Background It has been consistently shown that heavy exercise leads to cardiac troponin (cTn) release and variable changes in post exercise cardiac function. This relationship has not be explored at increasing or significant HA exposure (>4300 m).

Aims This study aimed to assess, for the first time, the effects of exercise at progressively increasing high altitude (HA) on high-sensitivity (hs) cardiac cTnT levels and their relationship to cardiac function and severity of acute mountain sickness (AMS).

Methods Transthoracic echocardiograms, hs-cTnT levels and acute mountain sickness scores were measured at rest at 1300 m then repeated post exercise and 12 h later after moderate-intensity progressive trekking to 3440 m, 4270 m and at 5150 m (after trekking to 5643 m) on 19 healthy subjects (age 35.4±years; 52.6% males).

Results There was a significant and detectable increase in post exercise hs-cTnT with increasing exercise (29.4% at 3440 m, 15.8% at 4270 m and 68.8% at 5150 m; p=0.02) with the rise only being significant on post test at 5150 m. No values exceed the cut off for observed with myocardial infarction (≥30 ng/l). Increasing HA led to a significant rise in AMS scores, pulmonary artery systolic pressure, cardiac output and a fall in SpO2 without changes in stroke volume. There were no changes in estimated left (E/E'; p=0.5) or right ventricular (E/E'; p=0.48) filling pressures. On multivariate analysis increasing cardiac output (p=0.040) and right ventricular systolic pressures (p=0.046) and decreasing SpO2 (p=0.05) were
the only independent predictors of increasing cTnT levels (overall
R²=0.24; p=0.0004).

Conclusions Moderate intensity exercise at significant HA does
influence the post exercise increase in hs-cTnT without overt dele-
terious effects on cardiac function.