

TECHNICAL RESCUE OF HUNGARIAN FIREFIGHTERS AND COURSES OF TRAINING

A MAGYAR TŰZOLTÓK MŰSZAKI MENTÉSI KÉPESSÉGEI ÉS A KÉPZÉS ÖSSZEFÜGGÉSEI

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Abstract

The national fire service has to face various accidents many times where technical rescue tasks have to be executed. In these technical rescues the fire-fighters mostly have to deal with traffic accidents, accidents involving hazardous materials and the aftermath of weather phenomena. The majority of these to eliminate falls to the operative intervene staff. In my document In my assey I analyze the intervention statistics of the last years, present the revealic of the technical backups accomplished by firefighter, survey the legal backgroud of intervention. I will study the theoretical and practical training consort with damage elamination activity and the effect of transformation of training on the intervention effectivity. My aim to attract attention the importance of practical tranig in firefighters activity.

Keywords: *technical rescue, fire-fighting, life-saving, disaster, training*

Absztrakt

A hazai mentő tűzvédelem kiemelkedőensokszor kerül szembe különfélekáreseményekkel, melyek felszámolásaérdekében műszaki mentési feladatokat kell végrehajtani. Műszaki mentések során a tűzoltók leggyakrabban a közlekedési balesetekkel, veszélyes anyagokkal kapcsolatos káresetekkel, szélsőséges időjárási jelenségek következményeivel kerülhetnek szembe. Ezeknek a felszámolása döntőrészt az operatív beavatkozó állományra hárul. Írásomban elemzem az elmúlt évek beavatkozási statisztikáit, bemutatom a tűzoltók által végrehajtott műszaki mentések jellemzőit, áttekintema beavatkozások jogszabályi háttérét. Vizsgálom, hogy milyen elméleti és gyakorlati kiképzés társul a kárfelszámolásitevékenységhez, továbbá a képzés átalakításának hatását a beavatkozási hatékonyságra. Céloom felhívni a figyelmeta gyakorlati képzés fontosságára a tűzoltók tevékenysége során.

Kulcsszavak: *műszaki mentés, tűzoltás, életmentés, katasztrófa, kiképzés*

A kézirat benyújtásának dátuma (Date of the submission): 2017.05.14.

A kézirat elfogadásának dátuma (Date of the acceptance): 2017.09.24.

INTRODUCTION

I manage operative duties during my job at disaster protection, we execute complex interventions, the efficiency of this is greatly affected by the training of the fire-fighters. We experience extreme weather conditions more and more which cause damage to properties and sometimes demands peoples life and also makes the job more difficult for those who are doing the remediation. Our fire-fighters nowadays have to react quicker to more complex duties than ever before. An improvement has been started in our country, not just the economy but the industry and the transportation is developing. Our government is planning to build 900km of road in 2016-2017 which most of it will be highway. We need this development because the statistic shows that the accidents on the roads are increasing. The two main part of a fire-fighter's job is to deal with traffic accidents and damages caused by extreme weather conditions, I will examine the the execution of the remediation of these in detail. I'll also present that the remediation duties are based on what law regulations, the involved fire-fighters training procedure and also what professional training is required to handle the most used technical tools. With my researches I would also like to point out the importance of the exercise because the appropriate practice is essential for damage elimination.

THE LEGISLATIVE BACKGROUND OF THECNICAL RESCUES

In Hungary, organizations who are carrying out various types of remedial tasks are operate under strict legal conditions. Below I will introduce only the laws related to the topic and the internal organizational instructions based on them.

CXXVIII. of 2011. law On disaster prevention and the related amendments to certain laws

The law is clear "Disaster prevention is a national matter. The unified management of defence is a task for the state. "Previously, fire protection was the responsibility of local governments, becoming a state task since the entry of the law. Later at the government's duties, it clarifies that "... coordinates educational, training, scientific research and technical development activities related to disaster prevention ..."

XXXI of 1996. law

About protection againts fire, technical rescue and the fire brigade

"In order to fulfill the tasks from the Fundamental Law and the international contracts, the Parliament shall ensure the protection of the rights and obligations of the persons involved in the prevention of fire and security risks, fire, technical assistance and fire protection, it's personal, material and material conditions are governed by the following law "

39/2011. (XI. 15.) BM decree On the general rules for the fire and rescue operations of the fire service

The Decree is based on Annex III. This chapter is about technical rescue.

Specifying technical rescue:

In the event of a natural disaster, an accident, a damage, an abnormal technological process, a technical failure, the release of a dangerous substance or any other dangerous event, the technical rescue is carried out as a primary intervention activty with the available tools by the fire brigade for the protection of the physical integrity, the material goods and human lives.

In the course of technical rescue activities, in particular:

- in building damages, site accidents,
- in traffic accidents,
- in accidents involving natural waters,
- in accidents involving canals, wells and other reservoirs,
- In the event of emergencies, accidents, damage to public utilities,
- Accidents at height, depth, underground voids (caves, gaps)
- during the outbreak of hazardous substances, during a nuclear accident,
- during natural disasters and in similar cases.

Life- and asset saving as well as fundamental fire and life security firefighter tasks. The primary intervention lasts until the immediate emergency has been resolved or the management of the event elimination has been taken over by the entitled organization. The fire brigade then carries out its duties beside this organization.

- Main tasks to be performed during technical rescue:
 - life saving,
 - the elimination of the risk of indirect and direct danger of life and accident,
 - the saving of animals, objects and material goods in view of their value, irreplaceability, animal welfare or functional importance,
 - mitigating further environmental damage caused by the event,
 - supporting the restoration of traffic.

Particular attention and caution is needed when searching for people, in the process of the rescue you have to take into account the opinion of a doctor or an ambulance. In the case of a mass accident you have to follow the instructions of the commander, where should be the wounded could be treated.

6/2016 (VI.24) BM OKF instruction is the Rules of Fire-fighting Tactics on the release of the Rules of Technical Backup Operation.

The regulation consist of eight chapter:

- I. Intervention in the prevention of damages construction.
- II. Intervention in accidents of public utilities and sewerage system (public road tunnels)
- III. Rules of intervencion in traffic accidents.
- IV. Rules of intervention in natural disaster.
- V. Intervention in the presence of hazardous substance.
- VI. Intervention with the presence of radiation-haradous substance.
- VII. Intervention in case of gas line casualty.
- VIII. Life rescue rules.

According to the statutory definition, the intervening staff and forces must be able to deal with the damage and technical rescue. That's why the knowledge of executing a technical rescue is already being gained in basic training by new firefighters rather in theory and in a few practice scenarios. Internal controllers take care of both theoretical and practical training, they are responsible for the quality and the quantity of the lessons, but in most cases, this is not enough in real scenarios, because the training plan is now shifting to theory. Properly trained executives, commanders, seniors and more experienced fire-fighters are a great help to newcomer fire-fighters during an intervention such as fire or technical rescue [3]. During the work, the intervening staff must encounter extremes. Weather conditions, night shifts, deceased people, blood, must be able to work at heights or depths. The training cannot

prepare for these. The before mentioned executives, the senior colleagues, can help a lot in solving problems and processing bad experiences. [4].

THE BASICS OF THE FIRE-FIGHTER TRAINING

Many would wonder: What can a "rookie" fire-fighter expect during the basic training? Most of the time, newcomer fire-fighters has to go back to school as an adult because of changing their job . This is the first challenge for many future fire-fighters. A lot of them come from different places to a training facility which can be found at several locations in the country. Fire-fighters participating in training will learn the basics of fire-fighting and technical rescue, but they also get a comprehensive view of the complex tasks of fire-fighting. They study the service act, the rules of fire and technical rescue, and familiarize themselves with the recruitment policy, the basic tasks of technical rescue, which is the subject of my article. The renewal of the legal background to disaster prevention also brought a change in education and training. In the new education system, fire-fighters are required to take part in basic police training at several locations in the country.

With the entry of the modified Disaster Protection Act, in parallel with the emergence of new administrative and professional tasks, the legal background for education and the education system has undergone a complete transformation and renewal. Recently, the normative system for firefighting training has been continuously renewed. These legal norms also define the operation of the disaster protection training system. The tasks of the field of education are diverse, it deals with the preparation, training, further training of the entire staff of disaster protection and the tasks of organizing, managing and controlling the education nationwide. Based on the changes in the organization of disaster protection, it can be stated that the training system has changed significantly and is constantly opening up new perspectives in disaster protection training [5].

MODULAR TRAINING

The module word - in a general sense - is a coherent part that can be interpreted as an organic entity as itself, which can be inserted into a larger system according to pre-defined rules. Following this logic, the concept can be defined for educational systems as follows: the module is a unit of a study, an organically related and structured part of the curriculum which has the same characteristics in the various training programs as in the practice of several different institutions or organizations (training objective, - in adn output requirements, etc.) described and used [6].The new Single Modular In-house Training System was launched in 2012 at the Disaster protection Education Center (KOK). Reforms have been integrated into the KOK's education, courses are in line with new legal requirements. Below I present the forms of training essential to the work of the intervening fire-fighters. [7]

UNIFIED LAW ENFORCEMENT BASE MODULE

During training, fire-fighters are trained in law enforcement schools - at several locations in the country - to develop the common foundations of their profession (such as law enforcement, service, IT, formal, armed and physical development and identity formation). During the first two months of the three-month module, basic law education is taught, and in the last month, the general fundamentals are taught. The successful module termination exam is a requirement for further training. Subsequently, in the framework of a specialized training, they will first obtain firefighting II and then firefighter I (part) qualifications.

Fire-fighter II. part certificate

The requirement of this module is the successful completion of the Law Enforcement Module, a certificate of graduation, medical, psychological and physical fitness. Fire-fighter II. Part-certificate qualification module must be completed by a module termination exam followed by a professional exam. After that, the student is already entitled to work as a fire-fighter. The course is two months long. The purpose of the course is to ensure that all professional fire-fighters have the same level of professional skills required to perform a task as an individual or in an intervening team. The duration of the course is 656 hours.

Fire-fighter I. certificate

The requirement of this course is the successful completion of the fire-fighter II part certificate, a certificate of graduation, medical, psychological and physical fitness. Acquiring this qualification gives you the opportunity to get a higher rank, and it is more important than the previous postgraduate qualifications, it provides specialized training for the firefighters executing basic tasks. Duration of training: 283 hours.

EXECUTIVE FIRE-FIGHTER CERTIFICATE

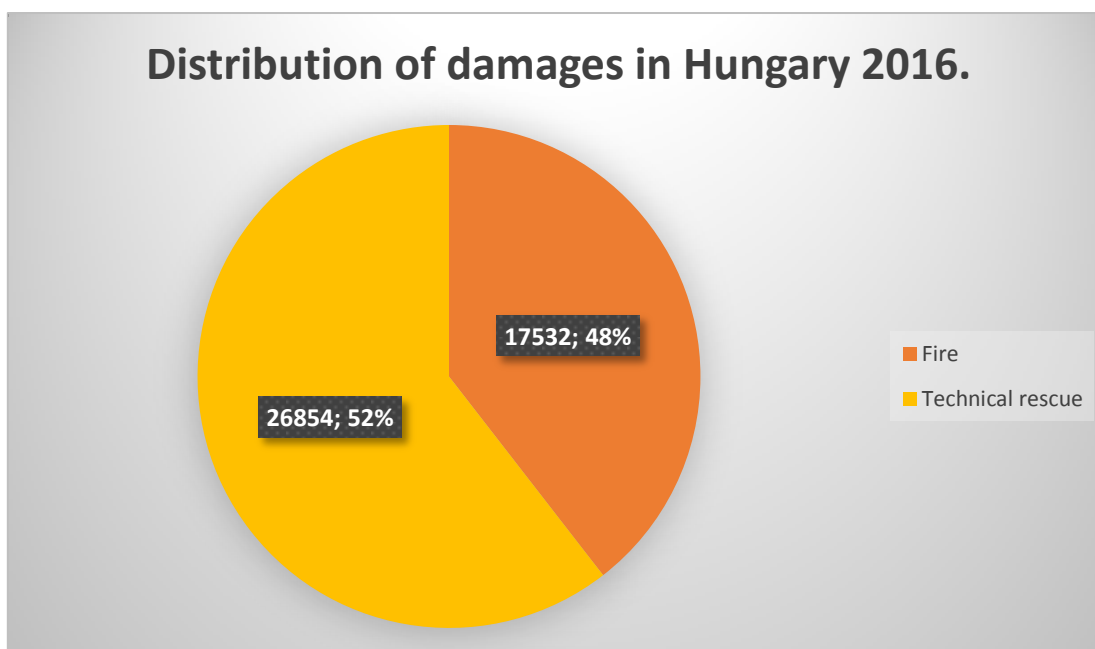
The requirements for this course is the successful completion of the Fire-fighter I. certificate, medical, psychological and physical fitness and at least two years of professional experience. Students who successfully completing the six months of training will be capable to lead a fire and technical rescue. The educational institution organizes an entrance exam, the written part of which is a test of secondary school level mathematics and chemistry, and a psychological and fitness survey is also waiting for the candidates. Duration of training: 804 hours [7].

Practical training

Compare to the past methodology of teaching, the preferred modular training is emphasizes the processing of experience, the knowledge gaining and the practicality. It is an important task, therefore, to deepen the practical skills of those who intervene, for which, is essential to keep practicing situational exercises [8]. When examining the damage or accident afterwards, it can be stated that, unfortunately, it is not always possible to prepare for unexpected situations perfectly. During the planning of the exercises, therefore, we have to aim for making realistic situations and complex tasks [9]. Exercises should always be reviewed and plan the future exercises with the gained knowledge. The development of practical training is also indispensable for the intervening and managing staff performing damage elimination tasks, which should be closely aligned with theoretical training [10].

The effect of training transformation on damage treatment

In Hungary, similarly, fire and technical rescue damage elimination tasks are typically carried out in similar numbers. In the year 2016, our firefighters were alerted to in total of 44.374 event wich fire 17.532 and 26.854 technical backups (see Figure 1)



1. Figure: Distribution of damages in 2016 (source: compilation of author by KAP-ONLINE)

The figure shows clearly that almost 21% of the difference between the number of fire-fighting and the number of technical backups, as in previous years, is the technical backups on an annual basis. Previously there were years when floods spilling out of our country and ruination caused by inclement weather. Due to the negative phenomenon more firefighters were required to make technical backups, which was characteristic of 2016.

Year reviewed	Total traffic accidents	Number of injured	Number of deceased
2011	6.206	5.351	298
2012	5.500	4.293	233
2013	6.016	4.738	269
2014	6.145	5.141	260
2015	6.943	5.844	286
2016	7.063	5.955	252

2. Figure: The number of road traffic accidents (source: compilation of author by KAP-ONLINE)

In the year of 2016, hydraulic tensioning equipment had to be used in 874 cases. In these cases, speed, accuracy and discipline are very important factors for a firefighter. Freshly-enrolled firefighters did not encounter such situations in their (civilian) everyday lives. Training is very important, but the acquisition of practical experience is also vital for the intervening staff [11]. Special emphasis should also be placed on the proper use of special rescue devices [12].

Climate change associated with global warming causes extreme weather conditions more and more, which affects our country.

For these events our firefighters have to react quickly and professionally and in many cases have to perform their damage elimination tasks in extreme weather conditions [13]. After a massive storm, thousands of alerts can be sent to the Operations Control Centers and to the 112 emergency call system. In 2016, 3706 times had to intervene in the elimination of an elemental blow - a storm. In the majority of cases, fallen trees and branches on electrical wires had to be removed. Typically, these are being cleaned up with a motorized or framed

saw or the help of other expansion tool. The following table shows the number of technical rescues caused by storm over the past five years:

Year reviewed	Number of storms
2011	2320
2012	2218
2013	2304
2014	3390
2015	4781
2016	3706

3. Figure: The distribution of the "Elemi csapás - Viharkár" damages from 2011 to 2015 (source: KAP-ONLINE)

The work of firefighters is also assisted by special devices and vehicles. These include various types of rescue devices, cranes, technical and chemical containers. The usage and their application are arranged and maintained by the current rescue officer [14].

CONCLUSIONS

Even before 2012, the disaster protection training system has been transformed several times, and the modifications were also aimed at ensuring the full coverage of the system. However, the increase in training efficiency can be better seen after the 2012 changes. BM OKF places strong emphasis on theoretical and practical training but practice largely covers the handling of technical tools. In my opinion a broader range of practical training would be needed to include more situational practices such as intervener than management. My personal experience is the freshly graduated colleagues are not practical enough and an unexpected situations are handled by them more difficult, which can cause faults. It is an important task to incorporate the experience gained during the interventions into the annual training at the firefighter headquarter. In the course of training, particularly in terms of technical rescue, taking into account the large number of traffic accidents, the development which has also been presented above, the changes in the safety equipment and the drive chain of vehicle have to be followed.

In my writing I have supported with statistical data that our firefighters have to participate in a large number of traffic accidents and storms, and I have highlighted that a high level of theoretical and practical training is a prerequisite for effective damage elimination. In my opinion, the rookie firefighters do little practical work, but it is missing from the active staff as well.

Prior to the creation of a unified disaster protection, recruits received a basic training of 2 months, followed by a 2-month professional training that they had spent in the barracks in which they were employed. The deficiency of this system was that they did not receive a unified law enforcement training, and because of the cancellation of the conscription, the young people did not learn any formality they did not have such training. Because of this, the basic training has changed after the establishment of a unified system, and these deficits have been filled. In summary, the introduction of the modular training system contributes greatly to the increased efficiency of the firefighting training. Interoperability between different roles is also facilitated by the modulated basic training. The disadvantage of the new system is the lack of practice.

I propose to put more practical elements into the training system. It's important to learn the use of the tools used in the technical rescue. There is still need to be focus on the use of the tools used for technical backups and the use of damage elimination experiences. I am confident my research will determine the improvement of the training system.

REFERENCES

- [1] KUTI R.,NAGY Á.: *WeatherExtremities, Challenges and Risksin Hungary*, AARMS, XIV. 4 (2015), 299-305.p. http://uni-nke.hu/uploads/media_items/aarms-vol-14_-issue4_-2015.original.pdf(downloaded: 12. 05. 2016.)
- [2] PÁNTYA P.: *Új kiképzési lehetőségek tűzoltók számára Műszaki Tudomány az Észak-kelet Magyarországi Régióban* (2013) 518. p.
- [3] PÁNTYA P.: *A tűzoltói beavatkozás veszélyes üzem?* BOLYAI SZEMLE 23/3 (2014) 36-42.p.
- [4] CSÉPLŐ Z., KÁTAI-U. L., VASS GY.: *Az iparbiztonsági képzési rendszer műszaki technikai feltételeinek vizsgálata*, Bolyai SzemleXXV. 2016/3., pp. 65-86. http://uni-nke.hu/uploads/media_items/bolyai-szemle-2016-03.original.pdf(downloaded: 01. 03. 2017.)
- [5] GUBICZA J.: *Az integrált katasztrófavédelmi szervek képzési rendszerének kialakítása, szinterei, megvalósulása, tanulmány*, (2015) 2015, 213. p.www.pecshor.hu/periodika/XIV/gubiczaj.pdf(downloaded: 01. 03. 2017.)
- [6] UDVARDI-LAKOS E.:*Paradigmaváltás a gyakorlatban I. Modularitás*, nda.sztaki.hu/kereso/index.php?a=get&id=718508&pattern(downloaded: 01. 03. 2017.)
- [7] KATASZTRÓFAVÉDELMI OKTATÁSI KÖZPONT honlapja:kok.katasztrofavedelem.hu(downloaded: 01. 03. 2017.)
- [8] RÖNNFELDT J.: *Feuerwehr Handbuch, der Organisation*, Technik und Ausbildung, Kohlhammer, 2015, 573. p.
- [9] HORVÁTH G., KUTI R.: *Ликвидация последствий а вариї приперевозкахона сныхвеществ автот ранспортом* 1.In: Топольский Н Г (szerk.)СИСТЕМЫ БЕЗОПАСНОСТИ – 2016 / SAFETY SYSTEMS – 2016: двадцатьпятоймеждународнойнаучно-техническойконференции / PROCEEDINGS of TwentyFifth International Scientific – TechnicalConference. 540 p.
- [10] KUTI R.:*Vegyimentesítési feladatokra történő kiképzés*, VÉDELEM – Katsztrófavédelmi Szemle, XXII/6, 2015, 33-35. p.
- [11] KUTI R.:*Advantages of Water Fog Use as a Fire Extinguisher*, AARMS **14/2**. 2015, 259-264.p.
- [12] KUTI R.: *A tűzoltóképzés sajátosságai Ausztriában, Védelem katasztrófa- tűz- és polgári védelmi szemle*, XV/6., (2008) 30-31.p. <http://vedelem.hu/letoltes/ujstag/v200806.pdf>(downloaded:01. 03. 2017.)
- [13] KUTI R.,FÖLDI L.: *Extremeweatherphenomena 2. The Process of Remediation*, Hadmérnök, IX./2. (2014) 250-256. p. http://hadmernok.hu/142_23_foldil-kr.pdf(downloaded: 01. 03. 2017.)
- [14] MOLNÁR R.: *A tűzoltói beavatkozások hatékonyságát növelő fejlesztések az egységes katasztrófavédelmi rendszerben*, Műszaki Katonai Közlöny XXVII. /3., 2017. 131-145. p.