

ORIGINAL RESEARCH

Summer Climbing Incidents Occurring on Fujisan's North Face from 1989 to 2008

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Objective.—Few studies exist on climbing-related incidents at Fujisan, although it is Japan's highest peak at 3776 m, and attracts dense crowds of summer climbers. A retrospective review was thus conducted to analyze the types of incidents and the demographics of climbers involved.

Methods.—Police reports of summer climbing incidents occurring along the Yoshida trail on Fujisan's north face from 1989 to 2008 were reviewed. Variables assessed included climber age, sex, experience, gear, altitude of incident, and whether the incident occurred during ascent or descent, as well as the cause and severity of any associated injury.

Results.—A total of 155 incident reports were assessed, including 28 deaths mostly attributable to cardiac events occurring among male climbers during ascent. The majority of nonfatal incidents occurred during descent and most involved tripping. More than half of all incidents were reported at the 8th step (approximately 3000 m). The frequent appearance of male climbers without experience or adequate footwear reflects Fujisan's summer demographics, yet the injury rate appears higher among older climbers more than 50 years of age. There were also 28 noninjury incidents attributed to acute mountain sickness or fatigue.

Conclusions.—This retrospective review describes the demographics of summer climbing incidents on Fujisan's north face. Additionally, limitations to the current method of incident reporting were identified. More comprehensive recordkeeping would increase understanding of injuries and illness, which could improve resource allocation and reduce the risk of fatalities from out-of-hospital cardiac events.

Key words: climbing, mountaineering, climbing incidents, injury, unintentional injury, accident, seasonal, national parks, Fujisan, Japan

Introduction

Fujisan is Japan's highest peak at 3776 m. Located in the Fuji-Hakone-Izu National Park, which receives more than 100 million annual visits, the stratovolcano is known for its short climbing season and dense crowds of climbers.¹ The estimated number of total summit attempts increased from 231,542 in 2007 to 305,350 in the summer of 2008, stabilizing thereafter around 300,000 per season (Figure 1).² However, there have been few

studies of climbing-related incidents on Fujisan, so injury and illness patterns remain largely unknown despite numerous equivalent studies elsewhere.^{3,4} A retrospective review was thus conducted to analyze the climber demographics and type of incidents involved.

Until the late 19th century, Fuji climbers faced a range of financial, logistical, and cultural barriers, with some sections of society—notably women—excluded from climbing. Today, Fujisan has few restrictions, and every summer sees a more diverse mix of climbers, including many female, foreign, and first-time climbers, who tend to be younger than at other mountains in Japan.⁵ Nonetheless, certain geophysical barriers remain; for example, the vast majority climb during July and August to avoid snowfields and ice. Within this brief window, climbers use 1 of 4 trails (Figure 2) to reach the summit, including the Yoshida trail situated on Fuji's

A preliminary version of these results was presented at the International Geographical Union Annual Conference in Kyoto, Japan, August 8, 2013.

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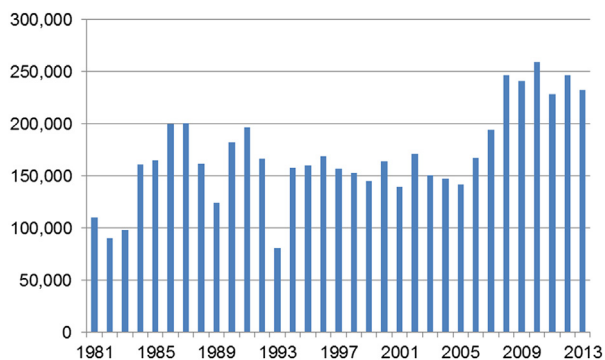


Figure 1. The number of ascending climbers at the 6th step of the Yoshida trail on Fuji's north face (Yamanashi Prefecture) 1981–2013.

north face. This is the busiest of the 4 trails because of the relatively high altitude (2300 m) of the trailhead at the 5th station (Figure 3) and the short access time required from the greater Tokyo area. In the summer of 2008, 172,369 climbers used the Yoshida trail, accounting for 56% of that season's total according to infrared trail counters positioned around the 8th step to capture climber numbers (Figure 2). Summer summit attempts are clustered around certain days—especially weekends and public holidays—with most climbers timing their ascent to see sunrise, resulting in more than 90% of summit attempts occurring between 02:00 AM and 07:59 AM.⁶ This results in intense spatial and temporal congestion as thousands of climbers attempt to reach the summit crater simultaneously. The situation has potential ramifications for risk management, particularly as the majority are first-time climbers with no prior experience as depicted in the Japanese proverb: “only a fool never climbs Fuji, but only a fool climbs it more than once.”⁷ To improve the understanding of climber injuries and illnesses during the congested

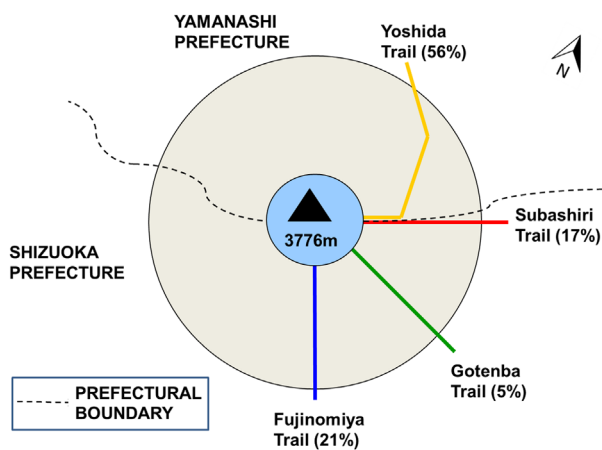


Figure 2. Proportion of ascending climbers at the 8th step of the 4 major trails in the 2008 season.⁹

summer season, this paper reviewed police incident reports following the methods of Wild's retrospective review of injuries.⁸

Methods

The annual reports published by the local Yamanashi Prefectural Police from 1989 to 2008 were reviewed. No institutional review board consent was required because data were extracted from these official, publicly available reports. Exclusion criteria were threefold. First, any incidents that occurred outside of Fujisan's official season of July and August were excluded. Although police records run year-round and summit attempts are often undertaken out of season, it is strongly discouraged by management organizations, and facilities such as mountain huts are mostly closed. Also the presence of snowfields and ice is a deterrent to casual climbers, resulting in a broadly different demographic profile from that of summer climbers. Second, incidents involving nonclimber visitors such as tourists, trail runners at the annual road race, and foragers for herbs were likewise excluded, leaving a total of 155 incidents. Finally, the year and month of the incident were excluded after preliminary analysis revealed no clear chronological trends. The remaining 8 variables recorded in the annual report included climber age, sex, experience, gear, altitude of incident, and whether it occurred during ascent or descent, as well as the cause and severity of any associated injury. Police categorized injury severity into 4 levels: “fatal,” resulting in death; “severe,” involving climbers with injuries diagnosed to take more than 1 month to heal; “moderate,” taking less than 1 month to heal; and “mild,” requiring no treatment.

The selected data were then examined to look for recurring types of incidents and climber demographics. The 8 variables were coded and entered into SPSS (v. 21.0; IBM Corp, Armonk, NY) software before cross analysis. Dichotomous variables were compared by using Fisher's exact test, and other nominal variables were tested using χ^2 for expected values less than 5. These were viable methods given the small sample size ($n = 155$), and a probability value of less than or equal to .05 was considered statistically significant.

Results

DEMOGRAPHICS

The most common age range of climbers involved in incidents was 50 to 69 years ($n = 69$, 45%). Ninety-eight incidents (63%) involved male climbers, whereas 108 (78%) were “novices,” defined by police records as those without any previous climbing experience. Seventy-three

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