

**Presentation – Commission for Terrestrial Rescue
Joint Meeting – all Commissions**

Place: Thessaloniki, Griechenland
Date: 19. Oktober 2023
Time: 08.00 Uhr
Present: Joint Meeting of all Commissions
Chair: John Ellerton
Minutes: Fabienne Jelk

Avalanche rescue and safety of the rescuers - Risk Management, Pierre Métrailler (KWRO)

The Air Glacier team carries out around 20 to 40 avalanche operations per year. The aim of an avalanche operation is to search for, dig up and provide medical care to as many buried people as quickly as possible. An avalanche operation is complex and various points must be taken into account: safety, search, digging, patient care, triage, evacuation. Alerting is important. After an alarm, a technical helicopter and not a medical helicopter is sent to the scene, with at least two rescue specialists. If two helicopters can be sent, then one medical and one technical. If the avalanche occurred near a ski area, ski patrollers can be hired.

The avalanche situation in the area of operation must be evaluated. This is done by the most experienced rescuer on site, taking into account the entire area of the avalanche and the area beyond. Then a decision must be made as to whether to go out, whether to go out later, whether to search only from the helicopter (e.g. with Recco), whether to remain tied to the helicopter during the search and whether to trigger artificial avalanches. In the event that the rescuer remains hanging from the helicopter, a special Y-kit with absorbers has been developed. The rescuer is on a longline of at least 30 meters in length. The helicopter must hold the same position for at least 10 to 20 minutes.

Various safety questions arise on the avalanche field:

Is it safe for the rescuers?

LVS back to SEND?

Should the rescuers wear an airbag?

The airbag is worn during the search, but not during long excavations and during medical care.

Survey in the workshop on the practical day in Thessaloniki on October 16th:

Do your rescuers wear avalanche airbags during avalanche operations?

5 % always – during the entire rescue operation

20% always – but not in all cases, but not during the entire operation

40% only in some cases

36% never

Is the doctor or paramedic trained in search and excavation:

70% Yes

20% no

We are not a rescue organization

Maybe

Is the person who evaluates the avalanche situation on the avalanche field a specialist?

35% no

15% Mountain Guide

10% Ski Patroller

Is the avalanche transceiver set to SEND when starting from rescue base before arriving at the avalanche field?

100 % Yes – with Partnercheck

Conclusion:

The safety of the rescuers (risk of another avalanche) and the chance of survival of the buried people must be evaluated. Use the available resources to evaluate the avalanche situation. The safety of the rescuers comes first. Training and debriefing is important.

Questions:

How is the search carried out from the helicopter? Does this not increase the risk of a secondary avalanche?

No, because the search is carried out using at least 50 meters of long line.

Presentation:

20241019-01-Avalanche-Rescue-Risk-Management-Metrailler.mp4

Position Paper from ICAR on Rescue at Very High Altitude, John Ellerton (ICAR)

The question arises whether mountaineers in distress at high altitudes should be helped. A position paper is being written on this.

Ed Hillary said, "You have a duty, really, to give all you can to get the man down and getting to the summit becomes very secondary."

Several events and the discussions surrounding Everest led to the UIAA Declaration on Mountain Ethics in 2009 and 2016 and the Tyrol Declaration:

"Helping someone in distress has absolute priority over the goals we have set for ourselves in the mountains. Saving a life or reducing the damage to an injured person is much more valuable than the hardest and first ascents."

What does ICAR say about this? ICAR members conduct training in Nepal with the Sherpas to enable rescues from high altitudes, such as Air Zermatt with Bruno Jelk and Gerold Biner.

In 2022, a working group was formed in ICAR under the leadership of Kyle McLaughlin. The aim of the working group was to improve rescues from high altitudes and make them safer for rescuers. Since the subject area was too broad, different areas were formed. It was decided to develop a position paper on the ethical aspects of rescues at high altitudes and to exclude legal and consent issues.

Rescues from high altitudes involve additional risks. "Condemnation" by the media has increased. This can be harmful.

There is often the opinion that organized rescue does not take ethical aspects into account. This is not true. Organized rescues also take ethical aspects into account and have dealt with an ethical risk-benefit analysis. There are various codes. One of them is the Zero-Point Survey, which is well suited to a rescue with a patient:

Zero-point Survey (adapted from Cliff 2018)

SETUP: Self, Team, Environment, Patient, Update, Priorities

SELF: Am I physically and mentally ready for this?

TEAM: Who is the leader and what is my role?

ENVIRONMENT: What are the hazards, what limitations are of concern?

If resuscitation is initiated:

PATIENT: Initial patient assessment

UPDATE: What is critical, what is likely to be difficult?

PRIORITIES: What are the immediate goals of treatment?

This code can be adapted to high altitude rescues.

The ethics of conducting a rescue from very high altitude, and particularly at extreme altitude, have been discussed but are incomplete. The boundaries described by the "duty to rescue" may well be violated in high frequency rescue hotspots

ICAR produces papers based on the literature and expert opinions to inform the current technical and medical aspects of very high altitude rescue. These are made available.

Presentation: *20241019-02-Rescue at Very High Altitude_Ellerton.pdf*

How we train Mountain Rescue Personnel in Scotland, Paul Russel (SMR)

The Scottish Mountain Rescue Service consists of 850 team members, 9 executive board members and 3 full-time paid employees. The number of missions in 2016 was 562 missions, in 2023 716 missions. The proportion of women in the rescue team increased to 32 percent.

How did the banking scandal help the Scottish Mountain Rescue Service? The banking scandal secured funding for the training of rescuers.

The mountain rescuers are trained in online courses and on-site courses.

The mountain rescue service operates a website where you can log in and register for various courses, e.g. avalanche rescue courses, medical, search

management, etc. There are online training courses before the on-site courses. Manuals are available on certain topics. There is also a forum for discussions.

Presentation: 20241019-03-MRC-Russel.pdf

Simulation - The Future of Training Starts Now, Sebastian Schneider and Jörg Redetzky (DRF)

What is the path to simulation training: You need an idea, then partners. What are the advantages of training with a simulator: The quality of the crew is increased, knowledge of the system and the procedure is increased, the environment is less polluted, training is safer, no helicopter is needed and training can be carried out regardless of the weather.

Disadvantages: It takes a lot of time and a lot of money. And it is a lot of work.

In the future, it will mean incorporating training with a simulator into training, creating a curriculum, involving national authorities and conducting tests.

Afterwards, a hoist operator will demonstrate how to carry out simulation training.

Presentation: 20241019-04-DRF-Hoist-Simulator.mp4

Education and support for the psychosocial health and SAR practitioner well-being, Peter Zimmer (NZLSAR)

The rescue teams in New Zealand are made up of 3100 volunteers, divided into 64 groups. The well-being of rescue members, i.e. their mental health, is important.

Well-being must be viewed as a holistic system, consisting of different pillars.

Te Whare Tapa Whā was developed in 1984 by leading Māori health advocate Sir Mason Durie. The model describes health and well-being as a wharenuī/a house with four walls: taha wairua/spiritual well-being, taha hinengaro/mental

and emotional well-being, taha tinana/physical well-being and taha whānau/family and social well-being. Our connection with the land (whenua) forms the foundation, and when all of these things are in balance, we are well. When one or more of these things are out of balance, our well-being is affected.

How can you help a person who is in poor health? In an acute situation:

Use the MANERS system.

MANERS was developed for the emergency services sector. It was developed by the Victorian Ambulance Counselling Unit and adopted by trauma management organizations around the world, including Fire and Emergency New Zealand. MANERS gives us a structured method to help people who are showing signs of psychological distress during an emergency.

Each of the letters represents a tool from the psychological first aid kit that can be used for psychological first aid.

M — Minimize Exposure: reducing stress and anxiety

A — Acknowledge the event: acknowledging that the event was stressful and that people may have problems with it. Ask rescuers how they are feeling and give them the opportunity to talk openly about it.

N — Normalize Reactions: helping the person to understand that it is normal to react to an event in different ways.

E — Educate as required: Helping people understand stress responses and encouraging them to use their coping skills. Exercise, sleep, food are good. No drugs or alcohol as coping mechanisms. Be gentle with yourself and avoid making important decisions.

R — Review, Restore or Refer: Check how a person is doing to restore their normal functions. Encourage them to resume work and normal routines or refer them to additional help.

S — Self Care.

The “2023 Final ICAR Recommendations for Stress Resilience in Alpine Rescue” can be viewed at this link:

<https://www.alpine-rescue.org/articles/1225--icar-recommendations-for-stress-resilience-in-alpine-rescue>

Presentation: 20241019-05-Psychosocial-Help-NZSAR.pdf

HRT - Enhancing First Responder Training: EU Projects' Innovative Approaches to Skill Development and Mixed-Reality Simulations presentation, Alexandros Giordanis (HRT)

The HRT rescue team has over 2,000 members throughout Greece, with 34 branches across the country. The HQ (headquarters) is based in Thessaloniki. All rescuers are volunteers.

Poll in the hall:

More than 60% of those present have been members of their rescue organization for more than 10 years.

47% consider training in the field in real conditions to be the most effective training in rescue.

55% consider obtaining resources and financial means for ongoing training to be the biggest challenge in rescue.

In crisis situations, the demands and responsibilities of first responders have increased significantly. They must perform life-sustaining tasks under great pressure, which often leads to increased stress levels. As research has shown, first responders face numerous challenges. They must assess the situation, check the vital status of the patients and choose the appropriate intervention strategy. They must ensure life-sustaining measures under stress. This increased stress can negatively impact their performance, highlighting the need for effective training methods.

The Hellenic Rescue Team (HRT) rescuers undergo training in three modules, each lasting one year.

Year 1: Basics in mountain safety and rescue techniques

Year 2: Advanced rescue techniques

Year 3: Leadership in mountain rescue

From 2012, the HRT has been able to participate in EU-funded projects. These projects have provided access to new innovative tools and systems that improve preparedness and efficiency in rescue operations and allow the HRT to collaborate with European partners and adopt best practices.

MED1stMR is one of these projects. It is an innovative research project that aims to improve the training of medical first responders (MFRs) to better prepare them for stressful and complex disaster situations. The project ran from June 1, 2021 to May 31, 2024. The MED1stMR project included a mixed reality (MR) training solution with a realistic simulation manikin for a realistic haptic experience (experience through touch).

The advantages of this are saving material and space, flexibility and automated post-processing. The training enables evidence-based decisions to be made, is

realistic, there are infinite resources, a low risk of injury in training and the impossible can be trained (children, elderly people). The training environment is safe, mixed reality trains the sense of touch and prepares the first responders for different situations.

Presentation: 20241019-06-HRT -FR-Training.mp4

Helicopter Rescue at Very High Altitude, Dr. Kyle McLaughlin (PC) and Charley Shimanski (AIRCOM President) Dr. Kyle McLaughlin

Rescues at altitudes above 3500 m are more complex and demanding. There are physical, physiological, psychological and meteorological challenges that can make rescue more difficult. There are no recommendations on this.

The following questions arise:

- Is oxygen needed for rescues higher than 3500 m above sea level during rapid ascents?
- Should acetazolamide, dexamethasone, nifedipine and tadalafil be taken prophylactically during rapid ascents:
- Can they be used in terrestrial rescues?
- Can they be used in air rescues?

The following definitions are used:

- High altitudes 1500m - 3500m
- Very high altitudes 3500m - 5500m (5000m)
- Extreme altitudes >5500 m (5000 m)
- Rapid ascent >300 m/day

Various recommendations are given on the following topics:

When should additional oxygen be given.

Acetazolamide (AZ) recommendation for AMS/HACE prophylaxis:

1. AZ 250 mg every 12 hours for rapid ascent rescue to 3500 - 5000 m if the duration is expected to be more than 3 hours and immediate intervention is not required.
2. Start with AZ as soon as you are notified, ideally the day before the ascent.
3. Continue AZ during rescue for 2 - 4 days or until descent, whichever comes first.

Dexamethasone recommendation for AMS/HACE prophylaxis:

1. DEX 4 mg every 6 hours above 3500 m for > 3 hours if immediate use is required.
2. AZ and DEX at >5000 m for >3 hours.
3. If a prolonged stay at altitude is unavoidable, DEX should be continued for 2 - 4 days or until descent, whichever comes first.
4. DEX should be reduced slowly and not stopped abruptly if taken for more than 7 days

Nifedine recommendation for HAPE prophylaxis:

1. Rescuers with a history of HAPE should avoid rescue missions involving rapid ascent above 3500 m.

2. Rescuers with a history of HAPE who must ascend rapidly above 3500 m for rescue should take NIF 30 mg SR every 12 hours or 20 mg SR every 8 hours.
3. Rescuers with a history of HAPE who cannot take NIF and must be deployed rapidly above 3500 m should take tadalafil 10 mg every 12 hours.
4. Concomitant use of NIF and PDE-5I should be avoided.

The following can be learned:

- Acetazolamide, dexamethasone reduces the frequency and severity of AMS.
- Acetazolamide has a slower onset of action than dexamethasone.
- Nifedipine has strong evidence for the prevention of HAPE in patients with previous HAPE.
- Tadalafil is not superior to nifedipine but can be used as an alternative.
- AMS typically sets in after 6-12 hours - arbitrarily chosen 3 hours for initiation of pharmacological prophylaxis.
- The incidence of HACE is increased at altitudes above 5000 m, so acetazolamide and dexamethasone should be combined.
- Pharmacological prophylaxis is not required if supplemental oxygen is used.

Charley Shimanski:

In high altitude rescues, pilots must consider several points:

- Helicopter performance: effects of air density on performance, weight reduction to increase efficiency, fuel management, power reserves.
- Reducing exposure time: number of flights and personnel per flight, controlling flight duration, Human External Cargo (HEC) vs. landing options.
- Pre-flight risk assessment: Pre-flight risk assessment checklist with additional risks for VHA (Very High Altitude). The safety of the pilot and rescue team is the top priority.

- Meteorological concerns: Effects of temperature/wind on performance, increased risk of icing in cold weather, humidity in the cabin and freezing of the windshield, limitations in heating and dehumidifying the helicopter at altitude, fuel management in cold weather.
- HEC (Human External Cargo): Short haul vs. helicopter; Optimal tactics for short haul operations in VHA; Long line techniques and trade-off between safety and performance.
- Plan B: Importance of alternative rescue options in VHA operations; Redundancy: Second helicopter and ground rescue teams,
- Contingency plan: Established route on ground for safe descent; Personal survival equipment for high altitude with preparation for an overnight stay; Helicopter evacuation option by a second helicopter.

The rescuers and pilots should be acclimatized.

There are other questions:

- Any other operational or safety considerations that should be added?
- Optimal flow rate? Mask? O2 monitoring?
- Is there a preferred matrix/tool/algorithm to include in the recommendations?
- Other feedback?

Please email suggestions to: kyle.mclaughlin@me.com

Presentation: *20241019-07-Rescue-High-Altitude-McLaughlin.pdf*

End of Meeting: 12.10