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## A Comprehensive Study of the Everest Expedition: Planning, Equipment, Route Analysis, and Personal Experience

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DOI : <https://doi.org/10.5281/zenodo.18246976>

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### ARTICLE DETAILS

**Research Paper**

**Accepted:** 26-12-2025

**Published:** 10-01-2026

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**Keywords:**

*Everest Expedition, high-altitude mountaineering, acclimatization, expedition planning, adventure studies*

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### ABSTRACT

This research paper presents a comprehensive and experience-based study of the Everest Expedition undertaken by the author, Manisha Payal, who successfully participated in high-altitude climbing on the Nepal South Col Route. The paper integrates personal experiential insights with established mountaineering research to analyze pre-expedition planning, physical and technical preparation, equipment systems, route progression, acclimatization strategies, and high-altitude camp management. As an Everest summiteer and NCC Instructor, the author brings a unique practitioner-trainer perspective to this study. The findings emphasize that successful Everest climbing requires scientific preparation, psychological resilience, disciplined training, and logistical precision. This paper aims to serve as an academic reference for researchers, adventure scholars, NCC cadets, and aspiring mountaineers.

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### Introduction

Mount Everest, standing at 8,848.86 meters above sea level, represents the ultimate challenge in high-altitude mountaineering. The ascent demands exceptional physical endurance, mental strength, and strategic preparation. Unlike theoretical studies, this research is grounded in the author's **first-hand Everest climbing experience**, offering authentic insights into the realities of extreme-altitude environments.



As an **Everest summiteer and NCC Instructor at Guru Jambheshwar University of Science and Technology, Hisar**, the author combines practical mountaineering exposure with institutional training discipline. The purpose of this study is to document the Everest expedition through an academic framework while reflecting on real-life challenges encountered during the climb, thereby bridging experiential knowledge and scholarly research (West, 2013).



### **Pre-Expedition Planning**

Effective Everest climbing begins long before reaching the mountain. Pre-expedition planning determines both safety and success.

### **Psychological and Family Support**

From the author's experience, sustained emotional support from family played a vital role during prolonged training and expedition phases. Psychological stability is essential when operating in hazardous zones such as the Khumbu Icefall and the Death Zone, where decision-making under stress becomes critical (Huey & Eguskitza, 2001).

### **Financial Preparation**

Everest expeditions involve significant financial investment, including climbing permits, Sherpa support, oxygen systems, travel, insurance, and specialized equipment. According to the Department of Tourism, Government of Nepal (2023), permit regulations and logistical compliance are mandatory for all climbers. Proper financial planning enabled uninterrupted focus on training and acclimatization during the author's expedition.

### **Physical and Technical Training**

The author underwent structured endurance training, strength conditioning, and technical mountaineering preparation, including rope handling, ice-axe arrest, crampon movement, and altitude adaptation. Scientific studies confirm that climbers must adapt to oxygen levels that drop below one-third of sea-level concentration above 8,000 meters (West, 2013).

## Equipment and Technical Systems

High-altitude mountaineering is highly equipment-dependent. The author utilized internationally recommended, extreme-weather-tested gear essential for survival in subzero conditions.

### Head-to-Toe Clothing System

A multi-layer clothing system comprising thermal base layers, fleece insulation, softshell jackets, down jackets, Gore-Tex shells, and an expedition down suit was used. This layering system maintained core temperature and minimized hypothermia risk in temperatures reaching  $-40^{\circ}\text{C}$  (Salisbury & Hawley, 2011).



### Hand and Foot Protection

Triple-layer high-altitude boots (e.g., Olympus Mons), insulated socks, gaiters, and high-altitude mittens were crucial in preventing frostbite and maintaining circulation at extreme elevations.

### Technical Climbing Gear

The expedition required specialized climbing tools, including ice axes, crampons, harnesses, ascenders (jumars), descenders, carabiners, prusik loops, and trekking poles. These tools ensured safe movement across crevasses, ladders, and fixed-rope sections on the Lhotse Face and South Col Route (Himalayan Database, 2022).

### Camping and Sleeping Systems

The author relied on a  $-40^{\circ}\text{C}$  rated sleeping bag, inflatable and foam mats, insulated water bottles, and expedition duffel bags. Adequate rest at altitude significantly improved acclimatization efficiency and physical recovery, which is essential for summit readiness (West, 2013).

### Electronics and Communication

Satellite phones, GPS tracking devices (Garmin inReach), headlamps, and power banks enabled navigation, safety communication, and emergency preparedness in low-visibility and high-risk situations.

### Food, Hydration, and Medical Supplies



High-calorie nutrition, electrolyte supplements, and instant meals supported metabolic demands at altitude. Medical supplies included Diamox (as prescribed), pain relief medication, blister care kits, and sun protection to counter intense ultraviolet exposure at high elevations.

### Legal Permissions

All climbing activities were conducted under the **Everest Climbing Permit**, issued by the **Department of Tourism, Government of Nepal**, ensuring compliance with safety, environmental, and rescue regulations (Department of Tourism, 2023).

### Route Description: Nepal South Col Route

The expedition followed the traditional South Col Route:

1. Home → Delhi
2. Delhi → Kathmandu (Flight)
3. Kathmandu → Lukla (Helicopter)
4. Lukla → Everest Base Camp (approximately 65 km trek)

### Altitude Progression

Lukla (2,860 m), Namche Bazaar (3,440 m), Tengboche (3,867 m), Dingboche (4,410 m), Lobuche (4,940 m), Gorak Shep (5,164 m), and Everest Base Camp (5,364 m).

### High-Altitude Camps Beyond Base Camp

- **Camp I (6,065 m):** Located above the Khumbu Icefall
- **Camp II (6,400 m):** Western Cwm, Advanced Base Camp
- **Camp III (7,200 m):** Lhotse Face, fixed-rope section
- **Camp IV (7,900 m):** South Col, Death Zone

From Camp IV, the author undertook the final summit push to **8,848.86 meters**.



## Experiential Reflection

Standing at extreme altitude offered a transformative personal experience. The author describes the summit moment as a realization of endurance, discipline, and self-mastery—where physical exhaustion converged with mental clarity. Such experiences validate research findings that extreme environments significantly reshape human psychological limits (Huey & Eguskitza, 2001).

## Conclusion

This study demonstrates that Everest climbing is not merely an adventure but a scientifically demanding expedition requiring disciplined preparation, psychological resilience, and technical competence. By integrating personal climbing experience with academic research, this paper contributes valuable insight to adventure studies, NCC training frameworks, and high-altitude performance research.

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