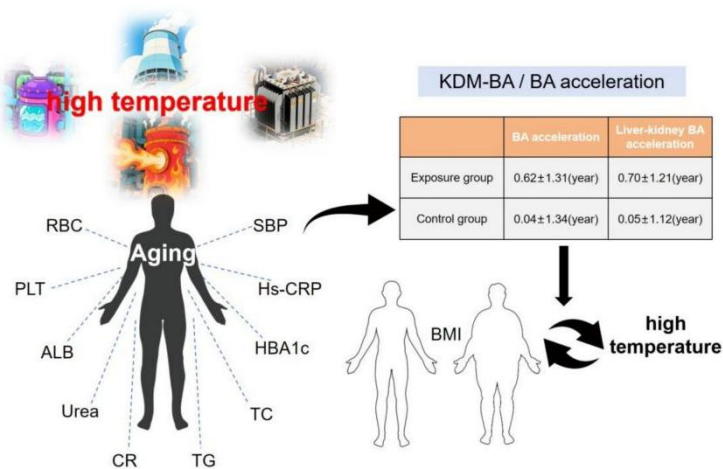
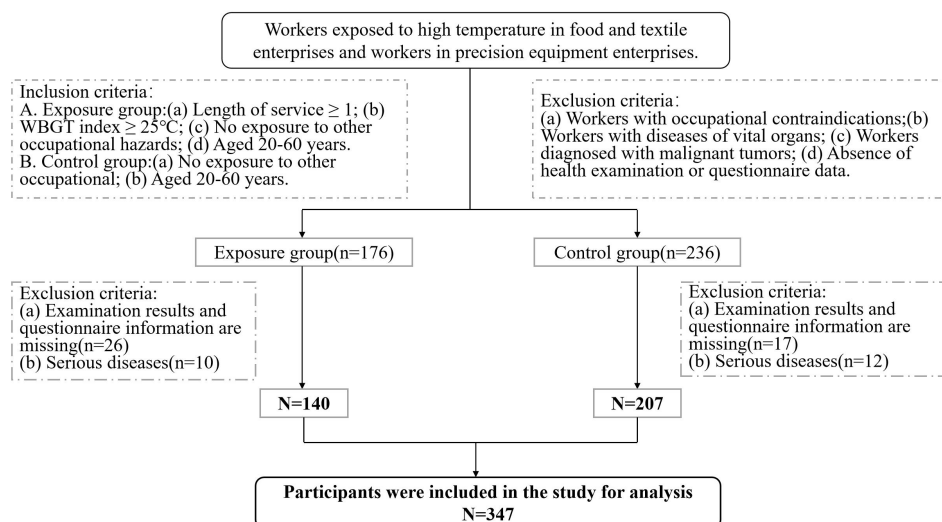




Graphical abstract.



Supplementary Figure S1. Participant selection flowchart. Inclusion criteria for the exposure group: Length of service ≥ 1 ; WBGT index $\geq 25^{\circ}\text{C}$ (In accordance with GB/T4200-2025); No history of exposure to other occupational hazards; Age: 20–60 years old. Inclusion criteria for the control group: No exposure to occupational hazards; Age: 20–60 years old. Exclusion criteria (two groups): Subjects with occupational contraindications; Individuals suffering from diseases that affect vital organs such as the heart, liver, and kidneys; Patients diagnosed with malignant tumors; There is a lack of health examination or questionnaire data.