The effect of fitting factor and material property of leather shoes on heat and water vapor transfer in shoes microclimate

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In this study, to improve the thermal comfort in the microclimate of leather shoes, it was evaluated that the effect of fitting factor like size of foot measurement (we compared three sizes, tight fitted: 1E, medium fitted: 2E, loose fitted: 3E) and material factor of leather shoes like water vapor permeability (we compared artificial leather with natural leather) on heat and water vapor transfer in the shoes microclimate. It was found that bellows action during walking affected heat and water vapor transfer. The smaller the foot measurement was, the larger the magnitude of velocity near opening of shoe and thus effect of bellows action was. A ventilation accelerated mat was made experimentally. It was shown the above mat improve the vapor transfer in microclimate in the leather shoes.

Keywords: bellows action, thermal comfort, shoes microclimate, heat and water vapor transfer