Prior to the development of portable heat stroke screening system which stratifies excessive deep body temperature elevation (37.5 degrees) using a radar and thermopile, we conducted exercise stress tests which induces deep body temperature elevations using an ergometer (100W, 15 minutes) for nine subjects (male, 21-24 years). We defined excessive deep body temperature elevation (EDT) when deep body temperature exceeds 37.5 degrees. We conducted linear discriminant analysis which stratifies EDT using fifteen minutes heart rates, respiratory rates and body surface temperatures measured after exercise load. The tests achieved 90.5% sensitivity, while, positive predictive value was 47.5%.