacturing or involved in designing specialized clothing already); and people with disabilities, family members and caregivers of people with disabilities (all of whom already purchase specialized clothing). Phase three involved using visual ethnography techniques to analyze approximately 1,500 photographs taken of people with disabilities engaged in sporting activities. The analysis techniques follow methods described by Sarah Pink in her books on visual and sensory ethnography (2007, 2009).

Outcomes Phase 1: The outcomes of our literature search for sources directly relate to designing outdoor clothing for people with disabilities revealed nearly 50 sources with approximately half of them from the past ten years. The sources include 1 recent book (2008) and 3 earlier books (1978, 1978, 1993); 3 theses (the most recent one from 2011); 30+ journal articles; and over a dozen news articles that advocate for manufacturers to design clothing for people with disabilities or feature clothing designs. Although we were generally surprised at the number of sources found in our literature search, we see a continued trend where designs are often adapted

conventional designs, products are not available for purchase (no follow through after development), and disabilities are categorized into common physical limitations (Carroll & Gross, 2010) where there is a focus on the body and not a more comprehensive system that acknowledges the abilities of people and specific use-scenarios.

Outcomes Phase 2: The outcomes of our review of precedents or designs that are already available on the market that can be purchased and used by people with disabilities for extreme sporting were surprisingly broad. Products are available from Canada, USA, Australia and some countries in Europe and Scandinavia. The product range illustrates many clever innovations, particularly for people with mobility impairments, and prices range from being relatively reasonable to completely unaffordable. Even so, product ranges are relatively narrow and focus predominantly on everyday wear such as trousers, tops, underwear, coats and capes. Additionally, the specialized outdoor clothing for sporting activities is typically rated to relatively warm temperatures that are not suitable for the Canadian context.

Outcomes Phase 3: The outcomes of our visual analyses of people engaging in sporting activities reveals a range of access, physical and mobility needs. That is, through our data we can further characterize people's engagements in activities while wearing outdoor clothing. Access needs relate to how well a person can don or doff a garment independently or with assistance; physical needs relate to how a person fits in and feels comfortable in the garment system; and mobility needs relate to the relationship between the body-garment system-activity.

Summary & Future Directions: Three phases are reported upon in this paper that allow researchers and designers to move towards designing outdoor clothing for people with disabilities to engage in and enjoy sporting activities. This work provides essential foundational materials to move towards meaningful and marketable products for this user group. The future directions of our work include product innovation, development, testing, and manufacturing.

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