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Effect of Weave Structure and Picking Sequence on the Comfort Properties of Woven Fabrics

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Abstract : The term comfort is defined as 'the absence of unpleasantness or discomfort' or 'a neutral state compared to the more active state'. Comfort mainly is of three types: sensorial (tactile) comfort, psychological comfort and thermo-physiological comfort. Thermophysiological comfort is determined by the air permeability and moisture management properties of the garment. The aim of this study was to investigate the effect of weave structure and picking sequence on the comfort properties of woven fabrics. Six woven fabrics with two different weave structures i.e. 1/1 plain and 3/1 twill and three different picking sequences: (SPI, DPI, 3PI) were taken as input variables whereas air permeability, wetting time, wicking behavior and overall moisture management capability (OMMC) of fabrics were taken as response variables and a comparison is made of the effect of weave structure and picking sequence on the response variables. It was found that fabrics woven in twill weave design and with simultaneous triple pick insertion (3PI) give significantly better air permeability, shorter wetting time and better water spreading rate, as compared to plain woven fabrics and those with double pick insertion (DPI) or single pick insertion (SPI). It could be concluded that the thermophysiological comfort of woven fabrics may be significantly improved simply by selecting a suitable weave design and picking sequence.

Keywords : air permeability, picking sequence, thermophysiological comfort, weave design
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