

Clothing comfort – Consumer expectation and perception of sports garments

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ABSTRACT

Consumers are the driving force behind innovations in sportswear. Their demand for supportive and performance enhancing sportswear is increasing. The requirement for comfort in sports garments is fundamental, but its multifactorial nature makes it difficult to easily define. Whilst literature commonly gives a division of comfort in terms of psychological, physical (sensorial/tactile) and physiological comfort there is hardly a definition of clothing comfort from a consumer's perspective. Within the sports garment's development the choice of fabric is an integral part and has effects on the overall appearance and performance. Sports garments are manufactured from a combination of natural and synthetic fibres in knitted or woven materials. Product information labels and webpages state fibre contents and are used to identify the composition of the garment; however, consumers need knowledge of which properties are associated with the product attributes. This study explored factors contributing to the clothing comfort concept from a consumer perspective. Priorities of attributes contributing to the concept varied according to the person's sex. Females put more emphasis on garment fit, whereas males prioritised physiological comfort descriptors. A conceptualised feel in regard to commonly known textile materials taking sex into consideration was identified. A preference for cotton fibres in females and for polyester fibres in males was found. For the apparel industry, information on product attributes from a consumer perspective is key for an effective product development.

KEYWORDS

Clothing comfort, Sports garments, Purchase behaviour, Fibre preferences and perception, Haptic, E-commerce

Introduction

Sports garments play an important role in the well-being of both recreational and professional athletes. They protect the wearer from changing environmental conditions and provide a comfortable feel. Particularly in sports garments, comfort influences the overall performance and utility of the garment. The division of comfort in psychological/ergonomic, physical (sensorial/tactile) and physiological comfort defines its multifactorial nature (Kamalha *et al.*, 2013). The psychological/ergonomic comfort covers aspects of style, aesthetics, design, colour, fit, and freedom of movement, etc. The physical comfort creates sensations such as tactile (smoothness, roughness, softness, etc.), thermal (warmth, coolness, breathability), moisture (wetness, stickiness) and pressure sensations (light, heavy) (Bartels, 2005). The physiological comfort finally refers to the body thermoregulation. A perception of comfort is created when sensory information is received, processed and finally compared to past sensory experiences. The latter represents people's expectations and perceptions which influence the formulation of differently weighted clothing attributes (Rahman, 2011; Freire Castelo and de Oliveira Cabral, 2018). The perception of quality in

clothing is commonly defined by two general types: extrinsic and intrinsic cues. Intrinsic cues cannot be modified without changing the overall product and are inherent to the physical composition. Comfort is part of the intrinsic cues, and with-it fibre content, fabric structure, garment construction, and quality. Intrinsic cues are considered to have greater importance than extrinsic ones, which are related to the product, however are not physically part of it (price, brand label, store, etc.) (Freire Castelo and de Oliveira Cabral, 2018). This study will investigate comfort characteristics and the perception of different fibre types as part of the intrinsic cues of sports garments. The knowledge of materials and preferences that user have will aid the definition of garment properties and contribute to garment development, for providing (post purchase) satisfaction. The purpose of this study is to identify the main attributes contributing to comfort. Furthermore, the prioritisation of garment type in relation to comfort, and consumer attitudes towards specific textile materials are investigated. Sex related differences are taken into account.

A brief outline of the work carried out

An online survey was performed included 292 respondents, classified by sex, age, and amount and type of physical activity. The respondents were asked a total of 18 questions through the Bristol Online Survey tool to explore consumers' expectation and perception of clothing comfort in sports garments. Furthermore, preconceived opinion regarding the feel of different textile materials such as cotton, polyester, cotton/polyester blend and wool was investigated. All procedures have been approved by the Loughborough University Ethics Approvals Sub-Committee.

Data was analysed by running frequency distributions, multiple response frequency analyses as well as crosstabulations using SPSS version 26. A (Pearson) Chi-square (χ^2) test of independence was performed to find significant differences between sex (male/female). A probability level of $p < 0.05$ was defined for the threshold for significance. Open answer questions were analysed using a qualitative data analysis program (NVivo version 12) to identify themes and word trends.

Findings

Identification of the main attributes contributing to comfort.

Comfort is an important attribute in the purchase of sports garments. To be able to identify the main attributes contributing to the clothing comfort concept the question "*what is comfort in sports garments for you*" was asked and a list of suggestions provided. The ticked answers were evaluated. The three most important descriptors are *freedom of movement* (73.3%), *fit on the body* (60.3%) and *a nice feel when wearing the garment* (58.6%). Respondents were also asked to describe comfort in sports garments in their own words. Figure 1 (left) is a visual representation of the descriptions of comfort. *Fit* and *Feel* are the most prominent words, which respectively obtained a high ranking in the fixed answer question (*fit on the body*, *nice feel when wearing the garment*). Smaller displayed words were mostly combined with more prominent words such as *loose/baggy* with *fit* or *smooth/soft* with *feel*. *Tight* was mainly used in the context that the garments should not be (too) tight.

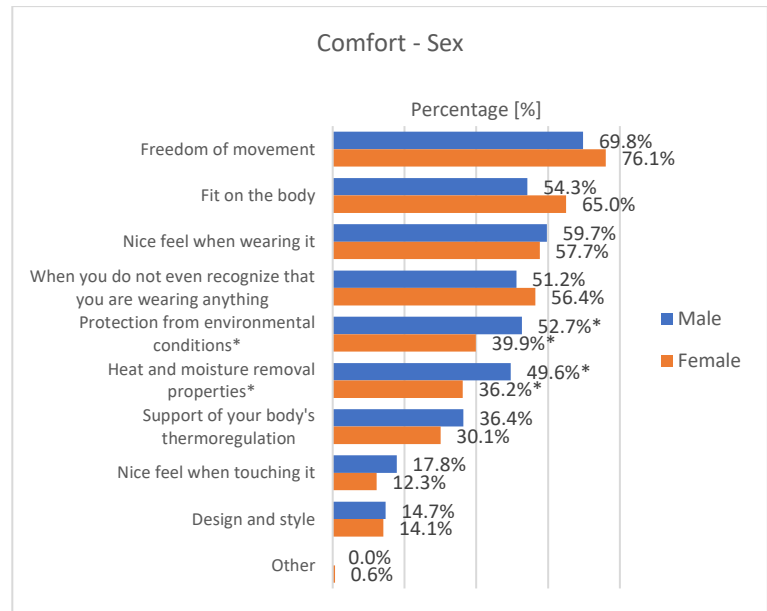


Figure 1: *Left*: Word cloud representing the description of comfort by the participants (“How would you describe comfort in sports garments for you?”). *Right*: Comparison of comfort descriptors broken down by sex (“What is comfort in sports garments for you?”). * indicates a significant difference between the two groups.

Priorities of attributes contributing to comfort differed according to the person’s sex (female/male). Figure 1 (right) shows the frequency distribution amongst males and females. Significantly more males prioritised physiological comfort descriptors such as *protection from environmental conditions* and *heat and moisture removal properties*. They place emphasis on having functional clothing with good breathability. There is a trend of females prioritising *freedom of movement* and *fit on the body*. Males and females differ on how they think, feel, and act concerning their bodies. Especially females place more cognitive and behavioural emphasis on managing their appearance (Cash and Brown, 1989), which could be an explanation why females placed greater emphasis on good fit.

For which garment type is wear comfort most important?

Respondents were asked to select up to two garment types for which wear comfort is most important (sports bra, t-shirt, pants, leggings, socks, jacket). A significant difference was found in all categories. Females chose sports bras (83.4%), leggings (56.4%) and pants (28.2%) and males t-shirts (79.1%), pants (69.8%) and socks (27.9%). That female respondents chose sports bras as the garment type for which wear comfort is most important is not surprising. The variety of individual breast shapes as well as breast asymmetries make it difficult to find well-fitted sports bras. For male participants t-shirts are considered most important. This garment type is, similar to sports bras, in direct contact with the skin, which is especially relevant when talking about moisture management properties of textiles. The next-to-skin garment takes up sweat and spreads it to a larger area on the fabric where heat loss due to evaporation takes place (Wang et al., 2013). Socks also gained higher percentage amongst male respondents. They are regarded as an important component within the foot-shoe system and have a positive impact on the reduction of tactile and mechanical inputs generated between the foot and the shoe (West et al., 2021).

Is there a preconceived opinion regarding the feel of different textile materials?

Throughout the survey participants relied on stored personal information about previous experiences with fabric materials. Therefore, participants could possibly have had difficulties

distinguishing some attributes, since they were not able to touch or lift the textile materials. Still, the results for the conceptualised feel of the textile materials are as could be expected: Cotton (CO) is considered to be a natural (65.4%), soft (53.8%) and smooth (50%) material with a warm feeling (46.2%). Polyester (PE) was evaluated to be synthetic (75%), light-weight (62.7%) and has a cold feeling (41.1%). The cotton/polyester blend (CO/PE) was judged smooth (56.2%), light-weight (42.8%), soft (39.4%) and synthetic (32.9%). Respondents seemed to struggle with rating the blend reflected in lower response rates. The main characteristics for wool were warm-feeling (73.6%), scratchy (54.5%), natural (51.7%), heavy-weight (46.6%) and rough (34.2%).

Considering female and male responses separately, there was a statistically significant difference in males seeing cotton as a heavy (34.1%; females: 20.9%) and warm (55% and females: 39.3%) material, which are both negative associations in regard to sports clothing. The preconceived feel of polyester between sex was significantly different in the attributes of cold-feeling (males: 48.8%; females: 35.0%) and stiff (males: 0.8%; females: 4.9%). Furthermore, significantly more males perceived the blend (CO/PE) as silky (17.8%; females: 9.8%).

The results regarding the selection of fibre types confirm that there is a trend that females have a stronger preference for cotton, which is confirmed by the significant difference in the selection of the fibre type for the summer running t-shirt (26.4%; males: 11.6%). This is in accordance with a study of Byrne et al. (1993) who also found a preference for natural fibres in female consumers. A preference for polyester in males is visible in both frequency distributions (Figure 2).

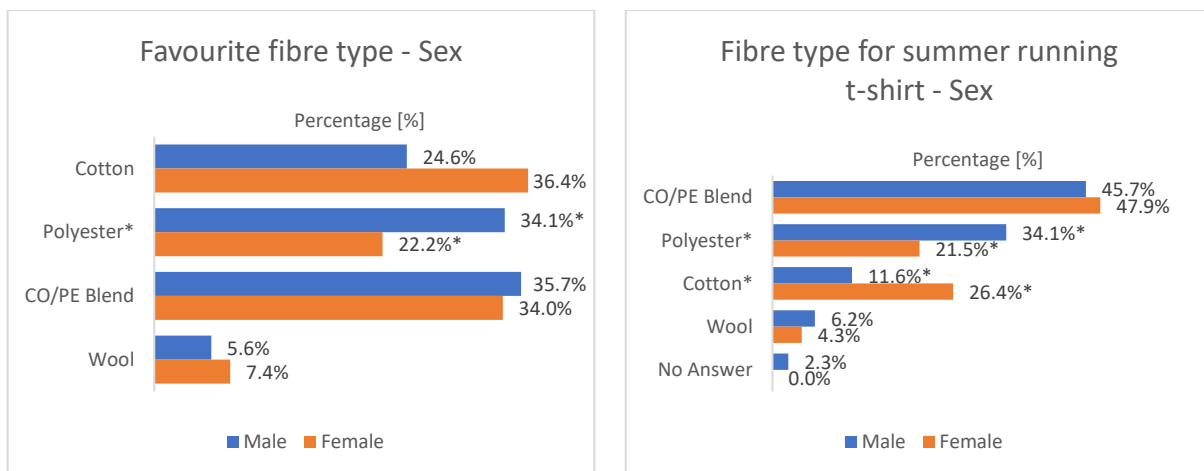


Figure 2: Left: “Please sort the fibre types from most favourite (1) to least favourite (4) one in your sports garments”. Right: “Imagine you could design your own individual running-shirt from scratch. Pick the fibre type for the production of your running t-shirt for summer”. * indicates a significant difference between the two groups.

These results lead to a conclusion that males prefer t-shirts made out of polyester due to a cold touch and its light-weight whereas females prioritise a warm, soft-felt and natural material such as cotton. Hyun et al. (1991) noted that the overall garment comfort is influenced by fibre type.

Impact

For the apparel industry information on product attributes from a consumer perspective is crucial. Comfort not only affects well-being, but also the performance and efficiency of athletes, which ultimately influences their success (Bartels, 2011). Comfort is of multifactorial nature and consumers do not seek a single attribute, but multiple factors within the product to satisfy their preference. *Freedom of movement*, *fit* and *feel* have been identified as the main parameters contributing to the clothing comfort concept. A major barrier for the sports garment industry in the

e-commerce domain, is how to present the ‘feel’ of a garment in a descriptive or visual form. Webpages only state fibre contents; however, the consumer must be knowledgeable about how the materials feels on the skin. In order to develop and optimise e-commerce further, sports companies should focus on not only stating information on the material composition but communicating on how the material feels on the skin, since this is a missing crucial parameter when shopping virtually. The survey identified common associations for textile materials (cotton, polyester, cotton/polyester blend, wool), identified the cotton/polyester blend as the most favourite fibre composition for a running t-shirt in a warm environment and showed a sex related nuance on cotton and polyester in their pure form. Furthermore, females put more emphasis on garment fit, and males prioritised physiological comfort descriptors for a good thermoregulatory support. Sex nuances regarding clothing comfort concept should be considered for an effective product development and marketing strategies. The challenge is to find a way of bridging the gap between description and appearance and the haptic sensations experienced by the wearer.

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