The experimental manipulations conducted in the study were instrumental in evaluating the thermal regulation and energy storage capabilities of smart textiles. These manipulations involved varying environmental conditions to assess the adaptability and performance of the textiles under different scenarios. Temperature regulation was tested through controlled thermal environments, where the textiles demonstrated enhanced heat dissipation capabilities, particularly those integrated with passive radiative cooling technologies (Ref-s204867). In terms of energy storage, the textiles were subjected to repeated energy harvesting and discharge cycles, revealing a consistent ability to store and release energy efficiently, thereby validating their potential for sustaining wearable electronics (Ref-s204867). These findings underscore the robustness of smart textiles as multifunctional materials, capable of maintaining performance across a range of conditions, thus supporting their application in diverse wearable technology sectors.