

1 BACKGROUND

Polar thigh

Definition: Polar thigh is a cold-related skin injury reported among long-distance polar skiers.^{1,2}

Severity: Its clinical manifestations range from erythematous, urticarial rashes, to ulceration, necrosis and sepsis requiring medical and surgical interventions.²

Current evidence

- Exhaustive search of databases: Ovid MEDLINE, EMBASE, Web of Science, Trip Pro and Scopus; forward and backward citation searching.
- Available literature is limited to expert opinion and isolated reports: one prospective case study,³ textbook chapters^{1,2} and journalistic expedition reports.⁴⁻¹¹

Knowledge gap

- Polar thigh has not yet been systematically characterised by its contributing factors, clinical manifestation and long-term outcomes.
- Prevention and field management strategies lack an established evidence base.

2 AIMS

To expand the evidence base beyond isolated case reports through a novel, structured, questionnaire-based study of multiple cases

To characterise polar thigh across the Arctic and Antarctic - the perceived contributing factors, clinical manifestation and long-term outcomes

To inform future prevention and field management strategies for polar thigh in expedition medicine

3 METHODS

Study was designed using the SPIDER framework¹²

Sample	17 adults with Arctic and Antarctic expedition experience
Phenomenon of interest	Polar thigh: Contributing factors, clinical manifestation, prevention, management, outcomes
Design	Retrospective case series: Online questionnaire collecting cases experienced, witnessed or treated by respondents
Evaluation	Perceived contributing factors, experiences , views on prevention and management strategies
Research type	Mixed-methods Quantitative data: Closed-ended, Likert-scale questions Qualitative data: Free-text responses

Data collection

- Ethical approval:** University of Exeter low-risk framework
- Original anonymous online questionnaire**
 - Develop → pilot → refine → distribute
- Participant recruitment:** Expedition, research and polar medicine networks:
 - World Extreme Medicine
 - International Association of Antarctica Tour Operators
 - UK Polar Network

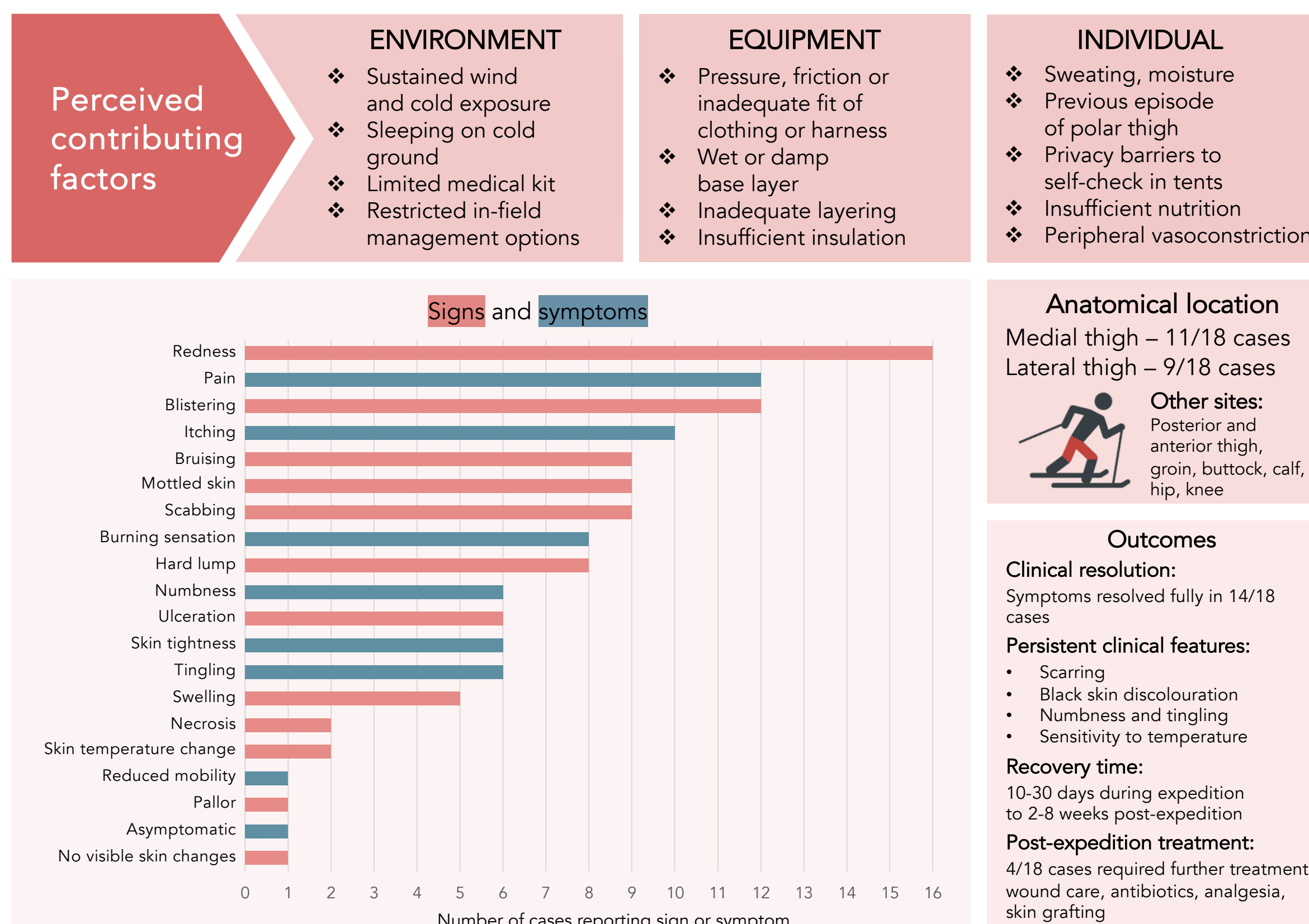
Data analysis

- Quantitative:** Descriptive statistics - frequencies, percentages
- Qualitative:** Qualitative content analysis¹³

4 RESULTS

Key results: perceived contributing factors, signs and symptoms, clinical outcomes and management of reported polar thigh cases

Reported cases (n=18): 14 females, 4 males; equally distributed between Arctic and Antarctic (n=9 each)



Reported prevention and management strategies

Prevention	Recognition	Wound care	Supportive care	Escalation
- Thigh insulation: long jackets, down skirt or shorts - Padding over pressure areas - Dry base layers - Adequate nutrition and hydration - Avoid tight clothes	- Daily skin checks - Early rash identification - Treatment initiation before skin breakdown - Pre-departure education	- Daily Granuflex or hydrocolloid dressings - Topical corticosteroids - Zinc cream - Pain relief medication - Topical antibiotics	- Wet clothing removal - Keep affected areas dry - Rewarming - Friction reduction	- Specialist medical assessment for severe cases - Evacuation - Surgical intervention for severe tissue injury

5 DISCUSSION

Interpretation and implications of findings

- First systematic investigation** of polar thigh, characterising 18 cases across the Arctic and Antarctic expeditions.
- Development of polar thigh is multifactorial**, involving environmental exposure, equipment and individual factors.
- Clinical severity** can range from inflammatory skin changes to ulceration, necrosis and residual scarring.
- Early recognition, optimised clothing systems and appropriate field management may **limit progression to severe skin injury**.
- Field management** includes daily hydrocolloid dressings, topical steroids and antibiotics, and zinc cream.

Relation to literature

- Expands evidence beyond previous case reports and anecdotal descriptions
- Captures a broader clinical spectrum** than previously documented.³
- Supports polar thigh as a distinct clinical entity** requiring further investigation.⁵

Strengths

- Largest compiled dataset of cases to date
- Systematic characterisation of polar thigh
- Addressed an important gap in literature
- Original pilot-tested questionnaire
- Foundation for future prospective research

Limitations

- Potential recall bias from retrospective design
- Potential self-selection bias from self-reported data
- Non-validated questionnaire may limit reliability and validity
- Small sample size (n=18)

6 CONCLUSION

- This study provides the first systematic insight into polar thigh across Arctic and Antarctic expeditions, advancing current understanding and strengthening the evidence base.
- Improved awareness and recognition of polar thigh may support earlier intervention and safer expedition practice.
- The findings provide a basis for future research and the development of evidence-based prevention and management guidance.

7 FUTURE RESEARCH

- Prospective multicentre studies to establish incidence and identify risk factors
- Clinical studies investigating underlying pathophysiology of tissue injury
- Incorporate polar thigh into the UK Frostbite Registry for standardised case collection and collaborative research

REFERENCES

