

Supplement 1: Questionnaire with correct answers indicated in red

Please answer the questions, which are marked with a small box, with a cross („X“) and questions with a free space ____ by filling in numbers or keywords. Please answer the questions without team work (after filling in we can talk about “right” and “wrong”).

Personal questions:

Age: ____ Years Male ☐ Female ☐ Size: ____ cm Weight: ____ kg

Country: D ☐ CH ☐ A ☐ F ☐ I ☐ or: _____

Relationship? Yes ☐ No ☐ Children? Yes ☐ No ☐

How much is your physical demand when you are active in your profession?

Very much ☐ Mediocore ☐ Little ☐ Not at all ☐

Do you do regularly (in season) perform endurance sports? No ☐ , or:

Daily ☐ 6x/week ☐ 5x/week ☐ 4x/week ☐ 3x/week ☐ 2x/week ☐ 1x/week ☐

Mountaineering experience (years) _____

How often are you in the mountains per year? _____ Days

How many of these days do you go via ferrata? _____ Days

Are you also a rock climber? Yes ☐ No ☐

If yes: What is your limit leading? _____ (UIAA or french scale)

What is your limit seconding? _____ (UIAA or french scale)

Predominant alpine? ☐ or predominant indoor climbing or rocks / cliffs? ☐

Do you go predominantly WITH ☐ or WITHOUT ☐ guide?

Did you have ever participate in a course?

- Climbing ☐ When? _____

- First-aid ☐ When? _____

- Other ☐ When? _____ What kind of course?

Do you have medical knowledge as - First-aid attendant/nurse/mountain rescue service

☐

- Medical student/doctor ☐

- No medical profession ☐

44 Actual via ferrata(s) (planned or recently done):
 45 Mindelheimer Klettersteig ☐
 46 Sentiero Alfredo Benini ☐
 47 Sentiero delle Bocchette Centrale ☐
 48 Sentiero delle Bocchette Alte ☐
 49 Via delle Bocchette SOSAT ☐
 50 Sentiero Osvaldo Orsi ☐
 51 Sentiero Livio Brentori / delle Ideale ☐
 52 Sentiero Ettore Castiglione ☐
 53 Sentiero Gustavo Vidi / Claudio Constanzi ☐
 54
 55 Other(s):
 56

57 Please describe your injuries or the incidences, which occurred while doing a via ferrata. You have
 58 to distinguish between two kinds of health impairment: *urgent / emergency* or *overdue*.

59 Urgent events occur while or in direct connection with going a via ferrata and have to be treated in
 60 some way (e.g. wounds, torn ligaments, fractures etc.) or have a noticeable impairment (e.g.
 61 sunburn).

62 Overdue injuries are physical damages (especially incessant pain), which make one or more of the
 63 following necessary: treatment, hospitalisation, a break of climbing for at least one week, unfit for
 64 work, consultation of a physician or physiotherapist (e.g. problems of tendons, muscles or joints)
 65 and which are occurred without a direct force or impact (fall, rock fall).

66

67 Overdue injuries

68 Did you ever have an overdue injury caused by going a via ferrata? Yes ☐ No ☐

69 If „Yes“, how many injuries like this did you have? _____

70

71 Did you have more than one overdue injury? ☐ No ☐ Yes. In this case please
 72 contact us immediately!

Kind of overdue injury			
Possible cause			
Attended a physician?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Attended a	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Attended a naturopathic	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Unfit to work?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	How long?
Treatmen necessary?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	How long?
Hospitalization?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	How long?
Break of climbing?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	How long?
Chronic symptoms?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Which one?
Remark(s)?			

73

74

75 Did ever occur overdue injuries in any other sport? Yes ☐ No ☐

76 If "Yes": Which one? / In which kind of sport / discipline?

77

78

79 Acute emergency

80

81 Did you have more than one emergency? ☐ No

82 ☐ Yes. In this case please contact us
83 immediately!

Type of emergency? other:	<input type="checkbox"/> Fracture <input type="checkbox"/> Strain <input type="checkbox"/> Circulatory disturbance/collapse <input type="checkbox"/> Faintness/exhaustion <input type="checkbox"/> Frostbite <input type="checkbox"/> Sunburn <input type="checkbox"/> Lightning stroke	<input type="checkbox"/> Sprain <input type="checkbox"/> Contusion <input type="checkbox"/> Open wound <input type="checkbox"/> Hypothermia <input type="checkbox"/> Heat stroke <input type="checkbox"/> Metabolic dis. (e.g. diabetes)
Location of the injury? (if necessary mark several boxes with a cross) other:	<input type="checkbox"/> Head/brain <input type="checkbox"/> chest/thorax <input type="checkbox"/> Abdomen/lower abdomen <input type="checkbox"/> Forearm <input type="checkbox"/> Pelvis <input type="checkbox"/> Lower leg <input type="checkbox"/> Shoulder <input type="checkbox"/> Wrist joint <input type="checkbox"/> Knee	<input type="checkbox"/> Neck <input type="checkbox"/> Back/vertebral column <input type="checkbox"/> Upper arm <input type="checkbox"/> Hand <input type="checkbox"/> Upper leg <input type="checkbox"/> Foot <input type="checkbox"/> Elbow <input type="checkbox"/> Hip <input type="checkbox"/> Ankle joint
Cause? (if necessary mark several boxes with a cross) other:	<input type="checkbox"/> Slip off from metal steps etc. <input type="checkbox"/> Strumble <input type="checkbox"/> Hunger/ energy deficiency <input type="checkbox"/> Fatigue/ lack of concentration <input type="checkbox"/> Inadequate equipment <input type="checkbox"/> Climbing with illness	<input type="checkbox"/> Rock fall <input type="checkbox"/> Fall <input type="checkbox"/> Passing manoeuvre <input type="checkbox"/> Weather conditions <input type="checkbox"/> Lack of fitness <input type="checkbox"/> Long-term medication forgotten
Existing equipment? (if necessary mark several boxes with a cross) other:	<input type="checkbox"/> Helmet <input type="checkbox"/> Mobile phone <input type="checkbox"/> Sunglasses <input type="checkbox"/> First Aid kit <input type="checkbox"/> Bivouac sack	<input type="checkbox"/> Gloves <input type="checkbox"/> Provisions/beverage <input type="checkbox"/> Sunscreen <input type="checkbox"/> Clothes/weather protection <input type="checkbox"/> Emergency blanket
What contained the first-	<input type="checkbox"/> Pavement	<input type="checkbox"/> Dressing material

aid kit? (if necessary mark several boxes with a cross)	<input type="checkbox"/> Sterile compresses <input type="checkbox"/> SamSplint <input type="checkbox"/> Emergency blanket <input type="checkbox"/> Analgesic,Which one?:	<input type="checkbox"/> Hygienic gloves <input type="checkbox"/> Triangular bandage <input type="checkbox"/> Disinfection agent
other:		
Emergency treated by? (if necessary mark several small with a cross)	<input type="checkbox"/> Myself <input type="checkbox"/> Emergency medical services	<input type="checkbox"/> Comrade/other climber <input type="checkbox"/> No treatment

84

85 Please answer the following questions by marking the correct statements. Remark: more than one
86 per question may be correct!

1)	In bad weather you meet an uninjured person wearing shorts and T-shirt. He isn't able to descent further. He isn't completely conscious.	
a	The person is not suffering from severe (dangerous) hypothermia.	
b	The person should be forced to descent as fast as possible.	
c	Kneading and massage improves the situation.	
d	If a bivouac can't be avoided, protection against moist is more important than against wind.	
e	If possible the person should not be moved.	

2)	You find an unconscious mountaineer who has neither pulse nor signs of respiration.	
a	During resuscitation pulse control should be performed at the person's wrist.	
b	The pressure point for cardiac resuscitation is localised at the left side of the breast above the heart.	
c	The normal expiratory volume of the assistant is sufficient to breathe the unconscious person.	
d	If the cardiopulmonary resuscitation is sufficient, the previously dilated pupils contract again.	
e	Superextension of the head to clear the airways should be avoided since there is a risk of a fractured neck and superextension would lead to a damage of the spinal cord.	

3)	A mountaineer was hit by a lightning.	
a	Even if he should feel well, he should be monitored for several days (hospital).	
b	Such an incident normally will not be survived.	
c	Also without a fall the victim must be checked for fractures.	
d	Attention: if one touches this person one can suffer from an electric shock.	
e	Danger to life can be excluded if the person wasn't hit directly.	

4)	While descending you meet a 50-years-old hiker. He is nervous, agitated, and reports about chest pain.	
a	You tell him to descent slowly, because the problems will become better then.	
b	He should lie on his back with heightened legs (shock position).	
c	Probably he has a problem of the airways, e.g. a bronchitis.	
d	He must be carried down. He should not exhaust himself any more.	
e	If the pain doesn't radiate to the left arm it is probably not a cardiac disease.	

5)	After a fall a mountaineer reports of back pain at his thorax.	
a	There is a particular risk of hypothermia.	
b	You should test whether there are deficiencies of the tactile sense or of the muscles of the legs.	
c	Involuntary urination may be a sign for a severe back injury.	

d	Until a final diagnosis was done (hospital) any movement should be avoided.	
e	Normally injuries of the back are easy to recognize because of the pain.	

6)	A mountaineer breaks through a snow bridge and falls into the creek below. Because of technical problems the comrades need about ¼ hour to get him out. After rescue he is unconscious without respiration and his pulse is extremely slowly and irregular.	
a	Regarding the situation in the mountains there is no hope for a success of resuscitation performed by the comrades.	
b	At all events one must supply as much warmth as possible.	
c	Resuscitation must be started at once.	
d	In this concrete case resuscitation is promising even if rescue took some time.	
e	Awaking of the patient indicates the success of the resuscitation.	

7)	In the evening a mountaineer reports about severe stabbing frontal headache and eye's pain (at a hut in 3400m).	
a	Snow blindness is unlikely, because the whole day was misty.	
b	It should be exertion or altitude related headache.	
c	One should give him a tablet against headache and can expect that there will be no symptoms at the next morning.	
d	First Aid is laying down in a dark room and cooling eyes and forehead.	
e	Normally there will be a slow improvement of the symptoms within some days.	

8)	A mountaineer suffers from frostbite of his fingers.	
a	Early signs of a severe frostbite are blisters and red skin.	
b	Also after reaching a hut alcohol is strictly forbidden.	
c	Moderate frostbite should be treated by massage or rubbing with snow.	
d	Analgesics should not be used.	
e	A frostbite should be waded and bandaged loosely.	

9)	In the evening a mountaineer suffers from lack of appetite, slight nausea, and headache at the Mantova Hut (3400m).	
a	Probably he suffers from influenza.	
b	If the symptoms don't become worse continuing to Margherita Hut (4560m) should be possible without problems.	
c	He should stay at least one day at the Mantova Hut (rest day).	
d	The sickness can be avoided by ascending to high altitudes during several days.	
e	If the symptoms should become worse, he must descent.	

10)	At the Margherita Hut 4560m) a mountaineer reports about air hunger. His breath rattles, sometimes he coughs.	
a	Although he seems to be absolutely inconspicuously and he is conscious, there is acute danger for life.	
b	In most cases such a situation will improve spontaneously until the next day.	
c	After transportation to sea level (or in the next valley) the symptoms will be much better.	
d	Although the person is conscious, he should get oxygen immediately (at Margherita Hut available!).	
e	The person should be placed with a heightened chest.	

11)	A victim has lost much blood.	
a	One should expect the following additional symptoms: paleness, raised pulse rate.	
b	One should expect the following additional symptoms: normal pulse, but dry and warm skin.	

c	The victim should be placed in horizontal position and with heightened legs (shock position).	
d	The victim should drink as much as he can to compensate the loss of blood.	
e	Cold-moist skin would contradict a shock.	

12)	After a fall a mountaineer reports about severe pain in his thigh. He is unable to move the leg as well as to load it.	
a	A shock is possible although no external (visible) injury is obvious.	
b	By fixation and a slight pull at the foot a reduction of pain can be obtained.	
c	Deviations from the leg's axis should never be corrected on scene.	
d	It should be a severe contusion.	
e	The injured leg should be placed heightened.	

13)	Strategy in cases of emergencies	
a	Each injury registered during checking the patient must be treated at once.	
b	If one expects a victim could die during a bivouac, the only chance is to force a transport to the next hut performed by the comrades.	
c	The safety of the rescuer is without any exception more important than the immediate medical attendance of the victim.	
d	An objective danger may demand an immediate transport of the victim without treatment.	
e	A retreat with a victim in easy terrain often strengthens more than in steep terrain.	

14)	A hiker fell down and is unconscious.	
a	Victims with head injuries should be placed flat.	
b	A fall on a smooth surface (e.g. a moss patch) would exclude dangerous head injuries.	
c	A cerebral trauma could be recognised by wounds of the head.	
d	It has to be considered that injuries of the head are often associated with injuries of the cervical vertebra.	
e	Dilated pupils indicate that there is no damage of the brain.	

15)	After a several-hours walk shortly above tree limit at summer-like conditions a hiker collapses with the sign of a deep red head.	
a	If he has a dry and hot skin, he probably suffers from a heat-stroke.	
b	The fastest improvement could be obtained by cooling the person with water as cold as possible.	
c	A cardiac disease can be excluded.	
d	This disease could be avoided by wearing a headgear.	
e	After a long rest and complete recovery a slow descent without any luggage is usually possible.	
16)	After a fall the victim complains of severe pain in the right breast and difficulties to breathe.	
a	The hurt person should be laid on his injured right side.	
b	Probably there is a fracture of several ribs.	
c	Since only one side of the breast is injured, one shouldn't expect a danger of life.	
d	If air exits out of the wound, it has to be closed by a tight bandage.	
e	To avoid secondary injuries, the person should be laid on his uninjured left side.	

17)	Analgesia in the wilderness	
a	In case of severe abdominal pain relaxing the abdominal wall and heighten the legs would help.	
b	Aspirine and similar analgesics do not have adverse effects.	
c	In emergencies the use of strong analgesics persons with less medical experience could be recommended.	
d	Severe pain could be induced by warming up a frostbite.	

e	Circulation and respiration could be impaired by pain.	
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18)	Check these statements for correctness!	
a	In high altitude severe headache could be caused by a sunstroke as well as by a high-altitude cerebral edema.	
b	In high altitude (snow/ice) a heat stroke is not expected.	
c	An alpinist with a high-altitude cerebral edema attracts attention e. g. with an incertitude of gait or unexpected reactions and acts.	
d	Nightly sharp headache is normally a sign for a high-altitude sickness and never for snow blindness (darkness).	
e	The measure to ameliorate a high-altitude cerebral edema are oxygen therapy, transport in lower level and – if available – administration of cortisone.	

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93 Please assess your knowledge on first aid in mountaineering emergencies of the following
94 subjects. (Please mark only one category in each row)

	Very good	Well	Average	Fragmentary	Little/no
Hypothermia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shock	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mountain sickness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cardiopulmonary resuscitation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frostbite	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Acclimatisation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergencies of the heart	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Head injuries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fractures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rescue strategies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Checkup of injured person	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
High-altitude pulmonary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Illness on the way	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Heat stroke	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Snow blindness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

95 Remarks/Suggestions for future education:

96

97

98

99 If you want to know the result of the study, please write down your email address:

100

101 _____

102 Thank you very much for your cooperation!

103