ORIGINAL RESEARCH

Personal and Professional Profile of Mountain Medicine Physicians

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Objective.—The purpose of this study was to define and describe the personal and professional profile of mountain medicine physicians including general physical training information and to include a detailed overview of the practice of mountain sports.

Methods.—A group of physicians participating in a specialized mountain medicine education program filled out a standardized questionnaire. The data obtained from this questionnaire were first analyzed in a descriptive way and then by statistical methods (χ^2 test, t test, and analysis of variance).

Results.—Detailed results have been provided for gender, age, marital status, general training frequency and methods, professional status, additional medical qualifications, memberships in professional societies and alpine clubs, mountain sports practice, and injuries sustained during the practice of mountain sports.

Conclusions.—This study has provided a detailed overview concerning the personal and professional profile of mountain medicine physicians. Course organizers as well as official commissions regulating the education in mountain medicine will be able to use this information to adapt and optimize the courses and the recommendations/requirements as detailed by the UIAA-ICAR-ISMM (Union Internationale des Associations Alpinistes, International Commission for Alpine Rescue, International Society for Mountain Medicine).

Key words: mountain, mountaineering, climbing, mountain medicine, high-altitude medicine, mountain medicine education, mountain medicine courses

Introduction

Mountaineering and climbing have evolved from sports being practiced in their different forms by only small groups of highly focused people to sports attracting larger numbers of often unprepared amateurs. This change has been achieved by creating a number of subspecialties (eg, sport and icefall climbing, mountain biking, river rafting, canyoning) as well as by defining new goals for trekking and expeditions. However, this change has led to a significant increase in accidents and high-altitude problems.^{1–6}

Thus, the medical community has had to deal with these developments and, consequently, has had to provide adequate preparation for its patients practicing these sports. Because the various mountain sports feature very specific problems not dealt with in normal sports med-

icine programs,^{7–9} there is a need for specialized education in mountain medicine focusing on the different medical aspects of these new mountain sports.^{4,9,10}

This situation is being dealt with by organizing, in different countries, courses that offer the specific mountain medicine education required when encountering medical incidents in the alpine or expedition setting. Because the content of these courses varies and there is little compatibility between the courses, the ICAR MEDCOM (International Commission for Alpine Rescue Medical Commission), in cooperation with the UIAA MEDCOM (Union Internationale des Associations Alpinistes Medical Commission), developed a set of recommendations and minimal requirements approved by both commissions (1997) and accepted by the ISMM (International Society of Mountain Medicine) (1998). These recommendations could be integrated into the existing programs respective of national and regional needs and standards while creating and maintaining minimal requirements for content, duration, and length of the

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courses. National courses that fulfill the minimal requirements defined by the work of the commissions receive an approval and are issued a UIAA-ICAR-ISMM label. Once completed, the International Diploma for Mountain Medicine (UIAA-ICAR-ISMM) is conferred to their successful candidates.¹⁰⁻¹⁴

For minimal requirements, the course cycle is divided into 1 common course and 2 specialized courses ("mountain rescue medicine" and "expedition and wilderness medicine"), which can be partly or completely integrated into the common course. The common course and a specialized course that total at least 100 hours are necessary to obtain the International Diploma. No definite recommendations are given for examinations. Contents of the common course include altitude problems, hypothermia, avalanche rescue, survival, practical trauma, alpine techniques, the first aid kit, and legal aspects. Most contents are reviewed in the specialized course, with more detailed and up-to-date knowledge given in the expedition medicine course (eg, altitude problems, cold, the medical kit, improvised rescue techniques, practical expedition medicine). Previous literature that studied these topics showed 13 different programs lasting from a long weekend to a full 3-week course with final examinations. Through these courses, 3200 physicians had their first contact with mountain medicine.¹⁰⁻¹⁴

Although mountaineers and mountain medicine patients have been extensively described,^{4,5,15-21} there have, to our knowledge, been no specific studies dealing with the physicians that practice mountain medicine ("mountain rescue medicine" or "expedition and wilderness medicine") or with the physicians enrolled in specialized mountain medicine education programs. The purpose of this study was therefore to provide a personal and professional profile of mountain medicine physicians. This includes information about all personal and professional issues with respect to mountain medicine and mountaineering (eg, membership in alpine clubs, mountain medicine organizations, training frequency, practice of mountain sports, mountain sports experience). The personal and professional profile of these physicians enrolled in mountain medicine education programs will provide direct feedback to course organizers and will allow short-term developments in course structure and course contents to adapt and optimize the courses and the recommendations/requirements as stated by the UIAA-ICAR-ISMM.^{12,13}

Materials and methods

The present study was performed during the international Swiss summer mountain medicine course in 1999. Forty-five mostly European physicians (30 men, 15

women) who participated in this mountain medicine course were given a standardized questionnaire for the purpose of gathering information about their personal and professional background, which included detailed questions about training methods, training frequency, mountaineering, and sports injuries. First, all data were analyzed in a descriptive way and then the dependencies of different variables were analyzed, and tendencies and significances were determined using various statistical methods (eg, χ^2 test, *t* test, analysis of variance).

The aforementioned questionnaire was developed in close cooperation and coordination with the UIAA MEDCOM and the organizers of the Swiss mountain medicine courses. It was introduced to the participants by the course director (Bruno Durrer, MD) and then fully explained by the author, who was present during the completion of the questionnaire to answer any queries.

The complete questionnaire was tested for validity and reliability in conjunction with a professional statistician (MWI, Saarland, Germany). Validity was tested by means of "content validity" by a group of experts in the field of mountain medicine.²² Reliability was tested by presenting the questionnaire to this group of physicians at another time as well as to a second, nonrelated group of mountain medicine physicians with the same experience and knowledge.²² There were no significant differences concerning the answers of the questionnaire.

Results

GENDER AND AGE

The group consisted of 45 physicians (30 men, 15 women) with a mean age of 33.2 years (men, 34.3 years; women, 31.2 years; range, 23-53 years). Eighteen participants were younger than 30 years, 19 were between 30 and 39 years, 4 were between 40 and 49 years, and 4 were older than 50 years.

No tendencies or significances were noted.

MARITAL STATUS

Twenty-three participants were single (16 men, 7 women), 10 were living with a partner (5 men, 5 women), 10 were married (8 men, 2 women, including 1 couple participating together at the course), and 2 were divorced (1 man, 1 woman).

No tendencies or significances were noted.

NUMBER OF CHILDREN

Thirty-four participants (21 men, 13 women) had no children, 3 (2 men, 1 woman) had 1 child, 3 (all men)

had 2 children, and 5 (4 men, 1 woman) had 3 children. All physicians with children were married or living with a partner.

No tendencies or significances were noted.

GENERAL TRAINING FREQUENCY AND METHODS

Five physicians (4 men, 1 woman) exercised once a week or less, 20 (15 men, 5 women) exercised 1 to 2 times a week, 11 (7 men, 4 women) exercised more than 2 times a week, and 8 (3 men, 5 women) exercised more than 3 times a week. One physician did not answer this question.

Thirty-nine physicians (25 men, 14 women) practiced long-distance endurance sports. Fourteen of these participants (8 men, 6 women) did this training using a heart beat monitor, and 6 of them (5 men, 1 woman) used additional lactate control.

No tendencies or significances were noted.

RISK FACTORS

Thirty-nine physicians (27 men, 12 women) were non-smokers. Four of them (3 men, 1 woman) smoked between 1 and 5 cigarettes daily. Two female physicians did not answer this question. Twenty-eight physicians (17 men, 11 women) did not drink any alcohol, but 13 of them (10 men, 3 women) did drink alcohol regularly in a social setting. Two men and 1 woman did not answer this question.

No tendencies or significances were noted.

PROFESSIONAL STATUS

Seven participants (4 men, 3 women) were in the process of completing their internship, 6 (4 men, 2 women) worked as general practitioners, 20 (13 men, 7 women) were enrolled in specialist education programs, and 7 (all men) were specialists. The physicians in specialist education programs were enrolled in general medicine (2), anesthesia (4), general surgery (2), gynecology (2), internal medicine (5), neurology (1), pediatrics (1), dentistry (2), and orthodontic surgery (1). The consultants were active in general medicine (3), anesthesia (1), internal medicine (2), and orthopedic surgery (1).

No tendencies or significances were noted.

ADDITIONAL MEDICAL QUALIFICATIONS— ADDITIONAL MEDICAL OR SCIENTIFIC WORK

Three physicians (all men) had an additional qualification—2 in sports medicine and 1 in tropical diseases. As

additional regular work, 12 (9 men, 3 women) indicated time spent in emergency medicine, and 7 (5 men, 2 women) indicated time spent in science and research.

No tendencies or significances were noted.

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS, MOUNTAIN MEDICINE ORGANIZATIONS, OR ALPINE CLUBS

Thirty-three physicians (23 men, 10 women) were members of a professional doctor's association, 18 (12 men, 6 women) were members of a mountain medicine organization or mountain medicine national society, and 24 (16 men, 8 women) were members of an alpine club.

A tendency was noted with respect to age. The older the physicians, the more often they were members of professional organizations, mountain medicine societies, and alpine clubs.

REGULAR READING OF SCIENTIFIC JOURNALS

Thirty-nine physicians (25 men, 14 women) regularly read scientific journals related to their subspecialty in medicine, sports medicine, or mountain medicine.

A tendency was noted with respect to age. Older physicians more often read scientific journals than younger physicians.

MOUNTAIN SPORTS PRACTICE

Forty-three physicians (28 men, 15 women) had practiced one of the different mountain sports, mostly mountain hiking (16 men, 4 women), climbing (16 men, 8 women), and classic alpine mountaineering (13 men, 7 women). Ten physicians (9 men, 1 woman) practiced trekking, and 5 (4 men, 1 woman) practiced expedition and high-altitude mountaineering (Table). The length of practical alpine experience varied from 1 to 40 years of personal mountaineering and climbing experience.

A significance ($P = .004$) was noted in the area of mountain hiking in relation to gender, and tendencies were noted in the areas of walking and trekking in relation to gender. Male physicians practiced these mountain sports more often than female participants.

SKELETAL AND SOFT TISSUE INJURIES RELATED TO MOUNTAIN SPORTS PRACTICE

Seventeen physicians (11 men, 6 women) suffered 30 skeletal or soft tissue injuries while practicing mountain sports. They experienced 7 fractures, 3 dislocations, 13 ligament tears, and 6 soft tissue muscle injuries.

No tendencies or significances were noted.

Practiced mountain sports*

<i>Practiced mountain sports</i>	<i>Physicians (n = 45)</i>	<i>Physicians, %</i>	<i>Men (n = 30)</i>	<i>Women (n = 15)</i>
Walking	20	44.4	16	4
Mountain hiking	28	62.2	18	10
Climbing (local crags)	24	53.3	16	8
Climbing (alpine routes)	20	44.4	13	7
Sport climbing (from UIAA VII)	7	15.6	6	1
Alpine mountaineering (classic—AD)	20	44.4	13	7
Alpine mountaineering (difficult—TD)	7	15.6	5	2
Alpine mountaineering (extreme—ED, ABO)	2	4.4	2	0
Snow and ice walls (up to 60°–70°)	2	4.4	2	0
Ice climbing	2	4.4	2	0
Trekking	10	22.2	9	1
High-altitude mountaineering	5	11.1	4	1
Expedition mountaineering	5	11.1	4	1
Delta plane	1	2.2	1	0
Parachute sailing	4	8.9	3	1
Mountain biking	16	35.6	10	6
Mountain running	5	11.1	4	1
Ski touring	23	51.1	17	6
Alpine skiing	22	48.9	15	7
Nordic skiing	11	24.4	9	2

*UIAA indicates Union Internationale des Associations Alpinistes; AD, quite difficult; TD, very difficult; ED, extremely difficult; and ABO, abominably difficult.

Discussion

The purpose of the present study was to describe the personal and professional details of a group of physicians undergoing specialized mountain medicine education in the summer course of the Swiss mountain medicine course cycle. To our knowledge, it represents the first study of its kind: mountaineers have been analyzed and described,^{9,15–21} mountain medicine courses have been presented, and their contents have been compared^{10–14}; however, until now, the physicians practicing mountain medicine (eg, mountain rescue doctors, expedition doctors) or undergoing mountain medicine education have not been the subject of scientific investigation. This study can be considered representative of a group of mountain medicine physicians taking part in international education programs in Switzerland and various other European programs. Nevertheless, because some mountain medicine courses have highly specific entry criteria (eg, member of an alpine club with recommendation, member of the alpine corps of the army),^{10,11} the personal and professional details of the participating physicians of these courses could differ from those defined in this study.

The gender distribution of about two-thirds male and about one-third female participants correlates with the

gender distribution published in the first international overview of mountain medicine courses in 1998.¹⁰ A comparison of the age distribution is not possible, as there are no other groups that have been analyzed before, but it is striking that more than 75% of the participating physicians are younger than 40 years—which contrasts with more than 50% of practicing doctors, in general, being older than 40 years.²³ This age distribution clearly shows that a large number of younger colleagues are attracted by the “young” and growing subspecialty of mountain medicine. This development will be of enormous value to mountain medicine, as this young generation will be able, while continuing the practice of mountain medicine, to create new education programs (eg, refresher courses, continuous medical education).

In the professional sector, the group showed a job distribution that closely correlated with the age distribution of the quite young group. Twenty-seven of the 45 participating physicians were still in their internship or in their specialist education program. In general, the distribution of the various specialties of the physicians in the education programs as well as the consultants corresponds with recent studies about physician disciplines.²³ It should be noted that physicians of all backgrounds, not associated with mountain sports or mountain medi-

cine (eg, gynecology or dental medicine), participate in these very specific education programs. It would be more reassuring to nonmedical fellow travelers if dentists and gynecologists that were participating in an expedition said that they had taken part in mountain medicine courses.

More than half of the participating physicians were members of an alpine club. Alpine clubs provide an excellent environment of well-known mountaineering colleagues for physicians who are beginning serious postcourse work. Furthermore, many participating physicians are members of national or international mountain medicine organizations. This situation can facilitate the ongoing process of interaction between members of the alpine clubs, the mountain medicine organizations, and the providers of guided alpine climbs and international expeditions and provide an atmosphere for the participants to get to know one another better and gain mutual respect. In this area, a trend could be detected. Older participants were more often members of an alpine club or a mountain medicine society than were younger participants. Thus, physicians practicing mountain medicine have active contact with their mountaineering peers only at a later stage in their careers. This is a negative observation, since each organization, especially in new, developing areas, needs the full support of all interested doctors, including the younger doctors. New ways should be developed to facilitate the approach of these organizations so that a broad base of younger physicians entering the subspecialty or participating in the appropriate educational program is established.

Forty-three participating physicians practiced mountain sports. Most physicians did walking or mountain hiking—these being the most popular mountain sports of mountaineers in general surveys, too.²⁴ Climbing and alpine mountaineering were also practiced in about the same way by the participating physicians as by the nonmedical mountain people. However, differences could be noted with regard to high-altitude and expedition mountaineering, where a higher percentage of the study group was involved with these aspects of mountaineering when compared to general mountain adepts.²⁴ This was not astonishing, as the course was partly specifically designed for high-altitude and expedition medicine, and thus, it could be expected that mountaineering physicians with this background were participating in higher numbers. The fact that a significantly higher number of men do more walking and (mountain) hiking than women may be due to the fact that men do more “approach marches” to places where serious mountaineering sports (eg, high altitude mountaineering, alpine climbing, ice-climbing) are practiced. Fewer women participate in serious mountaineering sports than men and therefore do

not practice walking and hiking as often as men for those “approach marches.”

SUMMARY AND CONCLUSION

This study, with its goal of providing an overview of the personal and professional profile of future mountain medicine physicians who were participants in a specialized education program in mountain medicine, describes a mixed group of mostly young doctors—part of whom are still enrolled in specialist education programs. Although most of these physicians kept fit and tried to practice (mainly endurance) sports at least once a week, some of them entered the mountain medicine course without a great deal of former mountain sport experience. Moreover, although many were members of professional and alpine societies and clubs, membership in these organizations should be enhanced. After their first contact with mountain medicine in these courses, young doctors may be encouraged to join these organizations. The details of this personal and professional profile of future mountain medicine physicians should provide the organizers of mountain medicine courses with a better definition of their target group and optimize the development of their mountain medicine courses so that all aspects of the needs of these highly interested physicians are met.

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