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Investigation of Comfort Properties of Knitted Fabrics

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Abstract : Water and air permeability and thermal resistance of fabrics are the important attributes which strongly influence the thermo-physiological comfort properties of sportswear fabrics in different environmental conditions. In this work, terry and fleece fabrics were developed by varying the fiber content and areal density of fabrics. Further, the thermo-physical properties, including air permeability, water vapor permeability, and thermal resistance, of the developed fabrics were analyzed before and after washing. The multi-response optimization of thermo-physiological comfort properties was done by using principal component analysis (PCA) and Taguchi signal to noise ratio (PCA-S/N ratio) for optimal properties. It was found that the selected parameters resulted in a significant effect on thermo-physiological comfort properties of knitted fabrics. The PCA analysis showed that before wash, 100% cotton fabric with an aerial weight of 220 $g.m^{-2}$ gave optimum values of thermo-physiological comfort.

Keywords : thermo-physiological comfort, fleece knitted fabric, air permeability, water vapor transmission, cotton/polyester
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