
Extreme Sports Medicine

Francesco Feletti
Editor

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 Springer



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Foreword

Extreme sports are no longer a gimmick or a niche field. Despite of the inherent risks, extreme sports have evolved tremendously and gained enormous popularity over the past decades, involving both elite and recreational athletes. The impressive film footage generated by extreme sports participants including breathtaking stunts (and spectacular crashes or near misses) has attracted not only sports fans but also major television networks, their audiences and advertising, with its associated financial gain. To the general public the challenge and associated risks may seem unreasonably high, and yet each event may be the culmination of hours of training and preparation, similar to every other professional and more common sports pursuit.

As more and more people are enjoying extreme sports, unfortunately increased numbers are becoming injured as a result. Future research is progressing alongside the sports development to allow the sports mechanisms, injury patterns, and predisposing factors to be better understood. It is the hope of all researchers and athletes involved to make the sports safer without detracting from its adventurous nature. Researching extreme sports requires thorough understanding of the activities, preferably from within, as every small detail related to the technique and equipment utilized is instrumental to the global picture.

Dr. Feletti's passion as a physician and as an extreme sports athlete is transparent throughout this comprehensive collection, spanning over many medical subspecialties and fields, which were not previously discussed or presented in this context. I believe that this will be a great source for the health-care provider, both for the understanding and when approaching the extreme sports athlete.

Boulder, Colorado

Omer Mei-Dan

Preface

Extreme sports medicine is a rising discipline focused on medical commitment in the field of extreme sports.

Extreme sport does not just mean *sport taken to its extreme extent*. Extreme sports are to be strictly defined as sports – *physical activity requiring specific skills* – that expose participants to the risk of serious injuries or death in the case of mismanaged execution.

However, a widely shared definition among scholars does not currently exist. Risk plays an undeniable key role when defining an extreme sport, but stating how much risk is required for an activity to be considered “extreme” may be debatable. The perceived risk may prevail over any actual danger.

Thus, many activities involving high speed, height, or extreme strain are often generically ascribed to extreme sports independent of their real level of danger.

Several remarkable features highlight extreme sports compared to traditional ones:

- People’s drive to overcome their own limits and to break free from their daily routine.
- The role of environmental and meteorological circumstances since many extreme performances depend on natural forces and are undertaken to challenge physical laws; environmental variables are in sharp contrast to the controlled circumstances of traditional sporting events.
- The importance of high-tech equipment and the implementation of innovative approaches to the specific performance conduct (e.g., particular life pace management in solo oceanic sailing races).
- A marked influence on the collective imagination and the attraction of media interest – a strong appeal that is exploited in marketing campaigns and by the fashion world.

Albeit with some exceptions, extreme sports also share the following features:

- Their solitary nature, usually being practiced alone or in remote areas.
- A greater attention to aesthetic criteria rather than traditional quantitative parameters (distance, time, score, etc.) when assessing performance to such an extent that competition is not at the core of many of these activities.

Extreme sports have never been so popular. Today, they are practiced by millions of people worldwide, and this is a phenomenon that medicine needs to face.

The fact is that medicine has, so far, only been involved in these sports on a limited basis, dealing mainly with their sudden onset injuries.

However, overuse injuries and illnesses, specific psycho-physical training, preparation and rehabilitation programs, and specific diet and supplements also need to undergo evaluation.

Professionals working in the field must gain the knowledge and skills needed to intervene in remote and adverse environments.

A *multidisciplinary approach* involving many medical specialties – physiotherapy, psychology, physiology, and branches of engineering, ergonomics, physics, and materials science – is necessary.

Research encounters many difficulties. It requires distinct methods. On the one hand, extreme sports participants may be reluctant to take part in medical research because of their cultural conditioning. On the other hand, pursuing these studies is difficult due to the many variables involved, and the assessment parameters adopted in traditional sports may not be adequate for many extreme ones.

For instance, the injury rate appraisal in terms of hours practiced may not be completely accurate since many of these sports are intermittent – the time in the field is not necessarily spent in action.

Consequently, medicine should approach extreme sports in a new, more meaningful way in terms of research, support, prevention, diagnosis, and treatment.

This compendium includes the open contribution of the most authoritative experts in key fields of extreme sports medicine worldwide.

This book is not structured systematically; the authors have been allowed to discuss their subjects freely. The editor took this approach deliberately due to the vastness of the theme and the variety of relevant subjects. This pioneering work conveys the energy of a new scientific field that will definitely continue to develop and expand into the future.

Ravenna, Italy
May 2016

Francesco Feletti

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About the Editor

Dr Francesco Feletti is an extreme sports medicine expert.

He currently works as a radiologist at the *S. Maria delle Croci* Hospital in Ravenna, Italy.

In collaboration with the *Politecnico di Milano* University, he conducts cutting-edge academic extreme sports medicine research, and in 2013 he co-founded the *ExtremeSportMed* international scientific society.

He is a faculty member and lecturer at the International Extreme Sports Medicine Congress, located in Boulder, Co, USA and the ambassador of that congress to Europe.

His 20-year international athletic experience in many extreme sports and background as a windsurfing, kitesurfing and sailing instructor give him unique insight into this world.

The Use of “Accident” and “Incident”

An editorial decision was made to allow authors to use the term “accident” rather than “incident” as they saw fit throughout the text.

In many industries, government agencies, legal and scientific fields, the term “accident” is not used, or its use is debated because it could imply that the event was unavoidable (i.e., a chance occurrence or an “act of God”) and therefore could not be prevented.

This is the reason why the *British Medical Journal* (BMJ) banned the term “accident” in an editorial in 2001 [1] consequently arousing fervent discussion [2].

However, in some ambits such as in aviation, “accident” and “incident” are both currently used to mean different feature events with the aim to highlight such aspects that may practically affect risk management [3].

In particular within this context, both terms refer to events that may be subjected to preventative measures; however, “accident” is adopted for any occurrence actually resulting in injuries, material damages, or fatalities, while “incident” more generically refers to any occurrence that affects or could affect safety [3].

The term “accident” is still common in scientific medical papers [4], and it is widely used in medical literature regarding extreme sports in particular.

Extreme sports medicine requires special methods and terminology, and, as already observed, the choice of the most appropriate terms in the field of extreme sports injury prevention may be particularly complex [2] due to the special features of these activities.

Within the sphere of extreme sports medicine, the use of both “accident” and “incident” may therefore help to distinguish events of different features. What is more, the use of “accident” could be difficult to replace.

In particular, the term “accident” is often preferred for an event which:

- actually *results in unpleasant consequences* such as material damages, injuries, illnesses, or death;
- happens unexpectedly and unintentionally as a consequence of a complex chain of events which includes environmental and weather conditions, equipment failures, or human error.

As such, “accident” may be appropriate to refer to injuries which take place while riding or flying specific extreme sports vehicles or crafts such as boards, parachutes, wingsuits, mountain bikes, etc.

Alternatively, the term “incident” more generically refers to an event which:

- *affects or may affect people’s safety*, near misses included;
- is not part of standard performance execution, either a *result of intentional athlete conduct* or a repercussion of misjudgment (i.e., as a consequence of tiredness or of temporary mental impairment caused by extreme environments such as e.g., nitrogen narcosis in extreme diving).

Therefore, in the specific setting of extreme sports, the implicit unpredictability of the term “accident” lends itself to the examination of complex events stemming from the wide range of variables involved, many of which are difficult to predict such as environmental and weather-related factors.

The use of the term “accident,” however, does not mean that sportsmen are at the mercy of fate; there is still the possibility of adopting preventive measures to minimize risks or break down the chain of events and intervene. This is one of the goals of extreme sports medicine.

For the above-mentioned reasons, the use of “accident” has been accepted in this compendium, but the authors were free to use the terminology that, in their opinion, was most suitable to any specific subject.

We think that, regardless of the terminology adopted to refer to injury events, the possibility of intervening in different ways to prevent extreme sports injuries is evident in each chapter and in the work as a whole.

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