Journal of BTHA, Volume X, 2007

Occupational Health Problems of British Mountain Guides Operating Internationally

David Hillebrandt

Summary

Chronic musculoskeletal problems, mainly of the knees are a major problem for Mountain Guides some due to chronic overuse and some due to previous trauma. Medically they report little illness and remain fit after retirement.

Aspirant guides and others who indulge in many mountain trips should consider how to minimise long-term problems. Specific attention should be paid to long-term prevention of knee problems.

Introduction

With increased leisure time, more disposable income and the advent of the adventure tourism industry more people are spending more time mountaineering. This can involve mountain walking, trekking and camping, rock climbing, ice climbing, alpine mountaineering and skiing in all its forms. Many of these activities take place at high altitude with the associated physiological stress of reduced oxygen availability. The activities themselves may involve chronic strain of load carrying, musculoskeletal strain of working on steep ground, exposure to heat, cold, sun, wind, rain, snow, and potential for acute trauma.

For professional guides there is the additional psychological strain of caring for clients in a potentially hostile environment requiring continuous risk assessment, often without peers to share the responsibility.

Professional mountain guides may spend over 100 days a year climbing and provide an easily studied group who are intensively exposed to potential occupational health hazards. Lessons learnt from an occupational health survey may enable younger guides to protect themselves against long-term health risks. Lessons learnt may be relevant to amateur mountaineers with their increasing exposure to sport risks.

METHODS

Study Group

Professional mountain guides have operated in the European Alps for over 100 years. National guide associations operate in many countries and currently sixteen countries are affiliated to the International Union of Associations of Mountain Guides (IFMGA / UIAGM) which ensures a standardised level of competence in all aspects of mountaineering (rock climbing, ice climbing, hill walking, sport climbing, skiing, self rescue, first aid, snow pack science and client care). The Association of British Mountain Guides (ABMG) became affiliated to the IFMGA / UIAGM in 1977.

To become a guide in a member country requires a competent and fit mountaineer to embark on an apprenticeship as a trainee and then aspirant guide. It normally takes a minimum of four years to qualify fully as a guide. In many countries this qualification is a legal requirement before one can accept payment for guiding clients in the mountains. In the higher mountains of the world such as the Himalaya there is no legal requirement for qualification, but many commercial high altitude expedition companies do employ guides with this qualification.

Each year most of the 172 current members of the ABMG spend many days in the mountains of the UK and abroad both working with clients and informally with friends. Some are volunteer members of mountain rescue teams in their home areas. They offer an easily studied group of well motivated mountaineers.

Questionnaire

This study was carried out by questionnaire distributed to all ABMG members with their June 2004 Newsletter. A pilot study of the questionnaire using ten members had been carried out in January 2004 to ensure the acceptability of the format. Members were informed of the association's support for

the project in the newsletter. All replies were received within three months. No reminders were sent and respondents could remain anonymous.
Ethical committee approval was not required since this was a retrospective questionnaire study with no influence on current health outcomes.
The questionnaire (with a stamped and addressed envelope) was on two sides of A4 paper and could be completed in ten minutes *(see Fig 1).* The first section was designed to obtain the mountaineering back-ground of the subject and ensure that the information obtained was representative of the study group as a whole. Details of all time spent in the mountains, rather than just time with clients, was included to minimise any bias due to the working pattern of the guide.
Section two asked whether the subject was current-ly receiving or awaiting medical treatment of any sort, details of any hospital admissions or outpatient or general practitioner assessments or treatments during their working life. Details of regular or frequently taken medication with indications, long term medication taken in the past, with reasons, was requested and an open-ended question for other conditions included to ensure that data was collected on all morbidity, regardless of whether the respondent felt it was relevant to their mountain activities.

Figure 1
Detail of questions asked:
Name (Optional):
Address (Optional):
Age:
Years Guiding:
Sex:
Full Guide / Aspirant / Trainee / Candidate (delete as appropriate)
Current Job:
Employed / Self Employed?
Smoker / Non Smoker.
Subject of Special Interest
(e.g. Rock climbing, Alpine guiding, ski mountaineering, filming, big walls, greater ranges etc):
Geographical areas visited during working life:
Highest altitude reached:
Currently receiving or waiting for any medical treatment of any sort (Details Please)?
Hospital admissions with approximate dates and reasons during working life:
Outpatient or GP assessment or treatment with approximate dates and reasons during working life:
Current regularly or frequently taken medication with indication for taking:
Long term medication taken in past with approximate dates and reasons:
Additional medical problems of any sort encountered and not shown above that may be work related?

RESULTS

Responders

One hundred and sixty five questionnaires were distributed to all guides registered at the time of the survey. Eighty four (51%) were returned. This is an acceptable total of replies and the demographics of the replies in terms of sex, age, operational altitudes, category of guide and mountain activities reflects those of all registered British guides.[1] & [2]
Eighty one replies were from men and three from women. The majority of respondents were in 40-49 year old category with none less than 29 and a representative sample in 30-39, 50-59 and 60-69 age groups. Two were over 70 both still active in the hills but no longer paid. It is rare for a British Guide to qualify below the age of 30.[1] & [2]
Sixty four (76%) were working as guides, most self employed and all seven (8%) "retired" members still climbed for pleasure. Fourteen per cent of those not working as guides described themselves as working as administrators of various mountaineering schemes and still climbed for pleasure. There was a represent-tive spread of guiding experience between three and forty years (mean 19.5 years).
Fifteen respondents (18%) had operated above
8000m and of these eight (9.5%) had been to 8848m,
some without oxygen. Of the remainder 29 (34.5%)
quoted 7000 - 7999m as being their highest point
reached, 25 (30%) quoted 6000-6999m, seven (8%)
quoted 5000-6999m and only six stated that they had never operated above 5000m. Several had worked on every continent of the world.

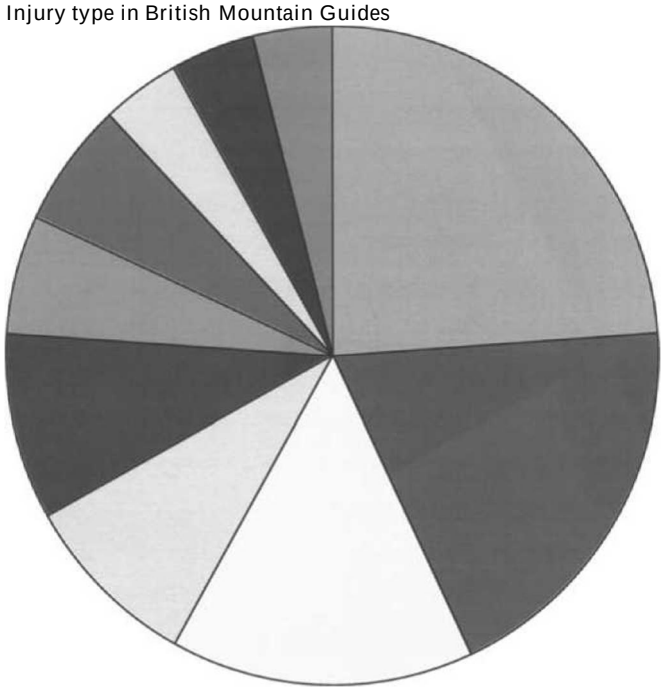
Medical Problems Experienced

Ten respondents (12%) stated that they never experienced any medical problems.

Muscular-skeletal & Trauma

Figure 2

Injury type in British Mountain Guides



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1 Lower Limb Fractures
2 Upper Limb Fractures & Dislocations
3 Fall with negligible Injury
4 Cut needing suturing
5 Acute Knee Ligament Injury
6 Spinal Fracture
7 Fractured Ribs
8 Head Injury
9 Fractured Pelvis
10 Internal Injuries

For the study acute trauma was defined as any injury requiring a hospital attendance but not necessarily a hospital admission. If on an expedition and far from medical aid it was defined as an injury meriting hospital attendance even if not feasible under the circumstances. There were 47 incidences of trauma experienced by 37 guides. Some guides had experienced more than one incident of trauma. None had more than three incidents. Twelve of these incidents were not related to mountain activities (e.g.: domestic acci-dents, industrial accidents, road traffic accidents).

Eleven (23.5%) mountaineering incidents involved fractures of lower limbs, nine (19%) involved upper limb fractures or dislocations, seven (15%) involved falls which merited hospital assessment but not serious injury, all four (8.5%) acute knee ligament injuries were sustained when skiing. Four required skin suturing, three involved spinal fractures (L1, L3 & C5/6), fortunately with no long-term neurological problems. Three had fractured ribs, one fractured pelvis one had a splenectomy post trauma, one was ventilated on ITU after a fat embolus following a long bone fracture and one fractured his skull with severe head injury but has since returned to active work.

Long term muscular-skeletal problems were reflected in 72 (86%) answers. Forty (48%) respondents reported lower limb problems. Of these 38 mentioned knee problems. Of the 38 sixteen reported simple "knee pain", eight reported more specific anterior cruciate ligament problems with six having operative repair. Thirteen people had had a knee arthroscopy with two having two arthroscopies and three having three arthroscopies. Some followed acute trauma but the majority presented as a chronic problem developing over time.

Upper limb problems were reported in 21 (25%) answers. Of these 14 involved the shoulder and seven the elbow.

The remaining musculoskeletal problems were reported as five general joint and tendon problems, five as hand problems and one an arthritic hip with replacement.

Medical (non musculoskeletal):
As expected in a fit and active population only 7 (8.5%) of the 83 completed replies (one reply had no smoking data) were from smokers. In 2004 25% of the UK adult population were smokers.[3]
There were only eleven acute medical problems declared. Five were altitude related problems, four were cases of travellers diarrhoea, one chest infection and one retinal haemorrhage which may have been altitude related, but this was not clear. Of the five altitude problems one was high altitude headache and three were High Altitude Pulmonary Oedema
("HAPE"). One of the subjects with HAPE had had the condition on three independent occasions. One person declared a "clot in the spine" which was altitude related and resulted in pain and then residual parasthesia. This was associated with a very high haematocrit which has recurred at altitude and which now prevents the subject working above 4500m.
Long-term medical problems include five people with urogenital problems made up of three cases of benign prostatic hypertrophy (aged 65, 53 and 68), two cases of testicular problems one chronic pain and one a simple cyst, and one person with renal calculi.
Three people have recurrent problems with piles (haemorrhoids). Four people had unrelated cardiovascular problems with one case of treated asymptomatic hypertension (age 70), one case of left ventricular hypertrophy (age 70), one of atrial fibrillation (age 71) and one case of asymptomatic mitral regurgitation (age 60). Three people had ENT problems of differing types, two were on medication for controlled asthma and two people suffered from glaucoma (age 55 and 61).
Dermatologically there was one reported problem with rosacea. One person reported having had a hernia operation and one having treated myxoedema. There was one case of treated bladder carcinoma (age 70) and one brain tumour (age 44)
Psychological:
Five respondents mentioned stress as a problem, two mentioned depression, two refered to alcohol intake. In the cases of stress and depression, two could be specifically linked to avalanche incidents and one to the pressures of being self-employed and working alone without peer support.

DISCUSSION

Limitations

This study is based on a small population, which limits any extrapolation. In a sport that prides itself on a lack of regulation it is difficult to obtain any meaningful data from specific groups and totally self-selected surveys are notoriously inaccurate. This survey relies on self-selection but the responses do reflect the demographics of the membership of the ABMG. Members of the ABMG partake in all forms of mountaineering and rock climbing.
Self-reporting is prone to error. Psychologically guides tend to think of themselves as "Fit". Several subjects had a list of injuries and illnesses, but they were from people who remained active despite apparent potential problems.
There has been one ABMG death through accident whilst working in the last ten years.[2] The subject was not included in the survey. Other premature deaths may have been missed but this is unlikely due to the author's personal knowledge of the study group.

Data

This study confirms a long held belief that active mountaineers are prone to chronic musculoskeletal problems. Seventy two examples of chronic musculoskeletal problems were found from the 84 respondents. Of these thirty eight were in the knees (45%). This represents a major occupation hazard and is above the incidence in the general population. In the UK the incidence of knee disorders in 20 to 60 year old males is 32%.[4] Baker identified sport as being a high risk activity, with soccer being predominant but also specifically listed running and rugby but did not give details of the "other" sports identified. In the work-place lifting, walking and repeated climbing of a lad-der or flight of stairs are known risk factors.[5] This may have some relevance to mountaineering. Load carrying has been studied with result-ant advice on footwear and a short stride gait.[6] & [7]
Twenty one responses had upper limb problems and 14 of these involved the shoulder which is common in high standard rock climbers.[8]
Guides are aware of these problems and many describe the use of Osteopaths, Chiropractors, Sports Physiotherapists, Homeopathy, and food supplements such as glucosamine and / or chondroitin. Comments on the forms included "inevitable aches and pains," "take herbal remedies," "general joint

creaking," "start most working days with an anti-inflammatory tablet", which would tend to illustrate a degree of physical and psychological adjustment.
From the general medical and specifically cardio-vascular and respiratory point of view, guides of all ages report a low incidence of illness.
None of the self selected self-reporting subjects mentioned any neurological or cognitive problems after altitude exposure, despite the fairly extensive work published on this potential problem.[9, 10, 11,12 & 13]
This could be due to their professional mountaineering expertise having a protective effect, or might indicate a lack of awareness or insight into some impairment. This may merit further investigation.
Avalanche risk is fairly unique to this job and two of those who had been avalanched reported this as triggering depression. To be avalanched is traumatic for anybody. It is possible that, for a guide who has a good knowledge of snow pack formation, there is the added stress of feeling that it may reflect poor professional judgement. Psychological implications for guides involved in trauma care in the mountains has been studied in Switzerland.[14] This is not relevant to rescue roles in the UK where guides do not routinely make up membership of rescue teams.
It has been postulated that increased exposure to ultraviolet radiation at high altitude[15 & 16] may increase the incidence of skin cancers,[17] seborrhoeic dermatitis, [18] solar keratosis and eye problems but, on this small sample none has been reported. More guides are now regularly operating at extreme altitude.

Prevention
British climbers are notoriously bad at 'warming up' prior to exercise and warming down after climb-ing.[19] With the high rate of muscular-skeletal problems these practices should be encouraged and sports physiotherapists with an interest in mountaineering could play a larger role in preventative advice and early treatment of injuries. The ABMG or British Mountaineering Council (BMC) could possibly draw up a list of interested physiotherapists throughout the UK, as is happening with doctors with an interest in mountain medicine (www.medex.org.uk).
Ski sticks for additional support when walking with a heavy rucsac[20] over rough ground have been popular in Europe for years. They are becoming more popular in the UK and possibly this should be encouraged, but like all innovations they have potential dis-advantages and may reduce balance skills.[21]
Sun protection should be encouraged in view of the massive doses of UV light to which guides are exposed although this study did not identify any evidence of increased sun-induced medical problems.
Comment
An awareness and acceptance of the stresses involved with guiding might help those who struggle with the consequences of the stresses. Professional is-lation can be difficult for those who do not have the peer support enjoyed by those working in an outdoor centre. Formal peer support should be offered to those involved in any accident especially those in avalanche incidents.
Recreational mountaineers are spending more time in the mountains and more join expeditions carrying heavy loads at altitude. The lessons learnt from pr-fessional guides about physical stresses on the body might provide help on prevention of chronic problems in recreational mountaineers.

THANKS
All members of the British Association of Mountain Guides who provided the data. Dr David Coggon, Professor of Occupational and Environmental Medicine, University of Southampton for information on occupational incidence of knee problems.
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ONFLICT OF INTEREST
The author has climbed with members of the ABMG both socially and as a client.
Dr David Hillebrandt. FIMC RCS (Edin).
General Medical Practitioner.
The Medical Centre Holsworthy, Devon
EX22 6JX. England. Phone: 00 44 (0)1049 253692 Fax: 00 44 (0)1409 254184 E Mail: dh@hillebrandt.org.uk

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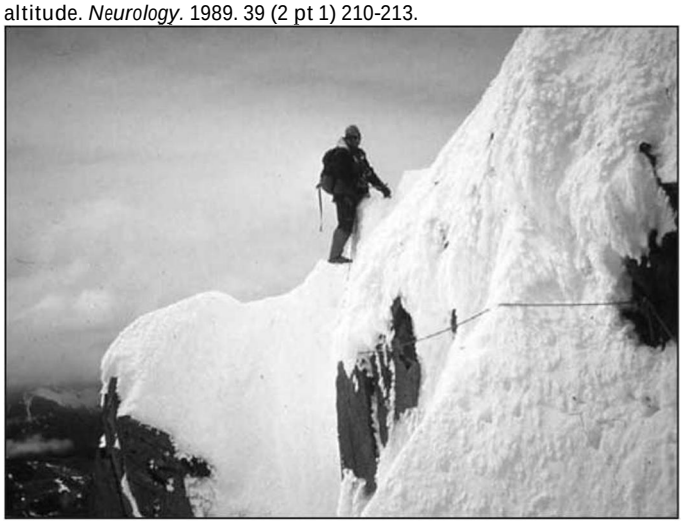

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