
**Adventure tourism — Hiking and
trekking activities — Requirements
and recommendations**

*Tourisme d'aventure — Activités de randonnée et de trekking —
Exigences et recommandations*

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 228, *Tourism and related services*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

0.1 Adventure tourism

Adventure tourism is a global industry that is growing in importance. Whether provided on a commercial, not-for-profit or charitable basis, adventure tourism activities involve an accepted, inherent element of risk and challenge. Taking risks brings rewards but also brings dangers. In order to maximize the rewards, adventure tourism activity providers should operate as safely as practicable.

ISO 20611, ISO 21101, ISO 21102 and ISO 21103 provide a basis for adventure tourism activity providers to plan, deliver and inform people about adventure tourism activities as safely as practicable.

Effective implementation of these documents will help consumers and other participants make informed choices about activities and providers.

0.2 Adventure tourism standards

The purpose of these four documents is to establish the minimum requirements for safety management systems and information for participants.

The documents are independent entities since they apply to different aspects of adventure tourism:

- ISO 20611: provides requirements and recommendations for good practices for sustainability (environmental, social and economic aspects) for adventure tourism activities;
- ISO 21101: specifies how the adventure tourism activity provider manages its operations in terms of safety;

NOTE *ISO 21101 – Adventure tourism – Safety management systems – A practical guide for SMEs* is a handbook that offers step-by-step guidance and examples to help small and medium-sized adventure tourism operators to develop, implement and continually improve a safety management system following the requirements of ISO 21101.

- ISO 21102: specifies the minimum requirements and recommendations for competencies and the related expected results of competencies for adventure tourism activity leaders common to any adventure tourism activity;
- ISO 21103: specifies the minimum information that shall be communicated to participant and potential participant before, during and after the activity.

0.3 Purpose of this document

This document specifies service requirements and route classifications in adventure tourism involving hiking and trekking activities, with the purpose of facilitating the safe delivery of these activities.

Adventure tourism — Hiking and trekking activities — Requirements and recommendations

1 Scope

This document establishes requirements for adventure tourism involving hiking and trekking activities, relating to the safety of participants, leaders and assistants.

This document also establishes criteria relating to characteristics and difficulty level for hiking and trekking route classification.

This document applies to hiking and trekking activities that are offered as tourism products. Tourism product design involves a product planning and development phase that is not subject to this document. Some tourism products include hiking and/or trekking activities together with other tourism services (e.g. transfers, meals, lodging), but this document applies only to hiking and trekking activities, the additional tourism services being excluded from the scope.

This document is applicable to any kind of adventure tourism activity provider that offers tourism products consisting of hiking and/or trekking activities.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 21101, *Adventure tourism — Safety management systems — Requirements*

ISO 21102, *Adventure tourism — Leaders — Personnel competence*

ISO 21103, *Adventure tourism — Information for participants*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

adventure tourism activity

adventure activity for tourism purposes that involves a degree of instruction or leadership, safety management and an accepted inherent risk (3.15)

Note 1 to entry: An accepted inherent risk means that the *participant* (3.14) has a reasonable understanding about the risk involved.

[SOURCE: ISO 21101:2014, 3.35, modified]

3.2

adventure tourism activity provider

individual or organization having overall responsibility for all aspects of the provision of *adventure tourism activities* (3.1)

Note 1 to entry: Adventure tourism activities can be provided free of charge or in return for payment.

[SOURCE: ISO 21101:2014, 3.36]

3.3

altimetric variation

altitude variation between two waypoints

3.4

assistant

competent person who is able to assist and support the *leader* (3.13)

3.5

difficulty level

rating or degree of physical and psychological exertion expected to be encountered while participating in an *adventure tourism activity* (3.1), based on factors such as required technical capacity, terrain, altitude or climate

Note 1 to entry: [Annex A](#) includes criteria indicating difficult levels of the activity

3.6

exertion index in hiking and trekking

<in adventure tourism routes> estimate of the exertion required by a person to complete a journey

3.7

emergency

serious situation requiring immediate action

[SOURCE: ISO 21101:2014, 3.43]

3.8

first aid

emergency (3.7) procedures aimed at maintaining vital functions while ensuring that the condition of a casualty who is injured or unconscious or whose life is in danger is not aggravated, until he or she receives more qualified assistance for further treatment

[SOURCE: ISO 21102:2020, 3.7, modified]

3.9

hiking

adventure tourism activity (3.1) where the main element is walking and is less arduous than *trekking* (3.24)

3.10

interested party

person or organization that can affect, be affected by or perceive itself to be affected by a decision or activity

3.11

itinerary

description of the component parts involved in the *adventure tourism activity* (3.1), listing times, locations and activities

3.12 leader

competent person who takes responsibility for people, and is able to lead, guide and supervise an assigned activity

Note 1 to entry: A leader can also be referred to as a 'guide', 'monitor' or similar.

[SOURCE: ISO 21102:2020, 3.8, modified]

3.13 participant

person taking part in the *adventure tourism activity* (3.1) but not a member of the leadership team

Note 1 to entry: A participant can also be referred to as a 'client', 'customer' or similar.

Note 2 to entry: A leadership team comprises several *leaders* (3.12).

[SOURCE: ISO 21101:2014, 3.37, modified]

3.14 risk

effect of uncertainty on objectives

Note 1 to entry: An effect is a deviation from the expected. It can be positive, negative or both, and can address, create or result in opportunities and threats.

Note 2 to entry: Objectives can have different aspects and categories and can be applied at different levels.

Note 3 to entry: Risk is usually expressed in terms of risk sources, potential events, their consequences and their likelihood.

[SOURCE: ISO 31000:2018, 3.1]

3.15 route

course from the beginning of the *adventure tourism activity* (3.1) to its end

Note 1 to entry: In some routes, the start and end points are the same.

3.16 self-rescue

specific techniques implemented by a person on his or her own to manage adverse situations without external intervention

Note 1 to entry: In some situations, there can be more than one person engaged in self-rescue.

3.17 self-belay system self-connection system

safety device system, connected to the harness fixing point and connected to a safety point, made of ropes or another connection

Note 1 to entry: The self-belay system can have the capacity to absorb impact forces.

Note 2 to entry: A safety point can be a leash, a sling or a lanyard.

3.18 single-track trail

trail (3.23) where only one person or bicycle can pass at a time

3.19 stakeholder

individual or group that has an interest in any decision or activity of an organization

3.20

support vehicle

<trekking> vehicle intended for logistical support during the course of the journey, except for the removal of an injured person

3.21

sustainability

state of the global system, including environmental, social and economic aspects, in which the needs of the present are met without compromising the ability of future generations to meet their own needs

Note 1 to entry: The environmental, social and economic aspects interact, are interdependent and are often referred to as the three dimensions of sustainability.

Note 2 to entry: Sustainability is the goal of sustainable development.

[SOURCE: ISO Guide 82:2019, 3.1]

3.22

third-party provider

external organization or individual that provides services to the *adventure tourism activity provider* (3.2)

3.23

trail

narrow road, track or pathway, usually unpaved, in natural surroundings

3.24

trekking

adventure tourism activity (3.1) in a natural environment, on *trails* (3.23), which is self-sufficient for survival, includes an overnight stay and is more arduous than *hiking* (3.9)

Note 1 to entry: Trekking activities can include an overnight stay of one or more nights.

Note 2 to entry: Overnight stays can be in, for example, campsites or camp grounds, farms, hostels, lodges or bivouacs.

4 Service requirements

The hiking and trekking tourism product shall be designed and provided in such a way that the safety of the participants, leader and personnel involved in providing the product is ensured and the inherent risk is communicated to all stakeholders or interested parties.

The adventure tourism activity provider responsible for the operation shall:

- a) ensure that leaders meet the qualification requirements set out in this document;
- b) maintain records of the leaders' continual development of competencies;
- c) ensure that any service contracted to third-party providers that affects the quality and safety of the tourism product meets the requirements of this document and any others that the adventure tourism activity provider establishes;
- d) ensure there are plans and procedures for safety checks of the equipment, gear and supplies necessary for use during the adventure tourism activities; these safety checks shall be conducted prior to the activities and the results recorded and made available for review;
- e) adhere to the existing stipulations of use for the visited environment;
- f) adopt the use plans or ecological area plans available when the attraction is in a conservation area or in an area with some environmental restrictions;

- g) introduce measures to implement and improve hygiene care, to prevent contamination to workers, participants and the visited communities and to enhance health conditions in the adventure tourism destination;
- h) ensure that weather forecasts and any hazardous conditions are taken into account before starting the activities.

It is important to monitor available information from pertinent institutions regarding hazard conditions (see [10.1](#)).

According to the characteristics of the place of operation and the offered tourism product, the establishment of a maximum number of participants per activity shall be considered. When planning and operating the hiking and trekking activities, the organization shall adopt responsible environmental and social practices, such as the recommendations for conscious conduct in a natural environment (see ISO 20611). The adventure tourism activity provider shall consider official health recommendations regarding sanitary measures at the time to define a safe number of participants.

When planning the hiking and trekking product, the organization shall consider the carrying capacity of the tourist attraction where the activity takes place. This can include reduction of the number of participants, considering the characteristics of each specific route, defining protocols for the flow path of participants and the use of common spaces.

For tourism products with hiking and trekking activities, the minimum age of the participants is determined by regulatory authorities. If the adventure tourism activity provider offers tourism products to children under the minimum age or to participants with disabilities, this product shall be subject to planning that considers the characteristics, procedures and equipment necessary to ensure the safety of those specific participants. These products can require professionals, equipment and specific conditions other than those provided in this document.

The measures adopted shall be validated, technically justified and documented.

The route shall have been previously established and the itinerary shall be documented.

Hiking or trekking routes should be classified. Classification shall be in accordance with [Clause 14](#) and shall be known to the leader, participants (and assistants, if applicable) and other stakeholders or interested parties involved in the operation.

5 Leadership

5.1 Leader qualifications and quantities

The operating team, except in the case of self-guided routes, which are dealt with in [9.3](#), shall be composed of leaders who meet the requirements of ISO 21102.

The hiking or trekking adventure tourism activity provider shall determine the minimum number of leaders and assistants to ensure the safety of the group. These quantities of assistants (if applicable), participants and leaders shall be documented, based on the implementation of ISO 21101.

Environmental concerns, including sanitary considerations, can require reducing the maximum number of participants per group. If they exist, minimum impact practices should be taken into account.

5.2 Assistant competencies

The assistant shall have knowledge in order to act as support to the leader. At a minimum, this shall include knowledge of the region, main route and alternative routes.

The assistant shall be able to:

- a) instruct participants about hiking or trekking techniques and the use of equipment;

- b) ensure the smooth progress, pace and cohesion of the group, including controlling participant well-being;
- c) support the leader in emergency situations;
- d) use different communication systems [e.g. satellite phones, global positioning system (GPS), radio];
- e) instruct participants about technical, hygiene and sanitary measures to improve safety throughout all operations.

6 Participants

6.1 Profile collection

The adventure tourism activity provider shall obtain at least the following information from each participant:

- a) name;
- b) telephone number;
- c) document number (ID or passport);
- d) emergency contact;
- e) specific health or medical conditions, such as those related to allergies, surgery, diabetes, epilepsy, cardiovascular disease, joints, bones, muscles, respiratory illness, depression, phobias, euphoria or pregnancy;
- f) medicines used;
- g) age;
- h) previous experience with the activity;
- i) insurance coverage applicable to the activity and location, including rescue operations;
- j) fitness level for the activity;
- k) parental or responsible person consent letter, if applicable;
- l) disabilities (if any) relevant to the activity.

In routes where there is the possibility of submersion, information about the participant's swimming skills shall be requested.

Participants shall be advised to have an optional insurance appropriate to the adventure tourism activity.

The adventure tourism activity provider shall encourage participants to provide detailed information to facilitate responses to potential emergencies.

The adventure tourism activity provider shall ensure the confidentiality of participant information, except under emergency response circumstances.

6.2 Information analysis

The adventure tourism activity provider shall do the following:

- a) Define criteria for handling the minimum information of participants. The criteria shall be technically justified.

- b) Critically review the information provided to analyse whether a participant is able to perform the activities. There shall be a record of this analysis. If a participant has a health condition that might put them or others (e.g. workers, leaders, assistants or the local community) at risk, this participant shall be advised to contact a medical authority immediately.
- c) Ensure that participants who do not meet the established criteria do not perform the activities.
- d) Ensure that relevant participant profile information is provided in advance to the leaders and assistants involved in the activity.

7 Equipment

7.1 Equipment availability and quantities

7.1.1 General

The adventure tourism activity provider shall ensure that all leaders, assistants and participants involved have all the necessary equipment in accordance with the requirements of this document.

Participants shall not use any equipment that has not been properly inspected and authorized by the adventure tourism activity provider.

If the adventure tourism activity provider offers equipment to a group of participants, it shall be in good working condition and clean. To maintain hygiene before, during or after each operation, the adventure tourism activity provider shall implement cleaning procedures to mitigate potential contamination of people using the equipment.

NOTE 1 It can be convenient to have some spare equipment according to experience of use on the specific route.

NOTE 2 Special consideration can be given to participants about sharing of equipment.

7.1.2 Collective equipment

The adventure tourism activity provider shall perform hiking or trekking activities using at least the following collective equipment:

- a) guidance equipment (e.g. map, compass, GPS), where applicable;
- b) first-aid kit that enables a leader to give first aid;
- c) means of communication (e.g. radio, cell phone) with the group;
- d) a support vehicle (if applicable).

Collective equipment shall be available to the group throughout the journey, carried by leaders or assistants, the participants or a support vehicle. In the latter case, it shall be available to the group when needed.

7.1.3 Individual equipment

7.1.3.1 Leader or assistant equipment

The hiking or trekking leader or assistant shall carry at least the following:

- a) means of communication (e.g. radio, cell phone) that allows communication between leaders, assistants and support vehicles, when available;
- b) water container (e.g. canteen, hydration bag);

- c) closed footwear suitable for hiking or trekking and additional clothing that ensures protection, mobility and comfort in the visited area, according to the classification of the route, including coverage (e.g. hat, cap, helmet);
- d) backpack or other equipment that is not carried by hand, making it possible to carry the equipment;
- e) whistle;
- f) pocket knife or cutting tools (e.g. machete, cutlass, axe, hatchet);
- g) flashlight and spare batteries;
- h) watch and compass;
- i) emergency food and portable water;
- j) rope (if applicable).

NOTE Wearable gadgets or GPS devices, including devices to activate an emergency rescue, can be used as additional equipment to improve safety.

Wearable gadgets or GPS devices generally use batteries; consideration should be given to the use of green and renewable technologies.

7.1.3.2 Participant equipment

The adventure tourism activity provider shall ensure that participants use at least the following:

- a) appropriate closed footwear for hiking and trekking;
- b) clothing that ensures protection, mobility and comfort in the visited area, including coverage (e.g. head coverage, raincoat);

Depending on the characteristics of the route (e.g. length, arrival time), the adventure tourism activity provider shall ensure that each participant additionally has:

- backpack or other equipment that is not carried by hand, making it possible to carry small volumes;
- water container (e.g. canteen, hydration bag);
- flashlight and spare batteries;
- emergency food and potable water;
- survival blanket.

NOTE Participants can bring other equipment to improve safety during self-guided activities (e.g. thermal insulator to use inside floor tents, below the sleeping bag).

7.2 Equipment maintenance, cleaning and sanitizing

The adventure tourism activity provider shall do the following:

- a) Ensure that the equipment used is properly maintained and is up to date.
- b) Implement and maintain procedures for the periodic inspection of equipment, involving preventive and corrective maintenance, cleaning and sanitizing procedures. These procedures shall include all equipment used in the operation, relevant to the safety of participants, leaders, assistants (if applicable) and maintenance workers. Equipment shall be stored in an appropriate place, free from direct sunlight and any chemicals, and in an organized manner. These procedures shall be documented and include systematic and regular verification and pre-use inspection. There shall be a record of the checks made.

8 Participant preparation

8.1 Information for participants

8.1.1 General

The adventure tourism activity provider shall provide participants with preliminary information as defined in ISO 21103 prior to the sale. The adventure tourism activity provider shall also provide the following standard and recorded information prior to the operation:

- a) Description of the characteristics of the activity to be performed, such as duration, points and times for food and rest, availability of potable water on the route.
- b) Minimum impact procedures related to the activity to be performed, the environmental characteristics of the practice sites, the main potential negative environmental and sociocultural impacts and the corresponding minimization, mitigation and compensation measures.
- c) Description of safety precautions and measures to be taken in case of emergencies and to prevent potential contraction of diseases.
- d) Identification of leaders and assistants (if applicable), their qualifications and function.
- e) Rules of specific use of the area, including regulations, if any.
- f) Necessary requirements regarding the appropriate clothing for each activity, especially the type of footwear, type of fabric of the clothing and coverage, such as hat or cap.
- g) Necessary precautions regarding the climate, including guidance on the use of sunscreen, raincoats, warm clothing and insect repellent. For reasons of environmental conservation and sustainability, the person responsible for the operation should either recommend that the participants avoid excessive use of sunscreen, hygiene products and insect repellent or prohibit their use in certain places.
- h) Support points during the route.
- i) Necessary equipment, food and beverages that each participant needs to bring to the activity that are not provided by the adventure tourism activity provider responsible for the operation.
- j) Presentation of the equipment to be used, its functions and relevant characteristics.
- k) If the product includes insurance for the adventure tourism activity.
- l) The type of route to be taken and particular route details; when the route's classification becomes available (in accordance with [Clause 14](#)) participants shall receive this information.

Information shall be provided to the participant of any training, qualifications and/or experience level required to complete the planned activity

It is advisable to record that participants have understood the information received.

8.1.2 Knowledge of risks and responsibilities

The adventure tourism activity provider shall provide each participant with a document that details the risks and responsibilities inherent in carrying out that activity and any insurance coverage. Online forms and documents are recommended.

The person in charge of the operation should emphasize the authority of the leader and the assistant in carrying out the activity.

The adventure tourism activity provider shall keep a record of this procedure.

8.2 Participant instruction

Participants are usually instructed at the time of purchase or at the site of the adventure tourism operation.

On site, the organization should inform participants about the route classification, if applicable (according to [Clause 14](#)).

Instructions regarding the following shall be provided to participants:

- a) placement, adjustment and use of individual equipment necessary for the activity to be performed;
- b) forms of progression and communication in the operation, including the need for the group to stay together;
- c) prevention of any participant from getting lost or not being supervised by a leader or assistant (if applicable);
- d) behaviour during the activity;
- e) specific care regarding the techniques of the performed activity;
- f) basic measures to be taken in case of emergency;
- g) actions to prevent potential cross-contamination of diseases.

It is recommended that a preparatory exercise is given to participants for warm-up purposes.

NOTE Observing a participant while doing a preparatory exercise can provide useful information about their profile and behaviour.

9 Safety and insurance requirements

9.1 General

Leaders and assistants shall know in advance the general conditions and any changes in the routes where the activity is performed.

Participants shall be advised to purchase appropriate insurance for the adventure tourism activity.

The adventure tourism activity provider shall ensure that there are suitable financial arrangements to assist participants in the event of an emergency. Such financial arrangements may be provided by an appropriate insurance product and be arranged either by the adventure tourism activity provider or the participant. The arrangements shall include, but not be limited to, the following emergency situations:

- a) evacuation from the emergency location;
- b) medical treatment;
- c) medical repatriation to the participant's home country, if relevant.

9.2 Prevention of risks and safety measures

In the case of narrow passages or steep slopes, specific procedures shall be adopted to ensure the safety of those involved in the operation before, during and after the crossed obstacle.

Guiding and progression techniques shall be adopted to ensure the safety of the group and self-belay systems used in places where there is a risk of falling, river crossings and waterways. On sections of routes with a possibility of submersion, procedures or equipment that ensure flotation shall be adopted.

Progression procedures shall be established which:

- a) include measures to prevent distinct groups from mixing;
- b) ensure that there is a leader or assistant at the beginning and the end of each group;
- c) provide special care in sections with:
 - vehicular traffic;
 - obstacles (including water hazards);
 - animals;
 - a danger of falling;
 - meetings with other groups;
 - slippery or wet slopes;
 - landslides;
 - a high risk of rural fire.
- d) provide rest stops;
- e) establish and control the pace of travel;
- f) prevent cross-contamination of people during the activity, including participants, leaders, assistants (if applicable) and the local community.

The adventure tourism activity provider shall ensure that there are procedures for participants who hesitate or give up on the activity, in particular regarding safety.

The leader can decide to make stops to meet any participant needs (including those of participants with disabilities), but this shall be done without compromising the operation's safety.

9.3 Communication

Effective communication between leaders and assistants shall be ensured through a communication procedure using, for example, beeps (e.g. a whistle), visual signs or radio, depending on the characteristics of the location.

Effective communication shall be ensured between:

- a) leaders, assistants (if applicable) and participants (including foreign participants, if applicable);
- b) leaders, assistants (if applicable) and, in the case of specific adventure tourism activities that use any of these, support vehicles or support base.

Participants shall be informed of the communication procedures between participants, leaders and assistants prior to risk exposure.

9.4 Specific requirements for self-guided routes

Self-guided products may be offered, provided that the following limits are met with respect to [Clause 14](#):

- up to level 2 in the severity of the environment criteria;
- up to level 1 in the navigation orientation criteria;
- up to level 3 in the terrain conditions criteria;

— up to level 2 in the physical exertion criteria.

Even if only one of these criteria is rated higher, the route shall be conducted by professionals in accordance with the requirements established in [Clause 5](#).

Regarding the equipment, there is no obligation regarding availability of means of communication. However, the adventure tourism activity provider shall ensure that there is an emergency response for participants on this type of route.

The adventure tourism activity provider shall ensure that self-guided routes are properly signposted and in working condition.

There shall be a record kept of the checks made.

10 Risk management

10.1 Risk analysis and assessment

Risk analysis and hazard assessment shall be performed in accordance with ISO 21101.

10.2 Hazard and risk inventory

A documented hazard and risk inventory shall be carried out in the realization of the product in accordance with ISO 21101. Among other risks, the following shall be accounted for in the preparation of the inventory:

- a) sudden increase in water volume due to weather conditions or artificial flow control devices;
- b) falling stones, branches or other objects along the route;
- c) drowning;
- d) hypothermia or hyperthermia;
- e) falls;
- f) loss of equipment or other supplies;
- g) a participant going missing from the group;
- h) an accident involving the leader or assistant;
- i) contamination;
- j) accidents with venomous animals;
- k) unwillingness of the participant;
- l) a participant giving up the activity for any reason (e.g. psychological or physical);
- m) destabilization of the walking surface;
- n) a participant experiencing labyrinthitis, dizziness, vertigo or acrophobia;
- o) incidents due to changes in climatic conditions (e.g. dehydration, overheating, terrain changes);
- p) fires in rural areas, such as forest and brush.

The inventory shall be critically reviewed at least once a year.

10.3 Risk treatment

Based on the results of the risk assessment, a documented risk-management plan shall be developed. The assessment plan shall be critically reviewed at least once a year or as necessary due to risk events.

10.4 Emergency preparedness and response

Plans and procedures shall be established and maintained to identify and address potential incidents, including accidents and emergencies, and to prevent and mitigate their associated consequences. These plans and procedures shall include a forecast of actions to be taken and the necessary information, according to the anticipated events and the assessed hazard and risk inventory.

These plans shall contain the necessary information to initiate specific actions in the event of an emergency or a first warning sent to a designated person previously defined in the emergency plan.

The most critical anticipated situations identified in the risk assessment (e.g. the higher-risk situations that can cause incidents) and the emergency action plan(s) shall have been previously determined by the adventure tourism activity provider. There shall be a documented technical justification for the selection of these critical situations that are addressed by the emergency action plans.

Examples of situations foreseen in emergency action planning:

- evacuation of people at risk;
- search for lost people;
- accident involving the leader;
- provision of first aid;
- identification of a person in distress.

Emergency response planning shall include:

- a) information on the structure of authorities and their responsibilities;
- b) prior information on the performance of activities of third parties that may initiate an emergency response action; this third party shall have guidance on how to act in an emergency situation;
- c) analysis of local availability for drives and routes;
- d) analysis of the availability of media in the region and under all conditions for the implementation and establishment of effective measures for communication in an emergency situation;
- e) identification of the structure available to respond to emergencies in the region and the procedure for initiating this response; this shall ensure that in the event of an emergency there is:
 - a survey of the availability of medical and hospital care in the region, including specialities and services offered;
 - means to summon help;
 - access to the rescue services;
 - estimated response time;
 - a procedure for giving the first warning;
 - safe transportation for the affected persons.

Participants shall be informed in advance of the available emergency response resources and facilities at the activity sites, including the anticipated response time.

Emergency response planning procedures shall be tested at least once a year, where practicable. There shall be records of these tests. They shall be critically reviewed at least annually and following incidents, accidents or emergencies.

All personnel involved in the operation of the hiking or trekking activity shall be trained to implement emergency response plans, according to the distribution of responsibilities and anticipated authorities. There shall be records of this training.

NOTE ISO 21101 gives examples of emergency preparedness and response.

11 Service completion

The organization shall have a service completion and participant evaluation procedure in place.

This procedure shall be documented and shall include informing participants of how to make complaints and how these will be processed. It shall also include measures for conducting a product evaluation by the participants.

NOTE 1 Product evaluations can be done using forms or other consultation mechanisms.

Service completion shall be recorded.

To improve safety, these records shall be designed so that the performance of leaders and other personnel involved in adventure tourism activities with hiking or trekking can be evaluated in different ways, such as:

- a) product realization;
- b) participants' impressions;
- c) general observations about the operation;
- d) performance of the leader, assistant (if applicable) and participants;
- e) information about status and performance of equipment and records of incidents that have occurred, measures and procedures adopted, possible causes, consequences and recommendations for future actions.

NOTE 2 This can be done, for example, with a daily or weekly log according to the flow of participants and complexity of the operation, or even with each operation.

12 Service control

12.1 General requirements

Steps shall be taken to ensure that the operation is carried out in a planned and controlled manner.

The adventure tourism activity provider shall make a daily and regular assessment of the conditions under which the activity is taking place. This assessment shall include a general assessment of the condition of participants, monitoring of weather conditions, equipment conditions and other relevant data.

This evaluation should be recorded (e.g. in a daily operation).

The adventure tourism activity provider shall ensure that during the operation the participants receive guidance on how to proceed and safety-critical aspects, when relevant.

When subcontracting (e.g. leaders, assistants or activities included in the service), a process of service provider qualification and performance monitoring shall be in place. It shall be ensured that the

requirements of this document are met by subcontractors. There shall be records of the qualification and follow-up of subcontractors' competence.

The adventure tourism activity provider shall systematically review the collected data, including records, and implement improvements or adjustments to its activities.

12.2 Records

12.2.1 Maintaining a registration system

Records shall be:

- a) stored and maintained to provide evidence of conformity with requirements and the effective operation of the service provider;
- b) legible, readily identifiable and retrievable.

12.2.2 Suggestion and critical records

A system of records of suggestions and comments from participants, contributors and employees shall be maintained, including:

- a) suggestions or feedback;
- b) critical analysis of suggestions or feedback;
- c) identification of causes;
- d) alternative solutions and their viability;
- e) proposed measures;
- f) measures taken;
- g) evaluation of the effectiveness of the measures taken.

Participants, contributors and staff shall be informed of how suggestions and feedback are dealt with, and the adventure tourism activity provider shall respond, where possible, to suggestions and feedback received, including the action(s) taken.

12.2.3 Incident recording, including accidents

A record of incidents, including accidents, shall be retained to enable traceability and follow-up of measures and actions taken. The record shall contain at least the following information:

- a) activity;
- b) date (including time);
- c) location (with relevant accuracy);
- d) stakeholders or interested parties (e.g. participants, leaders, assistants);
- e) description (e.g. environmental conditions, used equipment, particular circumstances);
- f) probable cause;
- g) treatment;
- h) consequences;
- i) corrective actions;

- j) preventive actions;
- k) person responsible for the information;
- l) registration approval.

The adventure tourism activity provider should report accident information to the relevant agencies, stakeholders or interested parties, as appropriate.

12.3 Procedures

For the provision of the service, at least the following documented procedures that can affect safety shall be established and implemented:

- a) reception and rejection of participants;
- b) analysis and critical evaluation of the product;
- c) hiring and training of staff;
- d) management, maintenance and conservation of equipment and materials;
- e) emergency response;
- f) handling of suggestions and feedback.

12.4 Critical service review

Service provision shall be periodically reviewed, critically checking all aspects of the operation. This check shall be done at least once a year. The verification shall be recorded.

Critical service review shall take into account:

- a) audits of trips;
- b) critical analysis of records of incidents, including accidents;
- c) critical analysis of the activity reports of the leaders or assistants (if applicable);
- d) critical analysis of other records (e.g. service providers' qualification and monitoring, competencies of the leaders and other personnel, participant feedback and respective measures taken).

The critical review shall result in an appreciation of the safety and satisfaction of the participants and any preventive or corrective measures or actions. If necessary, action plans shall be established to ensure the implementation of the measures or actions identified as necessary or opportune.

13 Social and environmental mitigation and conservation

When planning and operating the hiking or trekking activities, the adventure tourism activity provider shall consider environmental and sociocultural negative impacts, and practices or measures shall be adopted to minimize or mitigate these. Records of planned measures and their implementation shall be kept.

Consideration of environmental and sociocultural impacts can be based on past experience, similar cases and the application of established practices, and does not imply the preparation of specific environmental and sociocultural assessment and monitoring studies and research by the adventure tourism activity provider.

When the activity is carried out in conservation units, the adventure tourism activity provider should consider its public use and environmental area planning, if any, when planning the activity.

Participants shall be informed of the main negative environmental and sociocultural impacts and the corresponding mitigation and conservation measures.

NOTE ISO 20611 can be used by adventure tourism activity providers to implement social and environmental mitigation and conservation actions.

14 Route classification

14.1 General requirements

The route can be classified by various organizations (e.g. route owners, tour operators, regulatory authorities, development agencies). The adventure tourism activity provider that classifies a given route is responsible for the information provided.

The classification shall be made for the specific hiking and trekking activity.

The route classification allows participants to have preliminary information to help in choosing a particular route. It also helps the adventure tourism activity provider to lead participants in choosing the route, for example according to their physical condition.

The classification shall be updated if there are changes in the general conditions of the route.

The adventure tourism activity provider should use this hiking and trekking route classification in the information provided to participants in accordance with ISO 21103.

[Annexes A, B](#) and [C](#) give examples of route classification.

14.2 Classification criteria

Route classification consists of four criteria:

- a) severity of the environment: refers to the dangers and other difficulties arising from the natural environment, such as temperature, rainfall, risk of falls, ease of rescue or self-rescue, which can be encountered along the way;
- b) route navigation orientation: refers to the degree of difficulty in orientation, such as the presence of signs, well-marked trails, single-track trails or the presence of landmarks needed to complete the route;
- c) terrain conditions: refers to the aspects found on the route in relation to the ground and its conditions, such as types of terrain, sections with obstacles, sections with loose stones;
- d) physical exertion: refers to the amount of physical exertion required to complete the route, taking into account extension and unevenness (uphill and downhill), based on an average participant.

An amateur participant is considered to be an adult, non-sportsperson with light luggage.

The classification of a route can vary depending on the conditions of each season, climate conditions or natural disasters.

14.3 Classification procedures

14.3.1 General

- a) The route to be classified shall be divided into sections to assess each of the criteria.
- b) A section is a part of the route with characteristics that mean it can be considered a route itself. The inclusion or exclusion of a section can change the route's classification.
- c) Each section shall be evaluated for each of the criteria. All passages shall be evaluated.

- d) Each of the criteria is assigned a value on a scale from 1 to 5.
- e) A route shall be classified using all four criteria.
- f) The final value assigned to each of the criteria for the route shall be the one with the highest value.

The tables in this document present the scales applicable to route classification according to the criteria and the specific hiking and trekking activity.

In the case of the severity of the environment and terrain conditions criteria, when a route has 80 % or more of its length rated lower than the value assigned to the total route, this information shall be given to participants.

EXAMPLE On a 10 km route rated as level 3 for severity of the environment, of which 8 km is classified as level 1, participants are informed that the route is level 3 but with 8 km of level 1.

14.3.2 Severity of the environment

The classification for this criterion shall be done by counting the number of occurrences of the following factors cumulatively. In each section, each factor is counted only once, regardless of its probability and presence in other parts of the route. The following factors shall be considered:

- a) exposure to spontaneous detachment of stones;
- b) exposure to detachment of stones caused by the group itself or others;
- c) falling into a crevasse or down a steep slope;
- d) existence of passages where the use of hands is necessary to progress;
- e) exposure to sections that are permanently slippery, rocky or flooded;
- f) exposure to slippery or flooded stretches due to rain;
- g) crossing rivers or other bodies of water with a current by fording (i.e. without a bridge);
- h) high probability of heavy or continuous rainfall;
- i) high probability that at night the temperature will drop below 0 °C;
- j) high probability that the temperature will fall below 5 °C and the relative humidity will exceed 90 %;
- k) high probability of exposure to strong or cold winds;
- l) high probability that the relative humidity will be less than 30 %;
- m) high probability of heat exposure at temperatures above 32 °C;
- n) long stretches of high sun exposure;
- o) total activity time of 1 hour or more of hiking and trekking without passing an inhabited place, a distress telephone (or cell phone signal or radio) or an open road with traffic;
- p) total activity time of 3 hours or more of hiking and trekking without passing an inhabited place, a distress telephone (or cell phone signal or radio) or an open road with traffic;
- q) the difference between the time required to complete the route and the number of daylight hours remaining at the end of the day is less than 3 hours;
- r) decreasing visibility due to atmospheric phenomena that considerably increases the difficulty of orientation or of locating people;

- s) route through dense vegetation or uneven terrain that makes it difficult to orientate or to locate people;
- t) region or sections without access to drinking water.

If there are complementary criteria, these shall be counted cumulatively.

EXAMPLE If a route includes factor p), this is added cumulatively to factor o). Therefore, two occurrences are considered.

[Table 1](#) presents the classification according to the severity of the environment and the number of factors identified for each section.

Table 1 — Classification of hiking and trekking routes according to the severity of the environment

Level	Classification	Number of factors
1	Low severity	Up to 3
2	Moderately severe	4 or 5
3	Severe	6 to 8
4	Quite severe	9 to 12
5	Very severe	13 or more

14.3.3 Route navigation orientation

The classification for this criterion shall be made by assessing the conditions of the itinerary according to [Table 2](#). Each section shall be evaluated in relation to the ease of orientation when travelling it.

Table 2 — Classification according to route navigation orientation

Level	Classification	Hiking and trekking route orientation conditions
1	Well-defined or signposted paths and intersections	Well-marked or signposted main paths, with clear intersections with explicit or implicit indication. Staying on the path requires no exertion to identify the path. It might be necessary to follow a line marked by an unmistakable landform (e.g. a beach or a lake shore).
2	Path or signpost indicating continuity	There is a clear path layout over the terrain or signage indicating the continuity of the route. The path requires attention to its continuity and to its intersections with other paths. This condition applies to most signposted paths that use different types of paths with numerous intersections on the same route, such as roads, pedestrian trails, riding paths or landmarked fields (well-located and well-kept).
3	Requires identification of geographic features and cardinal points	Even if the itinerary develops via a trail, trails marked by geographic features (e.g. rivers, valley bottoms, coasts, ridges) or other people's crossing marks, the choice of the appropriate route depends on the recognition of geographic features and cardinal points.
4	Requires off-track navigation skills	There is no path over the terrain, no security of having landmarks on the horizon. The itinerary depends on an understanding of the terrain and the route design.
5	Requires navigation to use previously unknown alternative routes	The route depends on an understanding of the terrain and the route layout and requires navigation ability to complete it. Itinerary directions can be unexpectedly interrupted by obstacles that need to be circumvented.

14.3.4 Terrain conditions

Classification for this criterion shall be made by assessing the terrain conditions according to [Table 3](#). Each section shall be assessed for difficulty in traversing it, terrain conditions, obstacles and other conditions.

Table 3 — Classification according to terrain conditions

Level	Classification	Technical terrain conditions
1	Route on flat surfaces	Roads and tracks for vehicles, regardless of their inclination. Paths with steps on flat and regular ground. Beaches (sand or gravel) with level and firm ground.
2	Route through paths without obstacles	Paths through diverse terrain that maintain the regularity of the ground, well-marked trails that do not have steep slopes or obstacles that require great physical exertion to overcome. Routes across uniform terrain, such as sloping fields and pastures.
3	Route on staggered trails or uneven terrain	Route along trails with uneven obstacles or steps of different size, height and inclination. Off-track and uneven terrain. Crossings of rocky or outcropped areas (stone slabs). Loose rock stretches, unstable quarries, heavily exposed roots, sand or erosion.
4	Route with obstacles	Obstacle routes that can require jumping or the use of hands up to grade I Sup [International Climbing and Mountaineering Federation (UIAA) grading for climbing or vertical progression ^[8]].
5	Route requiring vertical techniques	Segments requiring climbing techniques from grades II and III Sup (UIAA grading for climbing or vertical progression). Requires the use of specific equipment and techniques. The existence of these passages is noted in the section “Specific conditions” in Figure B.1 .

14.3.5 Physical exertion

14.3.5.1 General

Each section shall be evaluated in relation to the estimated exertion required, taking into account the distance to be covered and the nature of the topography (uphill and downhill).

14.3.5.2 Physical exertion index in hiking and trekking in adventure tourism routes

Estimation of the exertion required is made using the exertion index in hiking and trekking in adventure tourism routes.

The exertion index in hiking and trekking in adventure tourism routes is calculated considering an adult non-sportsperson carrying light luggage, in typical hiking and trekking conditions, with increases due to the terrain conditions and the unevenness of the route. The exertion index in hiking and trekking in adventure tourism routes shall be expressed in hours.

The time to complete the route can vary depending on a number of factors, such as the participant's fitness, weather, walking pace, average speed and stops.

The exertion index in hiking and trekking in adventure tourism routes can be used for comparisons between different routes and to provide systematic and standardized information about the intensity of physical exertion required to complete a defined route.

The exertion index in hiking and trekking in adventure tourism route is calculated for horizontal stretches using the horizontal displacement time, obtained by dividing the distance travelled by an average horizontal speed according to [Formula \(1\)](#):

$$T_h = D_p / V_h \quad (1)$$

where

T_h is the horizontal displacement time;

D_p is the distance travelled on the path;

V_h is the average horizontal velocity.

The average horizontal speeds to use in this calculation are as follows:

- easy paving (e.g. roads and slopes): 4 km/h;
- moderate paving (e.g. trails, smooth paths and meadows): 3 km/h;
- difficult paving (e.g. bad, stony paths and river beds): 2 km/h.

The influence of the gap is taken into account by calculating the additional time due to the unevenness (uphill or downhill). This time represents an additional exertion. It is calculated using the difference divided by a standard vertical velocity as shown in [Table 4](#).

These additional times for each stretch shall be calculated according to [Formulae \(2\) and \(3\)](#):

$$T_{AU} \cdot T_u = G/V_u \quad (2)$$

$$T_{AD} \cdot T_d = D/V_d \quad (3)$$

where

T_{AU} is the additional uphill time;

T_{AD} is the additional downhill time;

T_u is the time going uphill;

G is the gap;

V_u is the vertical velocity going uphill;

T_d is the time going downhill;

D is the distance travelled on the path;

V_d is the vertical velocity going downhill.

Even though the start and end points of a section are at the same level, the existence of uphill and downhill can imply additions to the horizontal travel time.

In each section, the increase corresponding to the uphill shall be calculated, regardless of the increase corresponding to the downhill. The time corresponding to the gaps is the summation of the time corresponding to the uphill and the time corresponding to the downhill.

Table 4 — Average up and down vertical displacement speeds to consider when calculating time

Types of inclination	Average speed (hiking and trekking) m/h
Uphills (acclivity)	200
Downhills (deccivity)	300

In each section two times are calculated: the time corresponding to the horizontal displacement and the time corresponding to the gaps.

For the analysis of the route, the times corresponding to each section shall be summed, resulting in a total time for horizontal displacement and another total time for the gaps.

The exertion index in hiking and trekking in adventure tourism routes is the result of the summation of the longest time obtained and half of the shortest time obtained, as shown in [Formula \(4\)](#).

$$I_e = T_l + (T_s/2)$$

(4)

where

- I_e is the exertion index in hiking and trekking in adventure tourism route;
- T_l is the longest amount of time, expressed in hours (h);
- T_s is the shortest amount of time, expressed in hours (h).

[Figure 1](#) is an illustrative example for calculating the intensity of physical exertion on a hiking and trekking section.

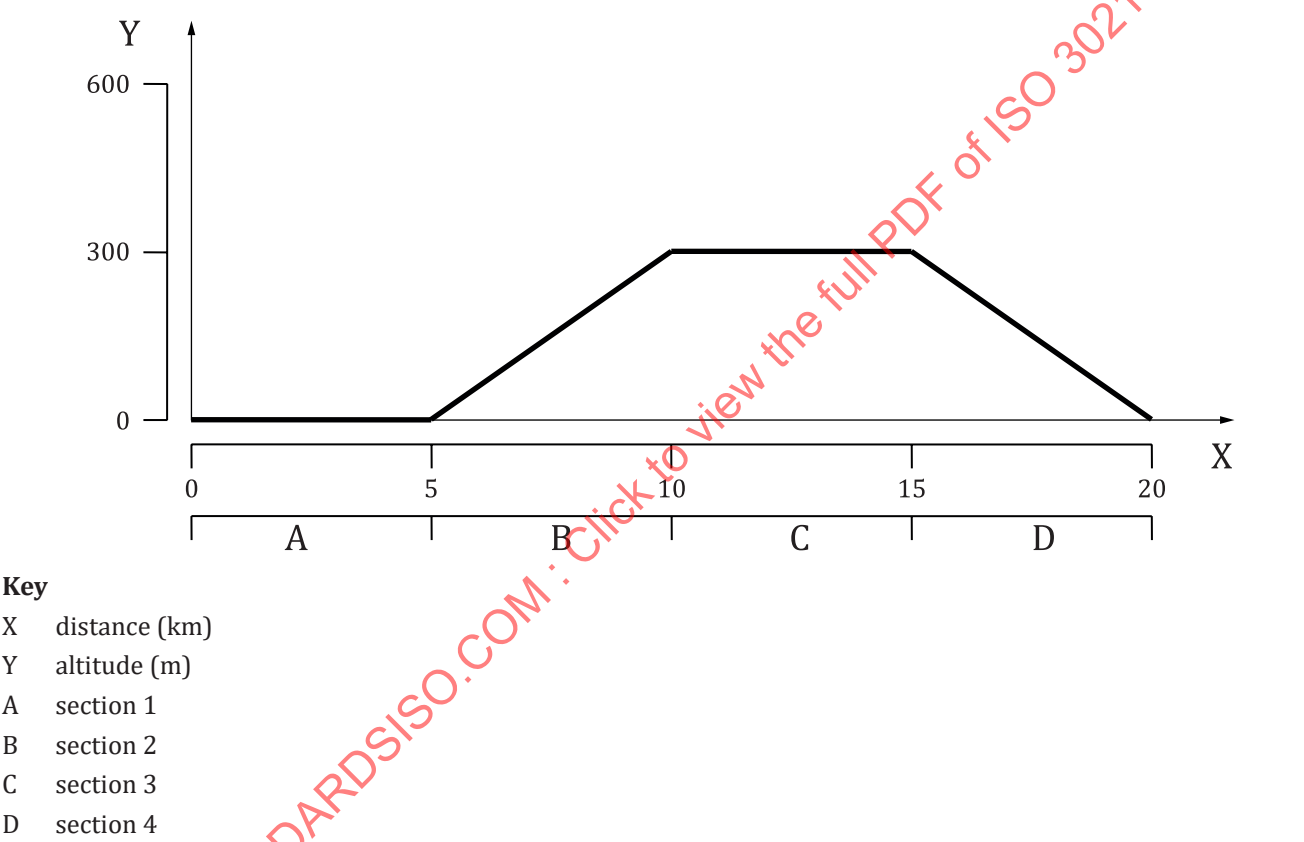


Figure 1 — Example of altimeter chart

Data:

- a) Type of floor in sections 1 and 2: track (velocity: 3 km/h);
- b) Type of floor in sections 3 and 4: rocky (velocity: 2 km/h);
- c) Total distance of the route: 20 km;
- d) Altimetric variation in uphill: 300 m (where the uphill vertical travel speed is 200 m/h);
- e) Altimetric variation in downhill: 300 m (where the downhill vertical travel speed is 300 m/h).