Aerobic capacity (VO\textsubscript{2max}) is reduced upon acute exposure to high altitude, yet measuring VO\textsubscript{2max} with calorimetry is expensive and may be impractical for use in the field. The 3-minute step test is a popular method for estimating VO\textsubscript{2max}. However, it has not been widely used at high altitude. **PURPOSE:** To examine the effect of altitude on step test performance. **METHODS:** Fourteen undergraduate students enrolled in a 10-day study abroad to Peru that included a two-day hike on the Inca trail. Prior to traveling, all students underwent a symptom-limited Bruce treadmill protocol with breath-by-breath analysis to determine VO\textsubscript{2max}. In Peru, students performed a Queens College step test at sea level (Lima). They stepped at a predetermined cadence for 3 minutes, after which recovery heart rate was recorded and entered into a standardized regression equation to estimate VO\textsubscript{2max}. The test was repeated at 3800 meters (Paucarcancha) and again at 2040 meters (Aguas Calientes). **RESULTS:** Ten students (age 21 ± 1.7 years; M:1, F:9) completed all aspects of the study. The measured VO\textsubscript{2max} was 42.2 ± 6.1 ml·kg\textsuperscript{-1}·min\textsuperscript{-1}. Measured VO\textsubscript{2max} was associated with estimated VO\textsubscript{2max} at sea level (r= 0.81, p= 0.005). Estimated VO\textsubscript{2max} was reduced from 38.0 ± 6.5 ml·kg\textsuperscript{-1}·min\textsuperscript{-1} at sea level to 34.2 ± 4.7 ml·kg\textsuperscript{-1}·min\textsuperscript{-1} at 3800 meters (p<0.001) No difference was observed between estimated VO\textsubscript{2max} at 2040 meters and sea level. **CONCLUSION:** We found that the Queens College step test provides a valid estimate of VO\textsubscript{2max}. Step test performance at 3800 meters was reduced by 11% compared to sea level, whereas no change was observed at 2040 meters. These data corroborate previous findings that indicate a threshold at which altitude adversely affects aerobic capacity.