
Managerial and Organizational Aspects of Safety Management in the Mountain Environment

Submitted 13/03/21, 1st revision 16/04/21, 2nd revision 03/05/21, accepted 25/05/21

Kazimierz Nagody-Mrozowicz¹, Maria Mańkowska², Piotr Halemba³

Abstract:

Purpose: The primary goal of this article is to present the organizational, legal, and managerial foundations of mountain rescue organizations in Europe, in the world and in Poland. They belong to non-profit organizations whose aim is to safeguard the safety and public health of citizens. The secondary purpose of the article was to present selected scientific and research problems that occur in mountain rescue.

Design/Methodology/Approach: Analysis of materials and source data, review of the literature on the subject.

Findings: Mountain rescue is an interdisciplinary phenomenon and process that includes knowledge and skills in many fields and scientific disciplines. Among the sciences that significantly affect the practical functioning of mountain rescue, the following can be identified: medical sciences, health sciences, technical and engineering sciences as well as social sciences.

Practical implications: The further development of research on the presented aspects of mountain rescue leads to the improvement of rescue strategies and techniques used in them. Knowledge of the presented research areas allows scientists to constantly deepen their research and theory in this field: technology for rescue and transport, life functions of the human body in mountain accident conditions and human behavior during mountain activity.

Originality/value: The activities of mountain rescue organizations include various forms of conducting rescue operations, which include the following aspects: medical and therapeutic, logistics and transport, meteorological, technological, psychosocial and, finally, competence and training.

Keywords: Safety management, mountain service, mountain rescue organizations.

JEL classification : H4, I1, I11, I19.

Paper Type: Critical review of literature and case study.

¹Prof. General Tadeusz Kościuszko Military University Land of Forces,
e-mail: kazimierz.nagody-mrozowicz@awl.edu.pl

²PhD. General Tadeusz Kościuszko Military University Land of Forces,
e-mail: kazimierz.nagody-mrozowicz@awl.edu.pl

³Prof. The Jerzy Kukuczka Academy of Physical Education in Katowice.

1. Introduction

In a general sense, managing safety in the mountains involves assessment of the state of safety, formulation of the programs to reduce the accident and morbidity rate, stimulating, tracking, and correcting the goals set in the programs of mountain rescue organizations and individual or institutionalized mountain tourism (Mrozowicz, 2012). However, implementing effective safety management is challenging, particularly for companies that provide services (Nenonen, Kivistö-Rahnasto, and Vasara, 2012). Its practical objective is to improve the level of rescue work, reduce accident rate among people staying in the mountains mainly for tourist purposes, as well as for other reasons associated with their profession or the pursued aims. „*Knowledge on safety implies a distinction between those events that are relevant and need managerial attention and those events that can be neglected*” (Swuste, 2008).

Considerable significance is attached to psychosocial and organizational determinants of fatal accidents in people staying in mountain areas, who frequently have them because of a technical error, ignorance of threat, or the occurrence of an exogenous random event, related to a coincidence of unfavorable circumstances or with a break in the weather. Unfortunately, most fatal events are yet a result of one's mental breakdown, destruction, and suicide, and some – ironically – search for a ‘better tomorrow’ or a more dignified life. The human factor determines the level of safety in the mountains, both of those who rescue (mountain rescuers) and of those who are rescued.

2. Review of Publications on the Area of Study

As part of the raised research issues, there was a query of appropriate literature of the subject, because of which it turned out that both thematic and quantitative dimensions of the scientific legacy of predecessors leave some sort of insufficiency in the field of the discussed problems. Particularly clear epistemological, discursive, and practical gaps seem to develop in issues related to conditions and determinants of fatal accidents in the mountains and the human factor in this process. It should be clearly emphasized already in the introduction that in terms of the discussed issues, one cannot appoint studies that *par excellence* relates to the raised subject matter. Both Polish- and foreign-language literature that address the problem of negative effects of human activity in a mountain environment, focus exclusively on therapeutic, or even medical problems.

Methods of prevention and eliminating the health effects and trauma of mountain tourists and mountaineers are presented more frequently, whereas factors that determine the formation of accidents, including the causes of deaths in the mountains, are not mentioned at all. In the catalog of foreign-language publications, we can distinguish several thematic groups which generally oscillate around the issues of medical aspects of mountain rescue.

The first type of publications are works devoted to medical qualifications and training of paramedics and doctors as well as the organization of the first aid in the mountains (Elsensohn, 2001; Wiget and Ledoux, 2001; Rammlmair, Zafren, and Elsensohn, 2001), the rules of providing first aid by rescuers, doctors, and mountain guides (Wiget, 2001) and the impact of one's body mass and age on physical efficiency (Schlegel and Ragaz, 2001). In the same group there are studies dedicated to the characterization and methods of convalescence of traumatic effects of mountain accidents (Forster and Zafren, 2001) such as dislocations and fractures (Forster and Zafren, 2001a; 2001b), intubation in field conditions (Thomas, Rammlmair, and Wiget, 2001) and treatment of pain in mountain conditions (Thomas, Wiget, and Rammlmair, 2001).

There are also valuable remarks on equipping rescue stations with pharmaceutical resources and rescue equipment (Ledoux and Wiget, 2001; Vogt, Thomas, Forster, and Wiget, 2001) including vacuum mattresses for victims of orthopedic accidents (Rammlmair and Zafren, 2001), providing medical assistance to victims of avalanches and generally pathophysiology of avalanches (Brugger and Durrer, 2001; Brugger, Falk, and Adler-Kastner, 1997; Brugger, Durrer, Adler-Kastner, Falk, and Tschirky, 2001; Stalsberg, Albretesen, Gilbert, and Kearney, 1989). In this category you may also find works on the cases of hypothermia (Durrer and Brugger, 1997; Durrer, 1991; Durrer, Brugger, and Syme, 2001; Kornberger, Posch, and Koller, 1989; Larach, 1995; Locher and Walpoth, 1996; Mair, Kornberger, Furtwängler, Balogh, and Antretter, 1994), frostbite (Durrer, Brugger, and Syme, 2001; Syme, 2001), acute mountain sickness, pulmonary edema (Ölz, 2001), resuscitation (Brugger, Durrer, and Adler-Kastner, 1996) and blood transfusion in the phase of a climbing operation (Elsensohn, 2001).

In the second group of publications in the field of mountain rescue are studies on the organization and rational use of technological resources, including, the work of a helicopter in mountain conditions (Tomazin, 2001), using hyperbaric chambers (Baertsch, Berghold, and Herry, 2001) as well as the rules of taking up an activity in tourist conditions in the mountains (Milledge, 2001; Elsensohn, 2001).

In the third group of publications, there are studies on safe mountain tourism which look at such issues as creating appropriate social conditions for taking up safe mountain tourism (Tarlow, 2000), attitudes towards safety among elderly tourists (Lindqvist and Björk, 2000), also including an assessment of safety in terms of terrorist attacks (Brunt and Shepherd, 2004; Lepp and Gibson, 2003) and crisis management in tourism (Faulkner, 2001).

With regard to Polish-language publications on the subject of the determinants of mountain rescue and fatal accidents in the mountains, the following may be mentioned: conditions and principles of safety in the mountains (Marasek, 2002), organization and history of mountain rescue in Poland (Fasiński, Jonak, and

Silberring, 1985), descriptions of actions and rescue expeditions (Jagiełło, 2006; Jonak, 2002; Kapuściński, 2012), reports, commentaries and opinions about accidents during guided tours in the mountains (Matuszyk, 1995), principles of moving, security and risk factors in the mountainous and ice terrain (Schubert, 2011; Tyson and Clelland, 2011), and most of all, various social and organizational aspects of the functioning of the Mountain Voluntary Rescue Service (Mrozowicz and Halemba, 2012; Mrozowicz, 2013).

3. Management of Safety in the Mountains

The results of long-term observation of human behavior, equipment and skills in the mountains had motivated the authors of this article to carry out a study in that field, which would show the actual state of things and real determinants of deaths in the mountains. It should be added that a working hypothesis was put forward at the beginning of the study and it assumed that sources of deaths in the mountains have a different etiology than it is popularly propagated. Mountains, more often than it is attributed to them, become only the scene and ‘silent observer’ of human death. The idiographic method, suggested in the pages of this article may be used by other local mountain rescue groups in their preventive, training and intervention activities, and in the development of reliable rescue work and safe mountain tourism. The nomothetic approach will be possible only after the comparative analyses.

The authors of the presented article thus set themselves a few objectives. First, to create a preliminary psycho-demographic profile of an accident victim in the mountains. Secondly, to identify the factors and circumstances which determine a fatal accident in the mountains. Thirdly, to revise empirically the theorem about the dominant in causing fatal accidents in the mountains influence of objective external factors. By no means shall we question the impact of atmospheric pressure, temperature or breaks in the weather on subjective decision-making processes and their direct influence on human life. There are many indications that the role of the decision-making subject – the human, who performs various socio-occupational roles, takes on major significance.

The previously mentioned aspect of security management is a practical and theoretical field, which is based on the experience and knowledge of a broad spectrum of scientific and pragmatic disciplines (Studenski, 1996). One of the main features of the management of safety is that it presents the organization and its environment as a so-called socio-technical system, in which the dominant role is played by a man, who is the creator of this system in collaboration with the following things: objectives, tasks, work environment, technical equipment and technologies used (Studenski, 1994; 1996).

The organization and its environment began to be recognized as a multi-element whole that creates the system, and accidents because of their inefficient functioning (Studenski, 1996). According to the cited conclusion, accidents happen because the

organization itself becomes their initiator or it is not able to prevent their occurrence (Leplat, 1982). The systemic concept of accident causation influenced the decision to include actions that increase the identification of hazards and reduction of the risk of losing one's life or health into the scope of prevention (Saari, 1987). The subjective role of man as the cause of accident is not restricted to the realized to a different extent risk factors leading to the accident or even death.

The individual who tries on one's own life oversteps intimate and unknowable boundaries of transcendence, moving into an area in which the most rational and economical organization is not able to manage effectively. Apart from the obvious reasons, it must be remembered that an individual's decision in such situations is made with the utmost discretion and under conditions which hinder adequately quick intervention of appropriate emergency services. Despite that, one should not get into the discursive and above all pragmatic pessimism or simply defeatism, because identification of factors, recognizing motivations, topography and the demographic structure of suicides may contribute to a considerable increase in the organizational effectiveness of Mountain Rescue in terms of reducing fatal accidents. Description of thanatological factors and their classification will certainly enable more effective prevention of death in the mountains.

It is worth noting that effective management of safety in the mountains by the Mountain Service (Mrozowicz, 2012), forming a strategic domain of the organization, the essence of its core activity or the purpose of its productive processes, is manifested in three main aspects: *helping people in the mountains, elimination of mountain accidents and their consequences, as well preventive and training activities*. However, mountain rescuers far too often witness in the mountain's deaths of not only tourists, suicides, but also of illegal emigrants and their children. The organizational environment of the border mountain range, the vicinity of Ukraine – in case of the Bieszczady Mountain Rescue Service – chosen as a place of illegal transit of Asians and Africans to the area of the European Union, fosters attempt to cross the borders in an informal manner. Yet, it would be a case of severely undermined terminology, or rather a mere gaffe, to define refugees as 'emigration tourists', although formally speaking, such individuals meet the definition criteria existing in this field. Without going deeper into the theoretical intricacies, since no attention was paid to these issues, it is sufficient to say that a tourist is a person who undertakes this kind of activity for cognitive, health, stimulating, interpersonal or recreational purposes, outside the place of permanent residence, not driven by economic reasons.

The design and implementation of innovative methods of identification, evaluation, description and assessment of risk factors, and the development of diagnostic and prognostic measures, as permanent components of the security system within the organization and its external environment, becomes the key success factor in building a strategic advantage and in creating the image of a credible and reliable organization (Jonak, 2002).

Contrary to opinions built on the wide-spread and superficial knowledge, GOPR (MVRS) endeavors after its public image, because sponsorship and donations are currently becoming for associations of this kind one of the leading ways of financing their activity (e.g., off-road vehicles, sportswear, mobile communications). The rationally perceiving their role Chieftaincy of GOPR (ang. MVSR) and the management of Regional Groups of GOPR, as public benefit organizations have been running a peculiar 'prosocial' market game for many years. Its aim is to create a brand public image, based on the knowledge and substantive skills in the field of mountain tourism and sport forms of mountain climbing, as well as ethical and humanitarian attitudes of the members of the Mountain Service (Jarosiński, 2011; Regulations of the Rescue Service of GOPR, 1975).

To put it simply, it can be stated that the effectiveness of intervention of mountain rescue is determined by marketing factors, supporting the existence of the GOPR association under free market conditions and axiological factors which secure the implementation of organizational principles. The carried out scientific analysis improves the effectiveness of both. Implementing statistical analyses and mathematical models into the operational activities of GOPR will certainly affect escalation of effectiveness in achieving organizational objectives and tasks, increasing the market value of this organization in a social sense.

4. Mountain Rescue Organizations in Europe and Around the World

Mountain rescue organizations in Europe operate as non-governmental organizations whose legal personality and social activity are based on the provisions of national law (tax law, administrative law, civil law, criminal law, and so on). Most of them belong to the international association called *International Commission for Alpine Rescue* (ICAR) as an organization with advisory, research and implementation competences in the field of mountain rescue in the world. National mountain rescue organizations have full autonomy and subsidiarity within the jurisdiction of the Member States but can implement new scientific and technological proposals in the framework of their specific preventive and rescue activities.

GOPR (MVSR) is one of the rescue organizations operating in Europe in the field of mountain rescue, whose functioning covers the area of the Sudetes and Western Carpathians in Poland. For example, in Poland the number of social activists, GOPR volunteer rescuers, is almost 85% of the staffing, while the remaining 15% are professional rescuers ensuring the continuity of implementation of statutory goals and tasks, as well as administrative and technical service employees (Mrozowicz and Halemba 2012; Mrozowicz, 2015).

The International Commission for Alpine Rescue (ICAR) is registered as an association under Swiss law and its seat is Klotten in Switzerland (ICAR Statute, 2019, paragraph 1, p. 1). ICAR obtained the status of a non-profit organization under tax law legalized by the institutions of the Canton of Zurich in Switzerland on April 10,

2007 (www.alpine-rescue.org). ICAR brings together mountain rescue organizations that operate independently on different continents of the world, in diverse organizational, geographical, political, social, cultural, and economic conditions. ICAR and its affiliates belong to the type of non-profit organizations whose common denominator is a voluntary, permanent, and self-governing association for non-profit purposes. They independently defined their goals, action programs and organizational structures and adopted internal acts regarding their activity based on the social work of their members (Mrozowicz, 2013). Currently ICAR brings together 118 international organizations that participate in various rescue fields, including 30 in the field of mountain rescue, which operate independently in 40 countries around the world (www.alpine-rescue.org).

The main statutory goals of ICAR are international cooperation concerning the problems of mountain rescue, providing the most effective methods of rescuing injured mountaineers, tourists, and skiers, as well as providing assistance in improving rescue techniques, obtaining information on the progress of scientific research as well as prevention and accident prevention in mountain and high mountain areas (ICAR Statute, 2019, paragraph 2, p. 1).

The discussed organization realizes its goals based on a system distinguished from the aspects of practical rescue operations and the resulting preventive activity, which includes the following subsystems: terrestrial, avalanche, air, and medical rescue. They operate based on the structure of four specialized committees. Analysis of the literature on the subject, review of specialist literature, as well as verification of experimental methods, expert interview, and participant observation (which we use in our research) justify the conclusion that mountain rescue, due to its geophysical, meteorological and traumatological specificity, is a type of activity of multifaceted and multidimensional characteristics (Mrozowicz and Halemba, 2012).

The operational and strategic activity of non-profit mountain rescue organizations associated in ICAR are implemented at the level of national associations, operating independently and separately in individual Member States, includes the following types of preventive and above all intervention activities (Mrozowicz and Halemba 2012; Mrozowicz, 2013; Mrozowicz, 2015; www.alpine-rescue.org):

- a) mountain rescue in a geomorphological environment aimed at reducing the causes and eliminating the effects of accidents whose coordination and logistics activities are carried out in ground conditions (without the need for air transport);
- b) mountain rescue mainly focused on exploration activities in winter as a result of avalanche disasters (with the need to use specialized navigation, transport and medical technologies);
- c) mountain rescue determined by the need to use technology and the air fleet (carried out as a basic or indispensable measure in achieving the objectives of the action);

- d) mountain rescue focused on the implementation of specialized medical methodology (with the need to use methods, resources, and therapeutic techniques with a high degree of medical professionalism) (Nagody-Mrozowicz, 2021).

Due to the multifaceted and multidimensional characteristics of mountain rescue, the ICAR organization, whose statutory objectives focus on the evolution and improvement of rescue practice, has identified four substructures in its organizational structure. Each of them has a slightly different domain of operation, specialization, and functions, who is divergent (autonomous and isolated) functioning is based on the specialization of learning and system operation, while converged (heteronomous and combined) operation is based on the principle of diversification (versatility). As a result, between both forms there are bi-directional interactions and feedback, whose result is based on the principle of system synergy. The results of research work used in practical mountain rescue activities are a real example of this (Nagody-Mrozowicz, 2021).

ICAR provides a platform for mountain rescue and related organizations to disseminate knowledge with the prime goal of improving mountain rescue services and their safety. ICAR is an independent, worldwide organization that respects its members and promotes international cooperation. International Mountain Rescue (www.alpine-rescue.org/ikar-cisa/documents/2019/ikar20191009007336.pdf):

- Unites men from mountain rescue, supports mountain rescue and related organizations with similar interests, respects the countries with their individual mountain rescue organizations and It is a base for the international community of mountain rescue services.

- Is a worldwide open platform for the exchange of mountain rescue know-how. It provides a forum and know-how in all areas of mountain rescue and promotes safety and prevention in mountain rescue.

- Facilitates a common interest of all men into mountain rescue, it is an independent entity and open to all, independent of gender, age, religion or provenance, its members show mutual respect and tolerance.

- ICAR was founded in 1948 and has shaped mountain rescue ever since, based on this tradition and promotes international responsible activities.

The main ICARs can be included:

- ICAR uses new insight, training schemes and infrastructure for its members. The emphasis is on mountain rescue activities. Related activities (technology, first aid) may also be considered.

- The safety of mountain rescue persons is the most important goal of ICAR. ICAR promotes interaction with safety organizations that are not members of ICAR. A close cooperation is desired.

- Is an information platform for its members. It takes advantage of modern communication technologies for providing services to its members. Global networking is a prerequisite for ICAR.
- Is politically neutral. It is committed to its members, but lets them shape its contacts with political entities themselves. ICAR facilitates the exchange of information and provides free access to mountain rescue organizations.
- Cooperation with related international entities is of paramount importance in alpine medicine, will continue the development of special mountain medicine for mountain rescue organizations.
- For prevention, the cooperation with alpine clubs is most important. ICAR shall promote prevention by political means at an international level.

Table 1. *Member Organizations of The International Commission for Alpine Rescue*

COUNTRY	ORGANIZATIONS
ANDORRA	1
ARGENTINA	1
AUSTRALIA	2
AUSTRIA	5
BELGIUM	1
BOSNIA AND HERZEGOVINA	2
BULGARIA	1
CANADA	10
CHILE	2
CHINA	1
CROATIA	1
CYPRUS	1
CZECH REPUBLIC	1
FRANCE	5
GERMANY	6
GREECE	1
ICELAND	1
IRELAND	1
ITALY	8
JAPAN	3
KYRGYZSTAN	1
LIECHTENSTEIN	1
MONTENEGRO	1
NEPAL	1
NETHERLANDS	1
NEW ZEALAND	2
NORWAY	8
NORTH MACEDONIA	1
POLAND	3
REPUBLIC OF KOREA	1
ROMANIA	2
SERBIA	2
SLOVAKIA	3
SLOVENIA	2
SOUTH AFRICA	1
SPAIN	10
SWEDEN	5

SWITZERLAND	11
TANZANIA	1
UNITED KINGDOM	4
USA	7
TOTAL	122

Source: <https://www.alpinerescue.org/xCMS5/WebObjects/nexus5.woa/wa/icar?menuid=1049&rubricid=238&articleid=10984>.

5. Organizational and Legal Conditions of MVRS in Poland

The organization system of preventive MVRS bases its structure on the four subsystems: technology (rescue techniques, equipment and specialized equipment, instruction on-call Rescue Service Regulations, the Statute of the MVRS, the so-called: „Mountain service”, „Mountain Rescue” and common name „Blue Cross”) society, which is composed of rescuers (presenting a kind of ability, behavior, attitudes, interests, knowledge, motivation and personality traits], structural, involving the structure of power and its posting, the general positions, functions and social roles within which reveal the organizational behavior, and a system environment, which deals with internal and external environment Mountain Rescue organization (Mrozowicz, 2007).

Mountain service is an organization-wide public, based its activities on voluntary social work of its members, registered in the District Court in Cracow, XII Commercial Division of the National Court Register under number 0000156881ⁱ. Mountain Rescue can be a member of national and international organizations with similar activities and a representative of Polish mountain rescue organizations in Europe and worldwide. The area of Mountain Rescue is an organization of the Republic of Polish territory, with particular attention to mountain regions, a total area of 20.410 km², 7.200 km of hiking trails and 425 ski facilities. Seat of the primate is the town of Zakopane. Mountain Rescue can also act outside the Republic of Polish (Statute of the Mountain Rescue, 1990; Mrozowicz, 2006; 2007a).

Blue Cross is based on divisionalized organizational form, has an autonomous branch office, called the regional groups that have legal personality and conduct independent operations in isolated mountainous areas under the terms of the Statute of the Mountain Rescue. These include: Beskidzka, Bieszczady, Jurajska, Karkonoska, Krynicka, Podhalańska and Wałbrzysko-Kłodzka Group. Mountain Rescue employs 74 full-time lifeguards, and supports the work of 1,126 volunteers, rescue workers and 248 candidates for the rescuers (Mrozowicz, 2007b).

Mountain Rescue is an association of physical cultureⁱⁱ. It is at this point realize that the meaning of the law of the organization domain is positioning it among the associations of physical culture. *“Physical culture is part of a national culture that is protected by law (...) (Law on Physical Culture, Chapter 1, Art.1.1), is also (...) the knowledge, values, habits, actions taken to ensure the psychological and physical development, education, improving the abilities of human and physical fitness, and*

also to preserve and restore their health” (The Law on Physical Culture, Chapter 1, Art.3.1). Mountain Rescue through its co-ordinates the activities of the organizational level of implementation of the above-mentioned values, the epicenter of axiological determinants of its activity is concentrated around the value of the humanities: social and spiritual development and the protection of human health and life. *“To assure the safety of persons residing in the mountains is one of the government administrations bodies and bodies of local government units, management of national parks, as well as legal and natural persons engaged in the mountains of the functions of physical culture”* (The Law on Physical Culture, Chapter 10, Article 54.1.). Poland’s most important legislative act governing the existence of any associations, including, of course, Mountain Rescue, is the Constitution of 2 April 1997, which in the 12th article provides that *“the Republic of Poland shall ensure freedom for the creation and functioning of trade unions, socio-professional organizations of farmers, societies, citizens; movements, other voluntary associations and foundations”* (Constitution, 1997).

The basic legal act regulating the operation of associations is the Act of 7 April 1989, the so-called. Law on Associations (UPS Coll. Laws of 1989 No. 20, poz.104). Law on Associations, a general regulation, referring directly to Article. And Article 12. 58 of the Constitution, as confirmed by the provision of Article. Paragraph 7.2, according to which certain organizations in matters not dealt with separately, the provisions of the UPS. Therefore, the regulation has specific laws (governing the specific associations) are specific exemptions and exceptions to the provisions of the UPS. Mountain Rescue works this way on the basis of three key pieces of legislation: a) Physical Culture Act of 18 January 1996, b) the Council of Ministers of 6 May 1997 on determining the safety of persons residing in the mountains, flying, bathers and water sports, c) of the Minister of Internal Affairs and Administration of 12 November 2002 on the detailed scope of duties and powers of specialized rescue organization, the conditions for their exercise of the other rescue organizations and the nature and amount of benefits available to mountain rescuers and water in connection with participation in the rescue operation. Organization of aid and rescue people who have been injured or are exposed to the danger of losing life or health in the mountains to the MVSR *“(…) specialized physical culture associations with nationwide coverage to the extent specified in the statute that organization”* (Law on Physical Culture, Chapter 10, Art.55.1) - this phrase principled values, constituting the functioning of the Mountain Rescue organization.

Mountain Rescue is currently bringing together seven Regional Groups: Beskidzka based in Szczyrk, Bieszczadzka based in Sanok, Karkonoska based in Jelenia Góra, Krynicka based in Krynica, Podhalańska based in Rabka, Wałbrzysko-Kłodzka based in Wałbrzych and Jurassic, based in Podlesice (Jonak [ed.], 2002). It has seven stations and eighteen central field. It brings together about 1,100 rescuers, of which 60 employees are working to maintain continuity of service and emergency preparedness understood against regulations, but the state remained bound up with the volunteer

rescue service. To carry out tasks assigned by the State Mountain Rescue received the 1996 funds from the central budget through the Office of Physical Culture and Tourism, Mountain Rescue is currently funding issues involved in the Ministry of Home Affairs (Fasiński, Jonak, and Silberring, 1983; Jonak [ed.], 2002).

Mountain Rescue supreme authorities are, the Congress of Delegates, General Council, and the Audit Commission. At the head of the association is Chief Mountain Rescue Council, which directs the activities of the organization by an executive body appointed by the Board of Mountain Rescue. Responsibilities of the Board shall consist of coordinating and controlling the activities of the Regional Mountain Rescue Group, programming, and overseeing the work of Service Mountain, development plans and projects of the organization and internal regulations. Its subsidiary in the organizational structure is Chief Mountain Rescue Regional Group, led by stand the Council of the Group together with the chiefs of the groups that make up the executive body, the head of the ongoing activities of the Regional Group (Statute of the Mountain Rescue, 1977; Fasiński, Jonak, and Silberring, 1983; Jonak [ed.], 2002).

*Tatrzańskie Volunteer Rescue Service (TVRS)*ⁱⁱⁱ, the second in the Polish mountain rescue organization is an association with legal personality, acting under a statute is registered in the Register of Associations Regional Court in Nowy Sącz, made by 13 July 1991. The supreme authority of the association is the General Assembly, which elects every two years TOPR Board and Audit Commission. Board appoints the Chief, his Deputy, Chief of Training and Prevention, exercising managerial functions in the organization. In TOPR are 25 unions and lifeguards over 100 volunteers (Jonak [ed.], 2002).

The phenomenon and process of mountain rescue is based mainly in the field of operational activity on social and voluntary activities of the participants of non-profit organizations. Organizations participating in mountain rescue activities in each country and geographical region are associated in the international non-profit organization called ICAR, which primarily performs opinion-forming, opinion-making and executive functions in relation to the mountain rescue process. It organizes scientific and practical conferences and symposia that set the directions of activity and development of non-profit mountain rescue organizations in individual countries and in the world. The results of scientific research are the basis for the organization and coordination of the training activities of ICAR and national associations. On the other hand, preventive, intervention, and rescue effectiveness is the basis of economy and profitability in the management of non-profit organizations when they generate economic and social profits.

The activities of mountain rescue organizations include various forms of conducting rescue operations, which include the following aspects: medical and therapeutic, logistics and transport, meteorological, technological, psychosocial and, finally, competence and training. They are scientifically and pragmatically explored by ICAR organizational entities, as well as by national mountain rescue organizations and by

natural and legal persons cooperating with them in the field of mountain rescue and activities of supporting and related entities (other rescue services, medical entities).

Mountain rescue is an interdisciplinary phenomenon and process that includes knowledge and skills in many fields and scientific disciplines. Among the sciences that significantly affect the practical functioning of mountain rescue, the following can be identified: medical sciences, health sciences, technical and engineering sciences as well as social sciences. As part of the sciences and disciplines that occur in their theoretical-research areas, research is conducted on aspects of rescue operations, namely, technology for rescue and transport, life functions of the human body in mountain accident conditions, human behavior during mountain activity, mountaineering competence of tourists and the competence of mountain rescuers in conducting interventions and mountain expeditions.

References:

- Baertsch, P., Berghold, F., Herry, J.P., Oelz, O. 2000/2001. Portable Hyperbaric Chambers. In: Elsensohn, F. (ed.). Qualifications for emergency doctors in mountain rescue operations. ICAR MEDCOM International Commission for Mountain Emergency Medicine & UIAA MEDCOM International Federation of Alpine Organizations, 111-114.
- Brugger, H., Durrer, B. 2001. On site Treatment of Avalanche victims. In: Elsensohn, F. (ed.). Qualifications for emergency doctors in mountain rescue operations. ICAR MEDCOM International Commission for Mountain Emergency Medicine & UIAA MEDCOM International Federation of Alpine Organizations, 65-70.
- Brugger, H., Durrer, B., Syme, D. 1998/2001. On site Treatment of Hypothermia. In: Elsensohn, F. (ed.). Qualifications for emergency doctors in mountain rescue operations. ICAR MEDCOM International Commission for Mountain Emergency Medicine & UIAA MEDCOM International Federation of Alpine Organizations, 71-75.
- Bugdol, M., Nagody-Mrozowicz, K. 2021. Management, Organization and Fear: Causes, Consequences and Strategies. Routledge Studies in Management, Organizations and Society. Taylor & Francis Group Routledge. New York, London.
- Elsensohn, F. 1996/2001. First aid training guidelines for Mountain Rescue Service Members. In: Elsensohn, F. (ed.). Qualifications for emergency doctors in mountain rescue operations. ICAR MEDCOM International Commission for Mountain Emergency Medicine & UIAA MEDCOM International Federation of Alpine Organizations, 25-27.
- Elsensohn, F. 1994/2001. The Ten Health Rules for Mountaineers. In: Elsensohn, F. (ed.). Qualifications for emergency doctors in mountain rescue operations. ICAR MEDCOM International Commission for Mountain Emergency Medicine & UIAA MEDCOM International Federation of Alpine Organizations, 105-106.
- Elsensohn, F. 1995/2001. Children going to the Mountains. In: Elsensohn, F. (ed.). Qualifications for emergency doctors in mountain rescue operations. ICAR MEDCOM International Commission for Mountain Emergency Medicine & UIAA MEDCOM International Federation of Alpine Organizations, 121-123.
- Elsensohn, F. 1996/2011. Qualifications for emergency doctors in mountain rescue

- operations. ICAR MEDCOM International Commission for Mountain Emergency Medicine & UIAA MEDCOM International Federation of Alpine Organizations, 25-27.
- Elsensohn, F. 1997/2001. Nutrition in Mountaineering. In: Elsensohn, F. (ed.). Qualifications for emergency doctors in mountain rescue operations. Italy: ICAR MEDCOM International Commission for Mountain Emergency Medicine & UIAA MEDCOM International Federation of Alpine Organizations, 101-103.
- Elsensohn, F., Rammlmair, G., Zafren, K. 2001. Qualifications for Emergency Doctors in Mountain Rescue Operations. In: Elsensohn, F. (ed.). Qualifications for emergency doctors in mountain rescue operations. ICAR MEDCOM International Commission for Mountain Emergency Medicine & UIAA MEDCOM International Federation of Alpine Organizations, 31-32.
- Fasiński, A., Jonak, A., Silberring, J. 1983. Poradnik Ratownika GOPR. Wydawnictwo PTTK „Kraj”, Warszawa, T. I.
- Forster, H., Thomas, A., Wiget, U., Vogt, Ch. 1996/2001. Contents of a Mountain Refuge’s Pharmacy. In: Elsensohn, F. (ed.). Qualifications for emergency doctors in mountain rescue operations. ICAR MEDCOM International Commission for Mountain Emergency Medicine & UIAA MEDCOM International Federation of Alpine Organizations, 33-36.
- Forster, H., Zafren, K. 1996/2001a. Treatment of Dislocations and Fractures. In: Elsensohn, F. (ed.). Qualifications for emergency doctors in mountain rescue operations. ICAR MEDCOM International Commission for Mountain Emergency Medicine & UIAA MEDCOM International Federation of Alpine Organizations, 47-49.
- Forster, H., Zafren, K. 1998/2001. Treatment of Shoulder Dislocations. In: Elsensohn F. (ed.). Qualifications for emergency doctors in mountain rescue operations. ICAR MEDCOM International Commission for Mountain Emergency Medicine & UIAA MEDCOM International Federation of Alpine Organizations, 51-53.
- Griffin, R.W. 1999. Podstawy zarządzania organizacjami. PWN, Warszawa.
- Jagiello, M. 1996. Wołanie w górach. Wypadki i akcje ratunkowe w Tatrach. Wydawnictwo „Iskry”, Warszawa, s. 6., s. 10.
- Jarosiński, J. 2011. Błękitny Krzyż na połoninach. Monographs of the Bieszczady Mountain Rescue Service. The RUTHENUS Publishing House, Krosno.
- Jonak, A. 2002 (red.). Na każde wezwanie. Pięćdziesiąt lat działalności Górskiego Ochotniczego Pogotowia Górskiego, Zakopane.
- Jonak, A. (red.) 2012. Na każde wezwanie. Pięćdziesiąt lat działalności GOPR 1952-2002. Centralny Ośrodek Turystyki Górskiej PTTK, Kraków.
- Koźmiński, A., Obłój, K. 1989. Zarys teorii równowagi organizacyjnej. PWE, Warszawa.
- Koźmiński, A., Piotrowski, B. 1999. Zarządzanie. Teoria i praktyka. PWN, Warszawa.
- Ledoux, X., Wiget, U. 2001. Equipment for Canyoning Rescue Doctors. In: Elsensohn, F. (ed.). Qualifications for emergency doctors in mountain rescue operations. ICAR MEDCOM International Commission for Mountain Emergency Medicine & UIAA MEDCOM International Federation of Alpine Organizations, 41-42.
- Ledoux, X., Wiget, U. 2001. Canyoning Rescue for Professional Guide. In: Elsensohn, F. (ed.). Qualifications for emergency doctors in mountain rescue operations. Italy: ICAR MEDCOM International Commission for Mountain Emergency Medicine & UIAA MEDCOM International Federation of Alpine Organizations, 29-30.
- Leplat, J. 1982. Accidents and Incidents Production: Method of Analysis. Journal of Occupational Accidents, New York, nr 4.
- Łucewicz, J. 1999. Organizacyjne zachowania człowieka. Wydawnictwo Akademii

- Ekonomicznej we Wrocławiu, Wrocław.
- Milledge, S. 2001. People with Preexisting Conditions Going to the Mountains. In: Elsensohn, F. (ed.). Qualifications for emergency doctors in mountain rescue operations. Italy: ICAR MEDCOM International Commission for Mountain Emergency Medicine & UIAA MEDCOM International Federation of Alpine Organizations, 97-100.
- Mrozowicz, K. 2006a. Zarządzanie bezpieczeństwem w górach w świetle osobowościowych determinant zachowań ratowników Górskiego Ochotniczego Pogotowia Górskiego. Maszynopis dysertacji. Biblioteka Uniwersytetu Jagiellońskiego, Kraków.
- Mrozowicz, K. 2006b. Zasoby ludzkie organizacji Niebieskiego Krzyża w pryzmacie funkcjonalnych cech osobowości. Jarosławskie Studia Społeczne. Jarosław, 1, s. 89-111.
- Mrozowicz, K., Halemba, P. 2011. Teoria motywacji uczenia się ról społecznych na przykładzie organizacji ratownictwa górskiego. W: P. Halemba (red.), Zarządzanie w wybranych obszarach sportu, turystyki i rekreacji. Monograph of the Academy of Physical Education in Katowice, Katowice, s. 177-191.
- Mrozowicz, K. 2006. Niektóre aspekty zarządzania potencjałem osobowościowym na przykładzie Górskiego Ochotniczego Pogotowia Ratunkowego. W: Lachiewicz, S. (red.). Zarządzanie rozwojem organizacji. Monografie Politechniki Łódzkiej, Łódź, ss. 468-482.
- Mrozowicz, K. 2007. Zarządzanie bezpieczeństwem w systemie ratownictwa górskiego. ZN MWSE w Tarnowie, Tarnów.
- Mrozowicz, K., Halemba, P. 2012. Ratownictwo górskie. Psychologiczne i organizacyjne aspekty zarządzania bezpieczeństwem w górach. Katowice: Publication of the Jerzy Kukuczka Academy of Physical Education in Katowice.
- Mrozowicz, K., Puciato, D. 2010. Blue Cross organization as the subject of safety management in mountain tourism. The Małopolska School of Economics in Tarnow, Research Papers Collection, 2(16), s. 99-108.
- Mrozowicz, K., Ziaja, W.W. 2012. Strategia marki sieciowego przedsiębiorstwa hotelarskiego. Publication the Jerzy Kukuczka Academy of Physical Education in Katowice, Katowice.
- Mrozowicz, K. 2010. Psychologiczne i organizacyjne mechanizmy formalizacji ról społecznych w organizacji (na przykładzie GOPR). Przegląd Organizacji, 5, 27-31.
- Mrozowicz, K. 2010. Zachowania pomocne w świetle humanistycznej teorii organizacji (w świetle badań motywacji i postaw służby medycznej). Przegląd Organizacji, 7-8, 35-39.
- Mrozowicz, K. 2010. Zachowania ratowników górskich w świetle badań systemu wartości. Przegląd Organizacji, 10, 15-20.
- Mrozowicz, K. 2009. Model procesu podejmowania decyzji (na przykładzie badań ratowników górskich). Organizacja i Kierowanie, 4 (147), 193-207.
- Mrozowicz, K. 2011. Teoria zachowań organizacyjnych (na przykładzie niektórych aspektów roli społecznej ratownika GOPR). Organizacja i Kierowanie, 1(144), 67-85.
- Nagody-Mrozowicz, K. 2015. The human factor and fatal accidents in the mountain (The mountain thanatological Studies method). Modern Management Review, Quarterly, vol. XX (April-June), 22/2, 83-96.
- Nagody-Mrozowicz, K., Halemba, P. 2021. Mountain rescue organizations non-profit in the interdisciplinary research spectrum in mountain tourism. European Research Studies Journal, 24, Special Issue 1, 3-23.

- Nenonen, S., Kivistö-Rahnasto, J., Vasara, J. 2012. Safety considerations during different stages of a project life cycle in the manufacturing industry. *Human Factors and Ergonomics in Manufacturing & Service Industries*, Article published online, 30 July.
- Ölz, O. 1996/2001. Emergency Treatment of Acute Mountain Sickness and High Altitude Pulmonary Edema. In: Elsensohn, F. (ed.). *Qualifications for emergency doctors in mountain rescue operations. Italy: ICAR MEDCOM International Commission for Mountain Emergency Medicine & UIAA MEDCOM International Federation of Alpine Organizations*, 115-119.
- Petersen, D. 1988. *Safety Management – A Human Approach*. New York: Alorex Inc.
- Pidgeon, N.F., Turner, B.A. 1986. Human Error and Socio – Technical System Failure. In: A.S. Nowak (red.). *Modeling Human Error in Structural Design and Construction*. New York: American Society of Civil Engineers.
- Program Grupy Bieszczadzkiej GOPR (The Bieszczady Mountain Rescue Service Program) 2011-2014. 2011. Sanok.
- Ragaz, B., Schlegel, Ch. 2000/2001. Body Mass Index and Age Limits. In: Elsensohn, F. (ed.). *Qualifications for emergency doctors in mountain rescue operations. Italy: ICAR MEDCOM International Commission for Mountain Emergency Medicine & UIAA MEDCOM International Federation of Alpine Organizations*, 125-127.
- Rammlmair, G., Thomas, A., Wiget, U. 1998/2001. Emergency Intubation and Ventilation in the Field. In: Elsensohn, F. (ed.). *Qualifications for emergency doctors in mountain rescue operations. ICAR MEDCOM International Commission for Mountain Emergency Medicine & UIAA MEDCOM International Federation of Alpine Organizations*, 59-61.
- Rammlmair, G., Thomas, A., Wiget, U. 1998/2001. Treatment of Pain in the Field. In: Elsensohn, F. (ed.). *Qualifications for emergency doctors in mountain rescue operations. ICAR MEDCOM International Commission for Mountain Emergency Medicine & UIAA MEDCOM International Federation of Alpine Organizations*, 55.
- Rammlmair, G., Zafren, K. 2001. Immobilization and Use of the Vacuum Mattress in Organized Mountain Rescue. In: Elsensohn, F. (ed.), *Qualifications for emergency doctors in mountain rescue operations. Italy: ICAR MEDCOM International Commission for Mountain Emergency Medicine & UIAA MEDCOM International Federation of Alpine Organizations*, 43-45.
- Regulamin Służby Ratowniczej GOPR (Regulations of the GOPR Rescue Service), Uchwała Zarządu (Resolution of the Board of) GOPR/PTTK no. 250/VIII/1975 of 9 September 1975.
- Rotter, T. 2001. *Psychologia likwidacji wypadków drogowych*. Kraków.
- Saari, J. 1987 (red.). *Successful Accident Prevention*. Institute of Occupational Health. Helsinki.
- Stalewski, T., Łucewicz, J. 1994. *Socjologia organizacji. Problemy podstawowe*. Wrocław: Oficyna Nauczycielska, Wrocław.
- Statut Górskiego Ochotniczego Pogotowia Ratunkowego 1977, Zakopane.
- Statut Tatrzańskiego Ochotniczego Pogotowia Ratunkowego 1991, Zakopane.
- Stawowska, L. 1983. *Psychologia różnic indywidualnych dzieci i młodzieży*, Wyd. AWF, Katowice.
- Stoner, J.A.F., Freeman, R.E., Gilbert, D.R. 2001. *Kierowanie*. Wydawnictwo PWN, Warszawa.
- Strategia Grupy Bieszczadzkiej GOPR (Strategy of the Bieszczady Mountain Rescue Service). 2006, Sanok.

- Studenski, R. 1986. Organizacja bezpiecznej pracy w przedsiębiorstwie. Wydawnictwo Politechniki Śląskiej, Gliwice.
- Studenski, R. 1994. Szacowanie i ograniczanie ryzyka. Atest – Ochrona Pracy. Warszawa.
- Studenski, R. 1996. Organizacja bezpiecznej pracy w przedsiębiorstwie. Wydawnictwo Politechniki Śląskiej, Gliwice.
- Studenski, R. 1994. Szacowanie i ograniczanie ryzyka. Atest – Ochrona Pracy, 6, 32-45.
- Studenski, R. 1996. Organizacja bezpiecznej pracy w przedsiębiorstwie. Gliwice: Publication of the Silesian University of Technology.
- Swuste, P. 2008. You will only see it, if you understand it or occupational risk prevention from a management perspective. *Human Factors and Ergonomics in Manufacturing & Service Industries*, 18(4), 438-453.
- Syme, D. 2000/2001. On site Treatment of Frostbites for Mountaineers. In: Elsensohn, F. (ed.). *Qualifications for emergency doctors in mountain rescue operations*. Italy: ICAR MEDCOM International Commission for Mountain Emergency Medicine & UIAA MEDCOM International Federation of Alpine Organizations, 77-79.
- Tomazin, I. 2001. Activation and Rational Use of Helicopters. In: Elsensohn, F. (ed.), *Qualifications for emergency doctors in mountain rescue operations*. Italy: ICAR MEDCOM International Commission for Mountain Emergency Medicine & UIAA MEDCOM International Federation of Alpine Organizations, 85.
- Wiget, U. 1998/2001. A Modular First Aid Kit for Alpinists, Mountain Guides and Alpinist Physicians. In: Elsensohn, F. (ed.). *Qualifications for emergency doctors in mountain rescue operations*. Italy: ICAR MEDCOM International Commission for Mountain Emergency Medicine & UIAA MEDCOM International Federation of Alpine Organizations, 37-39.

Notes:

ⁱ*Mountain Rescue is an association of registry, and as such form of organization with legal personality, may assume local agencies, to organize themselves into trade associations, affiliate its members to legal persons and benefit from the generosity of the public and accept donations from state authorities and other institutions.*

ⁱⁱ*The Association is: a voluntary, permanent, and self-governing non-profit association, which alone determines its objectives, action programs and organizational structures, and passes on its internal operations, basing it on the social work members.*

ⁱⁱⁱ*TOPR is a historic and the first mountain rescue association in Poland and the continuator of the Mountain Service mission, which was established in 1908, when Poland as a state was erased from the maps of the world and Europe.*