



MEDICAL AND SAFETY

GUIDELINE



INTERNATIONAL
TRAIL RUNNING
ASSOCIATION

Guidelines for the organization of a medical, safety and rescue plan during a trail-running race

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Foreword:

A race organizer has the obligation of organizing a preventive security and safety plan to ensure that appropriate measures are in place to:

- (1) reduce accidents and allow all relevant personnel to have access to necessary information;
- (2) assist and rescue individuals in an emergency situation.

It is the organizer's duty to ensure a maximum safety for all persons involved in the event (members of the organizing team - employees and volunteers, service providers, local public servants, runners and the public).

It should be brought to the attention of the runners that they are often the first on the scene and it is their responsibility to be ready to help somebody in harm's way.

Runners should have an adequate understanding of the natural habitat they travel through; this includes a thorough knowledge of its key characteristics and a respect for this environment.

Runners are to be responsible for themselves and should know the rules and regulations of the race. They should be able to clearly evaluate their mental and physical abilities. They should be sufficiently trained and keep with them the necessary equipment. Runners should be able to complete the race in an autonomous or semi-autonomous manner in terms of: food and drink, clothing and safety. This requires an ability to adapt and face expected or unexpected problems (darkness, bad weather, physical ailments, injury, etc.).

Trail-running presents some specific characteristics:

- Autonomous or semi-autonomous running possibly over long distances and major ascents;
- Running in a natural environment;
- Possibility of running during the night;
- Changing weather conditions, particularly when the race has a long duration;
- Travelling through locations only accessible by foot;
- Etc...

Trail-running events should take into account the measures and means described in this document to meet the specific needs of the sport.

A. Strong preparation for a safe and well-organized event

I. Responsible race leadership

1) Race director

The successful conduct of the event is his/her responsibility.

2) Safety and route manager

His/her role is to prevent any risk or danger (course marking, securing dangerous or fragile areas)

3) Rescue manager

In agreement with the medical director, he/she is in charge of the health and rescue scheme.

4) Medical director

He/she should always be a medical doctor.

He/she can be rescue manager.

It is highly recommended that the medical director have a contract with the event that specifies her/her responsibilities.

II. Key characteristics of the competition

The following information about the race is necessary to prepare a provisional health and rescue plan:

- Number of anticipated participants;
- Course characteristics (terrain, notable difficulties);
- Distance and elevation gains and losses;
- Extreme altitudes (maximum and minimum);
- Potential weather extremes
- Specificities: number of aid stations, necessity for nighttime running;
- Maximum race time;
- Estimated time for the first and last competitors at every checkpoints;
- Cut-off times.

III. Knowing the area

A **prior on-ground reconnaissance of the route(s)** must be done to enable:

- A GPS tracking of the course;
- Identification of specific risks;
- Identification of contingency route(s) to be used if the security of runners can no longer be guaranteed on the normal route - for example if there are extreme weather conditions (cf. VI. Weather);
- Determining the locations of:
 - The means of rescue;
 - Return vehicles for runners who drop out;
 - Checkpoints;
 - Aid station(s);
- Identify the access to these locations and the possible means of transportation (bus, 4x4, four-wheeler, motorcycle, foot, helicopter...);
- Test communication systems (cf.: VII Communication).

It is necessary to account for:

- Local health facilities;
- Local rescue means (firemen, ambulances);
- Contingency shelters for runners (gymnasiums, huts ...).

IV. Map

This is **the major component allowing all participants in the event to have appropriate knowledge of the setting of the race and enable them to unambiguously locate themselves.**

This map should be:

- Identical for all participant in the race organization;
- Of stated scale (at least 1/50 000);
- **Adapted to the area one has to cover;**
- With a **grid and GPS coordinates;**
- With a **legend explaining the symbols used.**

For each race the map should include:

- The map of the main and contingency routes with:
 - Departure(s), arrival(s) and, if necessary the race direction;
 - Checkpoints;
 - Time limits;
 - The aid stations; be they beverage only or beverage and food;
 - Rescue means;
 - Dangerous areas
- Color coding to allow the **identification** on the map of:
 - The main route;
 - The contingency routes;
 - Dangerous areas.

V. Insurance and contracts

Contracts

It is necessary to draw up contracts as it provides the **legal framework for a relationship.**

Any action delegated to a service provider, whether it is working for a fee or voluntarily, or done by employees of territorial administrations, should be delegated by the means of a **written contract.**

Insurance

Compulsory:

Liability insurance: the nature of this insurance depends on the local legislation (local meaning the territory where the headquarters of the organizing team are located). It aims to cover any risk in relations to the organization of the event.

It should be contracted from an insurance company with recognized financial capabilities.

Recommendation:

It is strongly advised that the organizer carry insurance in the name of the runners and members of the organizing team covering:

- Rescue costs. The guaranteed amount should consider the environment where the course is located;
- Repatriation assistance and medical costs.

A list of all service providers participating in the event should be made detailing their role. They should be advised that they should provide their own liability insurance if not covered by the organization.

B. Necessary measures during the race

VI. Weather

Extreme weather conditions and/or sudden changes can create important risks (extreme cold or heat; heavy rain, thunderstorms, lightning; snow, high winds, limited visibility, drought).

The organizer should prepare a reliable source of meteorological information, before and during the race. This source should come from a widely recognized service provider capable of delivering reliable data.

Weather forecasts should at least state the following data:

- The forecasted temperature and possible range at different altitudes;
- The point of origin of the winds and their strength;
- Wind chill;
- Humidity;
- Duration and amount of precipitation.

Depending on the location of the race, the characteristics of the environment may require some other data (tides, snow storms, sand storms, pollution...).

It is important to:

- 1) Consult the medical director as well as any individual with a good knowledge of the race area;
- 2) Inform runners before the start of the race of the forecasted weather conditions so that they may adapt their equipment;
- 3) Plan contingency routes to bypass areas rendered dangerous by bad weather;
- 4) Be able to stop, the event at any time and efficiently, particularly if extreme weather conditions arise.

***NB:** it is very important to have regular weather updates (at least every six hours) and to make the relevant decisions during the race.*

VII. Communication

The efficiency of the security and rescue scheme depends, to a great extent, on the reliability and efficiency of how information is communicated.

The system used should allow a **maximum continuity of service**. Thus, it is necessary to combine two different communication technologies (e.g.: radio communications and GSM phone and/or phone lines).

***NB:** the use of radio communications will have to abide by the laws and regulations of the country where the race is taking place.*

Recommendations:

- 1) Test the communication tools:
 - a. Before the race (keep in mind that the quality of the communication depends on weather conditions);
 - b. **Immediately after the start** of the race.
- 2) Understand that **mobile phone providers do not guarantee a continuity of service**;
- 3) Provide for spare batteries;
- 4) Use one radio frequency for rescues and another for race management. If there is only one frequency available, a communication priority scheme must be drawn up;
- 5) Centralize and coordinate radio communications through a common headquarter (race management and rescue).
- 6) Keep a record of the important communications to allow maximum traceability.

VIII. Transportation

The organizer should plan for sufficient transportation (buses, minibuses or cars) for race participants and volunteers. The plan should include means to increase transportation capabilities if the race is stopped or if a large number of racers drop out.

C. Preventive measures

IX. Runner's compulsory items

The race rules and regulations provided to runners should state the race's specificities (degree of self-sufficiency or semi-self-sufficiency, distance and elevation gains and losses, type of terrain, specific risks), and:

- 1) **Identify elements that runners have to wear at all times:**
 - a. Race-bib (it is recommended that it includes the runner's identity and the emergency phone number);
 - b. An official means of identification if a border is crossed;
 - c. An electronic chip (in the case of electronic chronometry).
- 2) **Any supplies the race organizer requires runners to have with them during the total duration of the race:** anything adapted to the weather conditions, occurring or possible, that allows the runner to:
 - Prevent any emergency situation (e.g.: headlamp, clothes, drink, food);
 - In the event of an accident: to make his position known (whistle, cell-phone, signal flare) and wait for rescue (survival blanket, spare clothes)

*NB : Race rules and regulations should state that runners place themselves under **the obligation of having these supplies with them** and to present it to the organizer immediately before the start of the race, during it or in the finish area.*

The **registration slip** (paper or digital) should state that **the runner accepts the rules and regulations** of the race.

X. Course marking

Course marking objectives:

- 1) Define the course so that runners do not get lost;
- 2) Warn runners of specific dangers.

Distances between the markings should be determined by the nature of the terrain, the weather and the visibility (night/day). Reflective waypoints should be used during nighttime running.

If the organizer does not set up specific marking, it should ascertain that the course is made sufficiently clear by permanent markings or documents provided to all competitors (map, road-book, GPS track) so that they may follow the right course and identify dangers.

XI. Road safety

When a route crosses or goes alongside a road on which there can be motor vehicles, the organizer will assess the incurred risks and the necessity of:

- Putting in place specific signaling to inform road users and runners;
- Put one or several marshals at appropriate locations ;
- During nighttime, make it compulsory to wear an individual and efficient means of signaling the presence of runners.

XII. Monitoring runners and drop outs

Checkpoints:

The organizer should set up manual or automatic checkpoints. Automatic checkpoints are highly recommended for events with a large number of participants.

The first checkpoint should be set up on the start line or close to it. This will enable a precise count of the number of participants and their identification. The frequency of checkpoints should be adapted to the race (at least one every 15 km).

Race management should receive regular updates from the checkpoints so that they may have a precise idea of the location of the runners. Volunteers in charge of this count should be made aware of the procedure to follow and their mission should be a priority.

Time limits:

Race management should set time limits at which the runners should have finished the race or left a given area.

This crucial element of security is based on the idea of time management at a given area to:

- Eliminate runners from the race;
- Guarantee the safety of eliminated runners and organize their return to the race finish area.

Time limits should be organized for every race of more than 40km and placed in areas where it is possible to evacuate runners.

Drop outs:

Dropping out is when a runner chooses to stop participating in the race.

When deciding to do so, the runner should notify race management as soon as possible.

A plan should be in place to manage and follow drop outs (meeting points, communicating with the race management, returning them from the course).

XIII. Closing the course

A mechanism needs to be in place to guarantee that there are no registered runners that started the race remaining on the course.

One or several teams (at least 2 individuals per team) should be dedicated to this task. Their mission should start from the beginning of the race and they should be in constant contact with race management. They should never leave a runner unattended. These teams cannot be held responsible for runners who have officially dropped out (1), either voluntarily or because they did not manage the cut-off times.

(1) Race rules and regulations should determine the required procedure (taking the race-bib, cutting in up...)

XIV. Aid station(s)

Based on the number of runners and race conditions, organizers should plan for sufficient aid stations. They must make sure that the hydration and nutrition support is consistent with the information provided to race participants.

In the race rules and regulations, a runner should be thoroughly informed of what is available during the race to include information about the extent of:

- Self-sufficiency or semi-self-sufficiency;
- The amount, location and type of aid stations.

D. The medical and rescue plan

It is necessary to detail a health and rescue plan taking into account the following elements:

XV. Minimum objective:

- Appropriate supervision and coordination of the members of the medical staff and rescue plan;
- Adequate education of the medical staff on the medical issues specific to trail-running.
- Coordination with the health policy services (anti-doping).

Regarding the athletes, the medical support should:

- Be prepared for the appropriate medical care of all injured individuals (runners, members of the organization team and the public);
- Ensure that runners are properly informed of the course's difficulty, the emergency phone numbers and the procedures in the case of an emergency

XVI. Procedure

- Priority should be given to life threatening situations;
- Supervise general pathologies and specific medical issues;
- Anticipate any public health matter (e.g.: enabling individuals to wash their hands at aid stations to prevent the spread of infections);
- Anticipate uncommon situations by drawing up specific procedures and collaborating with the relevant local services (many victims, e.g.: massive hypothermia).

XVII. Personnel

The organizer may delegate by contract this component of the event to specialized service providers.

Individuals participating in the medical and safety plan should have knowledge of the specific medical issues of participants in this sport (<http://link.springer.com/article/10.1007%2Fs40279-014-0189-3>).

These individuals are:

- The medical director (see paragraph I);
- Doctors; preferably those with a skill set relevant to dealing with life-threatening medical emergencies;
- Nurses;
- First responders (EMTs, paramedics);
- Physical therapists (optional);
- Podiatrist (optional).

XVIII. Means

- **Main Rescue Stations (MRS)** are generally located in:
 - Areas with a lot of attendance (aid station...);
 - Areas with resting time;
 - Areas where risks increase due to the intensity and/or duration of the effort (particularly after the benchmark of 6 hours for the leaders of the race).
- **Secondary Rescue Units (SRU)**, located in between main rescue stations, they enable first aid responders to arrive at any location in less than 30 minutes. It is recommended to locate them on high points or in areas that are not easily accessible.
- **Means of intervention** (helicopters, 4x4, motorcycle, foot ...): these enable the teams to intervene as quickly as possible, taking into account the constraints of the terrain.
- **Means of evacuation** (car, bus, ambulance, helicopter, 4X4, foot): these have to be adapted to the nature of the terrain:
 - Area accessible by a motorized vehicle: an intervention should be possible in less than one hour;
 - Area that is not accessible by a motorized vehicle: a team of at least 6 well-trained individuals capable of transporting the injured individual should be organized to reach the victim in less than 2 hours.
- **Equipment**: it should be adapted to the environment and the training of those wielding it (e.g.: bubble wrap to treat hypothermia in mountainous areas, ice in an arid environment). AEDs (Automated External Defibrillator) can be positioned along the course.
- **Premises**: MRSs should be located in constructed premises, on the ground floor or in big tops with heating and/or air conditioning, water, electricity and preferably a telephone landline. There should be a surface of 15 square meters for 1000 runners (without taking into account a comfort area).

XIX. Consideration of various challenges

- ✓ Legal or statutory constraints of the territories travelled by the race;
- ✓ Available communication means;
- ✓ The number of participants (by race and total). If there are more than 1000 runners, it will be necessary to adapt the health and rescue plan;
- ✓ Night/day and the seasonal (winter, spring, summer, fall) challenges;
- ✓ Geographical challenges (lowland, high altitude, coast)
- ✓ Race durations;
- ✓ Limited course accessibility;
- ✓ Contingency plans;
- ✓ Always keep in mind that the plan should work correctly even if the weather forbids a helicopter from flying.

XX. Key points

- **Weather conditions:** respect the recommendations of §VI Weather. If the weather turns for the worse and it is not possible to ensure the safety of the runners on the normal course of the race, decide to use the contingency course.

NB: - If a contingency course is used, it is not always necessary to increase the size of the medical and safety plan;

- *Good weather conditions tend to increase the workload of medical and safety personnel, as runners are more likely to push their limits.*
- **Common headquarters (race and rescue) (CH):** A rescue headquarters (often associated with the race headquarters) is compulsory if there are more than 1000 runners. It should be located in quiet premises. There should be at least one person with a thorough knowledge of the region of the course and one person appointed by the medical director. It should be equipped with the necessary communication means and the runners should be informed of the emergency phone number. There should be documentation of what is communicated and done.
- **Criteria for the medical and safety network:** this network should be prepared jointly by the person in charge of rescue operations, the race director and validated by the medical director before being presented, if necessary, to the local authorities.

This network should meet the following criteria:

Localization	Necessary measures
On the starting line	<ul style="list-style-type: none"> ▪ If > 1000 runners: a doctor and a nurse; ▪ If < 1000 runners: first aid responders; ▪ In a hostile (1) or isolated environment (2) : compulsory presence of a doctor
On the finish line	<ul style="list-style-type: none"> ▪ a doctor is compulsory if one of the 3 following conditions is met: <ul style="list-style-type: none"> - > 500 runners; - race time of the winner > 2h; - It is impossible for an ambulance to evacuate somebody to an emergency care facility in less than 30 minutes. ▪ a team of first aid responders with stretchers; ▪ a nurse to assist the doctor if >1000 runners.
Main Rescue Stations (MRS)	Their location should be stated in the race rules and regulations. Somebody with knowledge of the course should always be present. They are comprised of: <ul style="list-style-type: none"> ▪ A doctor; ▪ A nurse; ▪ First aid responders.
Secondary Rescue Units (SRU)	Their location need not be mentioned in the race rules and regulations. Somebody with knowledge of the course should always be present. There should be at least 2 first aid responders.
Sorting stations	It is necessary that some stations have the power to stop runners deemed unfit to continue the race. If this is in a SRU, it is compulsory that a nurse assist the first aid responders.

(1) Hostile environment: environment where traditional means of rescue are unadapted, insufficient or their use is dangerous due to the height, the depth or the risks taken to transport them.

(2) Isolated environment: more than 30 minutes away from a medical facility treating life-threatening emergencies.

Bibliography:

- Martin D. Hoffman, Andy Pasternak, Ian R. Rogers, Morteza Khodae, John C. Hill, David A. Townes, Bernd Volker Scheer, Patrick Basset, et al. Medical Services at Ultra-Endurance Foot Races in Remote Environments: Medical Issues and Consensus Guidelines, Sports Med. 2014, Volume 44, Issue 8 , pp 1055-1069 (<http://link.springer.com/article/10.1007%2Fs40279-014-0189-3>)
- Hoffman MD, Rogers IR, Joslin J, Asplund CA, Roberts WO, Levine BD, Managing collapsed or seriously ill participants of ultra-endurance events in remote environments. Sports Med. 2015 FEB ;45(2) :2012.