

## THE DIMENSIONS OF CLOTHING COMFORT-DISCOMFORT SENSATIONS

Y. Li, J.H. Keighley, I.F.G. Hampton

Department of Textile Industries and Department of Physiology

**Address** for reprints

Department of Textile Industries  
The University of Leeds  
LEEDS, West Yorkshire LS2 9JT  
ENGLAND

Mathematical models for assessment of the sensory comfort of clothing (underwear) were studied by exposing thirty-eight healthy subjects to exercise in two environmental conditions: hot ( $T=32^{\circ}\text{C}$ ,  $\text{RH}=45\%$ ) and cold ( $T=14^{\circ}\text{C}$ ,  $\text{RH}=32\%$ ). The air velocity was 0.25 m/s. Each trial lasted 80 minutes, during which two T-shirts were worn successively by a subject. The ratings of the T-shirts for handling qualities were determined before the test, and those for texture and sensation during exercise were recorded every ten minutes; both evaluations were by means of a questionnaire. 19 sensation descriptors were used. By factor analysis and variable clustering analysis, it was found that the 19 sensation descriptors could be arranged in three groups: 1 (sultry, clingy, hot, damp, clammy, cold, nonabsorbent and sticky); 2 (prickly, scratchy, rough, itchy and staticky); and 3 (snug, loose, heavy, lightweight, soft and stiff). We conclude from the results that the concept of comfort of underwear can be divided into three subconcepts of factors: tactile, thermal-wet, and tactile-fit comfort, corresponding to the three groups above, respectively. No significant differences in any of the three factors were found between hot and cold conditions. Significant differences in all the three factors, however, were found between the 8 kinds of T-shirts. The preference votes after wearing in hot and cold conditions were significantly correlated with the tactile and tactile-fit factors, not with the thermal-wet factor. The handling votes were also significantly correlated with the tactile-fit factor, well correlated with the tactile factor, but not with the thermal-wet factor.