Background

The Grand Canyon Emergency Medical Services assist over 700 visitors a year with Preventive Search and Rescue efforts. These efforts include direct guidance to hikers in order to improve visitor safety and success.

The Grand Canyon National Park is seeing an increase in visitors engaging in the challenging and dangerous traverse of the canyon from rim-to-rim in a single day (R2R hikers). R2R hikers cross over 21 miles, endure more than 11,000 feet of elevation change and substantial temperature changes. Little is known about this population of hikers.

Objective

To describe the population of R2R hikers and hiker characteristics that may be associated with exercise related illness. We focused on factors such as hiker preparedness and fatigue in order to meet this goal.

Methods

• Observational study of hikers attempting a single day R2R hike of the Grand Canyon over two of the busiest weekends in 2015
• Hikers were verbally consented, interviewed at the starting trailhead, canyon bottom, and exit trailhead
• Biometric data, previous experience, activity times, and self-reported fatigue and preparedness were measured

Hiker Demographics

Male (n=181) and female (n=100) hikers did not differ with respect to time required for hike (Figures 2A and 2B), age, self-reported fatigue (Figure 2H), preparedness, or hike difficulty.

Repeat R2R hikers (n=134) completed the hike faster (Figure 2G) than first-timers (n=155). Reported fatigue was higher for first time R2R hikers than repeat hikers (Figure 2J).

Preparedness and difficulty of the hike differed significantly by:

• Starting rim (p=.0492 and .0257 respectively). Those starting at South Rim reported being less prepared and the hike being more difficult.
• Previous R2R hike experience (p=.0013 and .0012 respectively). Those doing the R2R hike for the first time reported being less prepared and the hike being more difficult.

Overall, the majority of hikers reported being adequately prepared, with difficulty of hike being as expected.

Implications for Park Service

Grand Canyon National Park Preventive Search and Rescue efforts to reduce the number of hikers developing exercise related illness or injury may be more efficient if focused on hikers ages 20 - 29 and 50 - 60+. Information that the hike may be more difficult or require additional preparation depending on the direction of crossing could also be provided to hikers on the GCNP website, at the visitor center and at trailheads, allowing hikers to be better informed and plan accordingly.

Future R2R hiker research will include blood draws to look at molecular and physiologic changes, evaluation of blister prevention and self-treatment and nutritional intake.

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