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## THE HUMAN FACTOR AND FATAL ACCIDENTS IN THE MOUNTAINS (THE MOUNTAIN THANATOLOGICAL STUDIES METHOD)

Suffering, pain, not to mention death of another person, lead a normal, mentally healthy individual to experience traumatic emotional states. Organizational effects of exposing an employee to a long-lasting trauma, caused by the aforementioned factors are not limited solely to economic costs, but cause damage in one's psyche and carry with it negative social consequences. In case of the socio-occupational role of a mountain rescuer, within the catalogue of traumatic factors, apart from: the direct risk to one's health or life, physical, meteorological, natural, geomorphological, economic and social factors, there is also a factor of observing a trauma, agony or death of another human. The article raises the issues of causes and circumstances of the emergence of fatal accidents in the area of operation of the Bieszczady Group of Mountain Voluntary Rescue Service<sup>3</sup> (MVRS).<sup>4</sup> It is assumed that the source of their occurrence is sometimes the man himself, whereas the human factor is the main cause of fatal accidents in the mountains. The purpose of this article is also to present a diagnostic and prognostic method called *The Mountain Thanatological Studies Method (MTS Method)*, which could support organizational and decision-making processes in improving the efficiency of rescue work in the mountains. It can effectively lower the intensity of the analyzed traumatic factor connected with the performed socio-occupational work, reducing at the same time the number of fatal accidents.

**Keywords:** the human factor and decisions, the human factor and accidents, management of safety in the mountains, causes of mountain accidents, fatal accidents, factors of threats to life in the mountains

### 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 organiza-

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<sup>3</sup> In Polish: Górskie Ochotnicze Pogotowie Ratunkowe (GOPR)

<sup>4</sup> Organizational environment in case of the Mountain Service is fixed assets, buildings, infrastructure and other pecuniary resources related to running a particular core business, related to its strategic domain, as well as the geophysical environment, in which strategic and operational objectives are implemented (e.g. a rocky area, mountains pastures, rivers, forests etc.). In case of the Bieszczady Mountain Rescue Service, the operating area is not only Bieszczady, Low Beskids, Słonne Mountains, but also the area of the Dynów Foothills and Przemyśl Foothills, adjacent to the listed mountains ranges.

tions and individual or institutionalized mountain tourism<sup>5</sup>. However, implementing effective safety management is challenging, particularly for companies that provide services<sup>6</sup>. 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*”<sup>7</sup>.

Considerable significance is attached to psychosocial and organizational determinants of fatal accidents in people staying in mountain areas, who frequently have them as a result 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. MANAGEMENT OF SAFETY IN THE MOUNTAINS

The article gives an analysis of causes of fatal accidents and their determinants in the area of activity of the Bieszczady Group of Mountain Voluntary Rescue Service (MVRs): identification, description and classification in a subjective and objective perspective. In this way, a theoretical gap will be filled within the scope of scientific approach to the problem of causes of death cases in the mountains. Mountains are currently seen as a factor of the potential risk to human health and life, as they are characterized by the specific lie of the land and peculiar climate which, combined with technical – subjective shortcomings of the human, are sometimes the cause of his/her death.

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 direction, 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 of all, to create a preliminary psycho-demographic profile of an accident victim in the mountains.

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<sup>5</sup> K. Mrozowicz, P. Halemba, *Teoria motywacji uczenia się ról społecznych na przykładzie organizacji ratownictwa górskiego*, [in:] *Zarządzanie w wybranych obszarach sportu, turystyki i rekreacji*, ed. P. Halemba, Monograph of the Academy of Physical Education in Katowice, Katowice 2011, p. 177-191.

<sup>6</sup> S. Nenonen, J. Kivistö-Rahnasto, J. Vasara, *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 2012.

<sup>7</sup> P. Swuste, „*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 (2008), p. 438–453

Secondly, to identify the factors and circumstances which determine a fatal accident in the mountains. Thirdly, to revise empirically the theorem about the dominant 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<sup>8</sup>. 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<sup>9</sup>.

The organization and its environment began to be recognized as a multi-element whole that creates the system, and accidents as a result of their inefficient functioning<sup>10</sup>. According to the cited conclusion, accidents happen because the organization itself becomes their initiator or it is not able to prevent their occurrence<sup>11</sup>. 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<sup>12</sup>. 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 makes an attempt 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.

In spite of 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<sup>13</sup>, 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: *help-*

<sup>8</sup> R. Studenski, *Szacowanie i ograniczanie ryzyka*, „Atest – Ochrona Pracy” 1994/6, p. 32–45.

<sup>9</sup> Ibidem.

<sup>10</sup> J. Saari [ed.], *Successful Accident Prevention*, Institute of Occupational Health, Helsinki 1987.

<sup>11</sup> K. Mrozowicz, P. Halemba, *Ratownictwo górskie. Psychologiczne i organizacyjne aspekty zarządzania bezpieczeństwem w górach*, Publication of the Jerzy Kukuczka Academy of Physical Education in Katowice, Katowice 2012.

<sup>12</sup> *Strategia Grupy Bieszczadzkiej GOPR (Strategy of the Bieszczady Mountain Rescue Service)*, Sanok 2006.

<sup>13</sup> K. Mrozowicz, P. Halemba, *Teoria motywacji uczenia się ról społecznych na przykładzie organizacji ratownictwa górskiego*, [in:] *Zarządzanie w wybranych obszarach sportu, turystyki i rekreacji*, ed. P. Halemba, Monograph of the Academy of Physical Education in Katowice, Katowice 2011, p. 177–191.

ing 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 mountains 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<sup>14</sup> – chosen as a place of illegal transit of Asians and Africans to the area of the European Union, fosters attempts 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<sup>15</sup> (Figure 1).

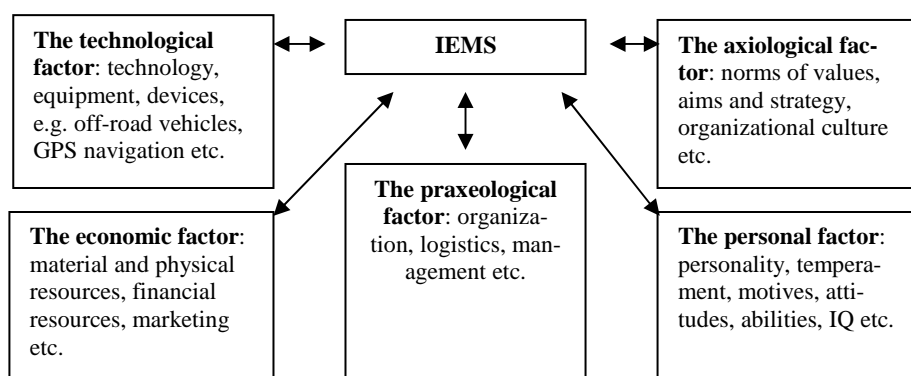


Fig. 1. Determinants of the Intervention Effectiveness of the Mountain Service – IEMS.

Contrary to opinions built on the wide-spread and superficial knowledge, GOPR 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 and the management of Regional Groups of GOPR, as public benefit organizations have been running a peculiar ‘prosocial’ market game for many years. Its

<sup>14</sup> J. Hołub, *Wypadki śmiertelne w obszarze działalności Grupy Bieszczadzkiej Górskiego Ochotniczego Pogotowia Ratunkowego* [Fatal accidents in the area of activity of the Bieszczady Group of Mountain Voluntary Rescue Service], Bachelor thesis, PWSTE in Jarosław, Jarosław 2012.

<sup>15</sup> K. Mrozowicz, P. Halemba, *Ratownictwo górskie. Psychologiczne i organizacyjne aspekty zarządzania bezpieczeństwem w górach*, op. cit., p. 127

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<sup>16</sup> and humanitarian attitudes of the members of the Mountain Service<sup>17</sup>.

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.

### 3. THE BIESZCZADY MOUNTAIN RESCUE SERVICE IN OUTLINE

The Bieszczady Mountain Rescue Service (abbreviated as GB GOPR) operates in the area of the Subcarpathian Voivodeship in Bieszczady and the eastern part of the Lower Beskids, as well as in the adjacent to the aforementioned mountains foothills (the Przemysł Foothills, the Dynów Foothills) of a total area of 4000 km<sup>2</sup>. The area of operation of the Group is closed by<sup>18</sup>:

- the northern border: the Krościenko - Sanok - Krosno – Jasło railway line,
- the western border: eastern of the road Jasło - Nowy Żmigród - Krempna to the border with Slovakia (Beskid Pass 593 m),
- the southern border: the border with Slovakia (to the summit Krzemieniec 1221 m) and with Ukraine to Użocka Pass 853 m,
- the eastern border (the border with Ukraine to the border crossing in Krościenko).

GB GOPR currently brings together (state from 01.07.2012) 203 rescuers, including 16 professional ones and 187 volunteers, gathered in four Operation Sections: Lutowska, Cisna, Sanok, Krosno. The Chief of the Mountain Service and other rescuers perform their duties in compliance with the Regulations of the Rescue Service and the Labor Code. Round-the-clock duties are carried out by rescuers of the Central Station in Sanok and in Rescue Stations in Ustrzyki Górne, Cisna, the PTTK Mountain Lodge in Połonina Wetlińska and at the Base of the General Rescue in Dukla<sup>19</sup>.

Depending on the degree of training, technical qualifications and seniority, ordinary members of GB GOPR have the following degrees: a rescuer candidate, mountain rescuer, senior mountain rescuer, mountain rescue instructor and senior mountain rescue instructor.

Rescuers of GB GOPR use modern equipment which enables to carry out activities in any conditions. Due to the nature of the terrain, they undertake rescue work also outside the area of Bieszczady and part of the Low Beskids in search operations in Subcarpathia, providing assistance to victims of road accidents, natural disasters etc. GB GOPR has

<sup>16</sup> J. Jarosiński J., *Błękitny Krzyż na połoninach. Monographs of the Bieszczady Mountain Rescue Service*, The RUTHENUS Publishing House, Krosno 2011.

<sup>17</sup> 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.

<sup>18</sup> *Program Grupy Bieszczadzkiej GOPR (The Bieszczady Mountain Rescue Service Program) 2011–2014*, Sanok 2011.

<sup>19</sup> Hołub J., *Wypadki śmiertelne w obszarze działalności Grupy Bieszczadzkiej Górskiego Ochotniczego Pogotowia Ratunkowego*, op. cit., p. 35

published a quarterly entitled *Echo Połonin* since 2000 (the Bieszczady Mountain Rescue Service Program 2011-2014), in which it raises not only the issues of mountain prevention, but also general organizational problems.

Rescuers from Bieszczady, within the scope of their core and operational activity, which consists in providing constant supervision of safety in the mountains in the form of a 24-hour watch, protect the organization and the way in which the following group forms of tourism are run: rallies, hikes, sport and leisure events, extreme forms of sport, support in the areas of cable railways and ski lifts.

As part of their operational activity, rescuers from GB GOPR participated in securing large massive events e.g.: the pilgrimage of *Pope John Paul II* and *Benedict XVI*, the *Finales* and *Woodstock* Festivals organized by the *Great Orchestra of Christmas Charity*, or regular events such as: *Bieg Rzeźnika* (*Butcher's Run*), *Bieg na Cergową* (*Run to Cergowa*), *Ogólnopolski Bieszczadzki Rajd Narciarski* (*National Bieszczady Ski Rally*), *Bieg Narciarski Szlakiem Bieszczadzkiej Kolejki Leśnej* (*Ski Run along the route of the Bieszczady Forest Railway*), *the Way of the Cross to Tarnica*. They also annually organize Mountain Film Review and cooperate with: the Polish Medical Air Rescue in Sanok, Bieszczadzki Border Guard Regional Unit in Przemyśl, Bieszczady National Park, Fire Brigade, Regional Directorate of State Forests in Krosno, Civil Defense, STORAT rescuers and mountain rescuers from Ukraine and Slovakia (Bieszczady Mountain Rescue Service Program 2011-2014). According to the project called Bieszczady Mountain Rescue Service Program 2011-2014 and regulations in the Strategy of the Bieszczady Mountain Rescue Service from 2006, important determinants of further development of the Group are:

- saving human life, protecting natural resources, performing prevention activities, preserving own traditions,
- retaining organizational integrity as an apolitical organization which attains its goals on the basis of the staff consisting of trained and committed rescuers,
- respect for the history and tradition of mountain rescue and handing them down to young generations of rescuers,
- raising the level of training and the level of rescue, technical and medical qualifications,
- maintaining operational readiness of the mountain service at a high level on the basis of modern rescue equipment.

#### 4. THE MOUNTAIN THANATOLOGICAL STUDIES METHOD (THE MTS METHOD)

The study used a monographic method which in practice is used in the following techniques and tools: preliminary archival research, critical analysis of the source data, participant observation, casual and depth interview.

The monographic method covered a thorough analysis of descriptive documentation and printed in scientific sources query of source materials of the Archive of GB GOPR in Sanok: Book of Expeditions, Duty Roster, written reports, cards of accidents, literature on the subject and supplementary literature (including popular science publications and the press), as well as the Internet.

In the course of the study, there were open and close interviews, structured and casual, unstructured interviews, and single with a group of deliberately chosen respondents, res-

cuers of BG GOPR. The interviews were conducted individually in the period from December 2011 to January 2012. In total, 34 interviews were carried out: 7 with managers of rescue actions and expeditions and 27 with rescuers taking part in rescue actions and expeditions. Informal interviews gave the respondents an opportunity to express themselves freely, and thus to obtain undistorted and substantial information by asking non-standard and unconventional questions during a casual conversation. Answers given by rescuers were honest, matter-of-fact statements, devoid of confabulation, and gave the impression of a narrative of real events. They became a valuable source material, which our research team owes to Mr. Jacek Hołub, who for research purposes used the fact that a mountain rescuer is trusted and respected by the respondents.

The participants of the study had been informed of the objectives and nature of the interviews. The questions addressed to a particular subject were in a special way related to a specific rescue action or expedition: the phase of preparing equipment and organizing the rescue team, circumstances of getting to the place of the accident, the manner of declaring somebody dead, transporting corpses.

A casual conversation (informal group interview) among the rescuers from the Group was also used, during which free questions were posed in order to collect reliable data, and also to clear the traumatic atmosphere, which usually pervades memories of such events. The study was carried out without any disruption, and its purpose met with the approval from the subjects and the management of the Group.

For technical data recording, the following devices were used: a camera, dictaphone, traditional and electronic data carriers, photographic material from own collections and from the Archive of GB GOPR in Sanok, sketches of the places of death, records of paths leading to places of death, record of the absolute altitude using a GPS navigation device, which is in the inventory of the District Station of GOPR in Ustrzyki Górne and Cisna, and also the cartographic base Bieszczady 1:60000 by the Ruthenus Publishing House from 2008/2009 and Beskid Niski 1:125000 by the PPWK Publishers from 1999.

Generally, the conducted analyses and the applied research methods were to answer some key research questions, namely:

- What is the nature of factors which determine the causes and circumstances of fatal accidents in the area of activity of GB GOPR?
- Which of the personal and situational determinants play a major role in causing fatal accidents within the area of operation of the Mountain Service GB GOPR?
- Are there enough reasonable grounds in order to be able to create a propaedeutic and simplified profile of a fatal accident victim in the mountains, and if so, what will its characterization be?

Before starting the presentation of the results of the study and their interpretation, it must be clearly emphasized that due to the fact that 100 observations of fatal accidents is such a large number that it nearly matches the normal (Gaussian) distribution. This led the authors to limit statistical tools only to the percentage distribution analysis. Moreover, due to the raised research questions, it was not our intention to draw implications about potential differences in the shaping of the variable – fatal accident – between regional groups of GOPR, operating in different mountain ranges. Categorization, description of factors and abstracting a possible demographic profile of an average fatal accident victim became the objectives. In the next few years it could be reasonable to analyze the significance of differences between the means and variances of distributions of the estimated variable based

on the data obtained from all the local mountain rescue groups. Interesting study results could be also provided by factor analysis.

Secondly, it was assumed that the development of concentration of the analyzed variable at the level of at least 50% means that it expresses a certain average state within the studied case groups. The levels below 10% and above 90% were considered as extremely low or high intensity, characterizing only a small proportion of cases from the whole studied group.

The ones whose level falls within the range of 50% and more were regarded as representative, and thus characteristic features of the analyzed variable. This kind of approach, although not free of certain mathematical imperfections, allows a bit simpler and logical systematization activities in creating the sought after personal and situational profile of a fatal accident victim in the mountains.

## **5. THE THANATOLOGICAL FACTOR – STRUCTURE AND CHARACTERIZATION**

In the years 1964-2012 (that is from the date of establishing GB GOPR to 19 September of the current year), there were 105 fatal accidents within the operational area of the Group, whereas the presented idiographic-statistical analysis applies to 100 events, i.e. as many as happened until the moment of carrying out this analysis (2010-2012). Five fatal accidents took place during the process of drawing up the materials and editing this article.

Preliminary research of source materials implies that the dominant region in terms of mortality, in which the Group operates, is the area of the High Bieszczady with ranges of mountain pastures and the Wooded Bieszczady with forested mountain ridges of Wołosz and Chryszczata. The following towns correspond to this location: Ustrzyki Górne, Wetlina and Cisna [1]. Accumulation of fatal accidents in this part of the area of activity of GB GOPR may suggest that topographic conditions such as: the lay of the land, its vastness and height, are a direct factor of a threat to life. The results show that in most cases it is a false implication. Causes of death in the mountains generally lie in human decision-making processes and they should become the main subject of analysis, observation, perhaps even supervision. As an inaccessible area, difficult to explore particularly in the winter season, it is conducive to activities which are the direct cause of death and thus limit the rescue effectiveness of Mountain Service.

In Table 1, there is a list of 12 criteria factors, which diversify the causes of fatal accidents in the area of activity of the Bieszczady Group of GOPR. In the light of the obtained findings, a unique regularity can be observed. In fact, the majority of fatal accidents took place before the arrival of GOPR, and so it did not happen after carrying out rescue activities (60%). This means that, as a matter of fact, rescuers after arriving at the place of the accident only found the body of the deceased victim. Therefore, their role was restricted only to searching, not to medical actions. No resuscitation actions were performed. The overwhelming majority of fatalities are men (84%) who are middle-aged (about 30%), dying mainly in Bieszczady (84%) in mountain areas (53%), in the winter (53%), as a result of non-tourist initiatives (67%), under the influence of the human factor (77%).



Table 1. Conditions and circumstances of fatal accidents in the context of thanatological criteria in the area of activity of GB GOPR

No.	Criteria and context	Conditions and circumstances of death	Results	Results	Results	Results
1.	Reaction of GB GOPR	death before or after the arrival of mountain rescuers	before the arrival – 60%	after the arrival – 40%	x	x
2.	Sex of the deceased	sex determined on the basis of autopsy by a pathologist	females – 14%	males – 84%	not established – 2%	x
3.	Age structure	age determined on the basis of the identification card	up to 18 years old – 9%	19-35 years old – 31%	36-55 years old – 28%	56-81 years old – 11%
4.	Place of death	Bieszczady, The Low Beskids and the buffer zones: Słonne Mountains and Foothills	Bieszczady – 84%	The Low Beskids – 6%	buffer zones – 10%	X
5.	Nationality	Poles, allochtonen	89% - Poles	7% - allochtonen	4% - not established	X
6.	Place of residence	registered residence	subcarpathia – 58%	from outside – 31%	7% - allochtonen	4% - not established
7.	Motivational cause	motive-related cause	tourism – 30%	not tourism – 67%	3% - not established	X
8.	Altitude	lowland or upland area	up to 600 m above sea level – 47%	over 600 above sea level – 53%	x	X
No.	Criteria and context	Conditions and circumstances of death	Results	Results	Results	Results
9.	Season	summer or winter season	winter (XI-IV) – 53%	summer (V-X) – 47%	x	X
10.	Month	extremes of severity	January – 23%	November – 2%	on average – ok.10%	X
11.	Time of day	time of recording	6.00-18.00 – 87%	18.00-6.00 – 11%	not established – 1%	X
12.	Risk factors	human – natural, technical, environmental	the human – personal factor – 77%	the technical factor – 11%	the environmental factor – 5%	not established – 7%

Source: own study based on

The results of the conducted study indicate that the personal (human) factor occupies a crucial role in the occurrence of fatal accidents in the examined region. Within the scope of this factor we may point out the following rank:

- I. suicide (mostly hanging oneself);
- II. alcohol poisoning;
- III. decision-making mistake such as: inaccurate assessment of one's state of health, conditions or technical and equipment capabilities, ignorance of topography, physical and mental exhaustion, cold.

As a matter of fact, it is evident that the thanatological factor occurs in two forms: teleological (death is the target or effect) and irrationalist (death is a result of one's mistake) (Figure 2).

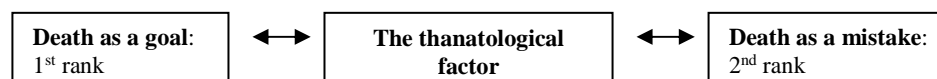


Fig. 2. The dual nature of the thanatological factor in the mountains. Death as a man's goal – death as a man's mistake

A major part of fatal accidents is deliberate and measured by their victims, and it sometimes happens that they are well thought out and meticulously planned. This means that the human factor is of teleological nature and is connected with the decision-making process. In order to synthetically express the above conclusions, an empirical model was created, the so-called *Psycho-demographical profile of a fatal accident victim in the mountains*. It is found in two variants: dominant (foreground) and complementary (peripheral), and its declination is caused by the dual (twofold) nature of the thanatological factor and is mostly of practical significance. Their use enables to identify a potential accident victim in the mountains.

### 5.1. Dominant (foreground) profile – death as a decision-making objective

An average victim of a fatal accident in the area of operation of GB GOPR is: a Polish citizen (84%) of the male sex (84%), registered in the Subcarpathian Voivodeship (58%), in the 19 to 55 age bracket (59%), killed in the mountain area (53%) in the winter season (53%), mainly in January (23%), under circumstances not directly related to practicing mountain hiking (67%), nevertheless as a result of the reasons for the existence of agony triggered off by one's own deliberate action, characterized by different levels of sanity (84%).

### 5.2. Complementary (peripheral) profile – death as a decision-making mistake

An average victim of a tourist accident ending with death in the area of activity of GB GOPR is: a Polish citizen (84%) of the male sex (84%), registered in the Subcarpathian Voivodeship (58%), in the 19 to 55 age group (59%), killed in the mountain area (53%), mostly in Bieszczady (84%), rarely in the Lower Beskids (6%), in the winter season (53%), mainly in January (23%), under the circumstances which are directly associated with mountain tourism (30%), as a result of the circumstances caused in consequence of harmful activities or making a wrong decision.

## 6. CONCLUSIONS – PRACTICAL IMPLEMENTATION OF THE PROFILES

On the grounds of the conducted study and the operationalization of data, an exact amount of information was obtained, on the basis of which a few final conclusions could be drawn. Here they are.

*Firstly* – men are statistically more often the victims of fatal accidents in the mountains, as they are more likely to exhibit risky behavior, especially in the context of showing one's courage in front of other members of the group; they are more willing to ignore danger, particularly when their decisions are made in the state of alcoholic intoxication; it happens that the prime motive for dangerous behavior is recuperation of self-esteem in comparison with the group by taking daring actions.

*Secondly* – the level of risk tolerance seems to decrease with age; more mature people prefer to choose routine situations of a programmed structure, and thus experienced and proven safe; young people seek novelty, stimulation and sensations that are hence produced, perceiving risk as a source of surprising, strong stimuli and exciting adventures.

*Thirdly* – geothermal conditions of the winter season combined with equipment and technical defects and lack of professional competence (knowledge, experience, skills, seniority in the role of a mountain tourist, appropriate psychomotor development and level of physical fitness, finely developed personality: attitudes, motivations and character features) of a man in the mountains increase the danger of death.

*Fourthly* – the main and direct cause of fatal accidents in the mountains is the goal of action. It might be reaching the peak of the mountain in bad weather conditions with inadequate preparation in terms of fitness and equipment, however, most frequently it is not the mountain environment that causes death, but the man himself due to the fact of choosing a terrifying epitaph on a forlorn mountain burial mound, or even by not being aware of the approaching agony (being in the state of fatal intoxication).

*Fifthly* – remarks for the rescue practice:

- rescue teams should consist of strong, insensitive to traumatic sight (pain, injuries, human corpse), resistant to stress overload men,
- search and rescue teams should be numerous (e.g. 8, 12-person) in order to reasonably quickly get to the scene of an accident, and also to frequently change the staffing of stretchers (fatigue which intensifies while marching in the snow and freezing weather at night),
- the control of the tourist traffic ought to be of a permanent nature, and its escalation should take place in the winter season (December, January, February) in cooperation with mainly the Police and economic entities which are in the service and commercial sector,
- safe mountain tourism should be still promoted with the use of the available media in various social circles, it seems legitimate to refer people addicted to alcohol to treatment, but it falls outside the competence of GOPR.

To sum up, it needs to be stated that the results of the carried out study should be the starting point for subsequent studies, but of the nature of a comparative analysis. Using the proposed *MTS Method*, they should embrace other local groups of Mountain Volunteer Search and Rescue: the Beskidy Group, the Jura Group, the Krynica Group, the Kar-konosze Group, the Podhale Group, the Wałbrzych-Kłodzko Group and Tatra Volunteer Search and Rescue (Polish: TOPR).

The findings of the scientific thought, casual interviews and participant observation suggest that in this field there can be quite considerable discord in terms of the categories of risk factors. This intuitive implication, however, ought to be supported by results of a guided study. There have been few analyses of this kind so far and they are solely part of the authors' scientific accomplishments. There is no scientific discourse or polemics in this regard, and the scientific legacy of the authors of this article is not accompanied by competitive views. This obvious scientific loophole hinders the critical analysis of other authors (theoretical predecessors) and the possible polarization of views, whereas evolution of the presented issues develops almost exclusively in the practical space. This means that on the pages of scientific publications there are only chosen issues concerning the management of mountain rescue services, but otherwise it is a transfer of the real need of practice to scientific explanations. What is more, scientific implications find their reflection in practice, and this in turn justifies the conduct of research activities.

The proposed *MTS Method*, used in practice in the preventive and intervention activity of local groups of GOPR, may cause an increase in the effectiveness of organizational work, increase in the level of occupational safety of rescuers and the condition of accident victims, and thereby an improvement in working conditions by reducing the risk factors for health and life.

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### **CZYNNIK LUDZKI A WYPADKI ŚMIERTELNE W GÓRACH (METODA GÓRSKIEGO STUDIUM TANATOLOGICZNEGO)**

Cierpienie, ból, śmierć drugiego człowieka powodują u normalnej, zdrowej psychicznie jednostki przeżywanie traumatycznych stanów emocjonalnych. Skutki organizacyjne ekspozycji pracownika na długotrwałą traumę spowodowaną wspomnianymi czynnikami nie ograniczają się wyłącznie do kosztów ekonomicznych, ale wyrządzają także szkody w jego psychice oraz pociągają negatywne skutki społeczne. Wspominany wymiar nie dotyczy wyłącznie kwestii etycznych. Zdobywana wiedza uzupełnia potencjał społeczny organizacji. Staje się ona zatem istotnym elementem kulturotwórczym, jest podstawą formułowania celów, wartości oraz norm zachowań jednostkowych i zespołowych. Czynniki te sprzyjają wzmocnieniu trwałości kultury organizacyjnej.

W wypadku roli społeczno-zawodowej ratownika górskiego w katalogu czynników traumatycznych oprócz bezpośredniego narażenia zdrowia lub życia, czynników fizycznych, meteorologicznych, przyrodniczych, geomorfologicznych, ekonomiczno-społecznych znajduje się też czynnik obserwacji traumy, agonii lub śmierci innego człowieka.

W artykule podjęto problematykę przyczyn oraz okoliczności powstawania wypadków śmiertelnych w obszarze działania Grupy Bieszczadzkiej Górskiego Ochotniczego Pogoto-

wia Ratunkowego (GOPR)<sup>20</sup>. Zakłada się, że źródłem ich powstawania bywa sam człowiek, czynnik ludzki zaś jest główną przyczyną powstawania wypadków śmiertelnych w górach. Celem artykułu jest też zaprezentowanie metody diagnostyczno-prognostycznej pod nazwą Metoda Górskiego Studium Tanatologicznego (Metoda GST), mogącej wspomóc procesy organizacyjno-decyzyjne w podnoszeniu efektywności pracy ratowniczej w górach. Może ona skutecznie obniżyć natężenie analizowanego czynnika traumatycznego, związanego z wykonywaną pracą społeczno-zawodową, ograniczając równocześnie liczbę wypadków śmiertelnych.

**Słowa kluczowe:** czynnik ludzki a decyzje, czynnik ludzki a wypadek, zarządzanie bezpieczeństwem w górach, przyczyny wypadków górskich, wypadki śmiertelne, czynniki zagrożeń życia w górach

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<sup>20</sup> Środowiskiem organizacyjnym w wypadku Służby Górskiej są środki trwałe, budowle, infrastruktura oraz inne zasoby materialne związane z prowadzeniem danej działalności podstawowej, związane z jej domeną strategiczną, a także otoczenie geofizyczne, będące środowiskiem realizacji celów strategicznych i zadań operacyjnych (np. teren skalny, połoniny, rzeki, lasy etc.). W wypadku działania Grupy Bieszczadzkiej GOPR terenem operacyjnym są nie tylko Bieszczady, Beskid Niski, Góry Słonne, ale również obszar Pogórza Dynowskiego i Przemyskiego, przylegający do wymienionych pasm górskich.