

'We are also Blind in Smoke'

THE IDEA

In 2009, the study by Major István Erdélyi called *We are also blind in smoke* was awarded first prize in a competition, the title of which was *Orientation and Mobility in Unfavourable Visual Conditions with the Help of Our Senses*. Following the recommendation of Dr. Imre Balogh's widow, the competition was promoted by the Director General of the National Directorate General for Disaster Management.

Unfortunately, numerous accidents and personal experiences have verified the timeliness of his study. The scope of the paper is that orientation and mobility (O&M) techniques, applied so far solely in teaching people with visual impairment, could also be taught to sighted people, that they can be learned, and that those elements which do not require technical aids can be built into firefighters' basic and ongoing training.

To prepare for safe, accident-free orientation and mobility without aids under difficult visual conditions during firefighting and technical rescue operations is a significant daily demand for firefighters.

The study examines the methods of O&M which, with the help of people's senses, find the way to integrate so-called 'blind-like' mobility into firefighters' practice.

The paper highlights a new method, which enables O&M with aids, and can well be applied to any problems; therefore it cannot be ignored.

In an experiment, the O&M instructors in the School of the Blind aimed at teaching the techniques with the help of which a firefighter can orientate on his own, self-confidently and, last but not least, safely, under unfavourable visual conditions, both in well-known and unknown areas, as well as along routes, even in foreign environments.

The O&M method of firefighters can only achieve its best results if the professional knowledge of the O&M instructors of the School of the Blind, that of the firefighters and the experiences acquired during training are combined and shaped to operational needs. As a result of this process, the methodology of the training was continuously subject to alterations and modifications.

Consequently, the actual training structure was tried and tested until it has become applicable to everyday practice.

THE BASICS OF THE TRAINING AND THE PRESENT SITUATION

In our country the firefighting service has gone through significant reorganisation. Therefore, there have been hardly any experienced colleagues to promote their experiences as well as to develop the routines of the younger generation and to look after their work. In addition to Major István Erdélyi's study, that fact has motivated the staff of the School of the Blind to start developing a format of practical training together with the Fire Department of Budapest.

Three O&M instructors from the School of the Blind and five people from the Fire Department participated in the experimental phase of the training. Each participant had his or her own special roles in the experiment.

The original idea was that two firefighters (who were also students) would acquire the 'blind-like' method to make it applicable for firefighters.

When choosing these firefighters, the criteria were that one of them should have many years of practice (20), whereas the other person should have little experience (1/2 year) in order to clarify to what extent results are influenced by professional experience and to what extent the skills developed can be attributed to the training.

At first, training was carried out individually using identical themes, then it continued in pairs as suits the rules of the firefighting profession.

At the beginning of the course, the students did the same tasks, though they could not see one another's development. At that phase of the training, the O&M instructors taught students a more subtle use of senses and the instructors showed that it was not only vision that could help orientation.

Whilst this was being taught, the author of the study could also obtain the same experience.

In the second phase, these exercises were practised in pairs, in protective equipment, creeping or half-kneeling, as demanded during operations. Progression also played an important role in that phase. The exercises were done in multi-storey buildings, labyrinth-structured cellars, and in flats and offices.

The phases introduced contained 30 training periods for each student.

THE PURPOSE OF TEACHING ORIENTATION AND MOBILITY

- Through working out, presenting and acquiring the firefighter's O&M method, embedding it into daily practice, and adapting the unified communication code, firefighters will be able to move self-confidently and safely in unfavourable visual conditions.
- Whilst acquiring the method, firefighters can practise their knowledge in small groups.
- By promoting safe and accident-free work, this shortens the time otherwise needed to obtain the necessary practice through years at work.
- Using and applying this knowledge to make cognitive and overview maps, this increases the efficiency of operations.

THE PHASES AND FIELDS OF TRAINING

1. Perception
 - acoustic
 - tactile
 - kinaesthetic
 - mass-shadow
2. Map-making
 - cognitive map; use of compass directions and the clock face ('linear' and overview)
 - Information changes recorded in drawings
3. Communication
 - Common code, word usage
 - improving communication skills
4. The chart below presents the results the trainees reached during training

Area of development	Firefighters' Developed skills
Acoustic	able to define directions, distance, source, pitch of sounds (according to the clock-face)
	able to turn to the direction of sounds
	able to identify the dimensions of the space or room with the help of the sounds they make
	able to stand facing the direction e.g. perpendicular to the length of a corridor
Tactile	able to sense, identify, recognise and differentiate surfaces, quality of materials; changes by hands, feet, in gloves and with aids.
	able to sense and realise level differences.
Kinaesthetic	able to take a 8-10 metre distance without counting steps, in standing, kneeling or altering these postures within a given distance
	able to keep a straight direction while progressing within 8 metres, with half a metre precision, without any direction stimulus
	able to turn precisely according to the four cardinal points and clock-face in standing and kneeling positions
Mass-shadow	able to identify the presence or lack of large objects, e.g. wardrobe, chest of drawers, cupboards
	able to sense the presence / opening of a corridor
	able to sense walls in front and to the side without touching them

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Map making	able to describe space on the basis of the four cardinal points, and then make a map in words and by drawing.
	able to size up and examine the space which is not visible.
Communication	able to use unified language to describe space, directions and situations

Summary

Due to sudden changes of light, the brain often produces visual disorder, momentary loss of sight, which – in addition to the stress caused by the above-mentioned phenomena - is disturbing; moreover, a certain loss of balance could also occur.

The method teaches us not to want to see in the dark, but rather to get accustomed to it. When getting accustomed to the darkness, our relation to it may change, so, in the case of sudden darkness, panic can occur at a later stage, can be delayed, or it can be totally excluded.

The training unifies the communication coding systems applied by the different fire departments, thus reducing the danger and misunderstanding during operations which can be attributed to the different communication codes used at work by firefighters coming from different departments.

We think that, by this method, the time of discovering and sizing up unknown locations of deployment under unfavourable visual conditions can be shortened, operations can be much safer at all levels, and stress caused by operations can be managed more easily.

On the basis of our experiences, the methodology developed can be built into the basic training for firefighters, and the acquired skills and abilities can be maintained through daily training.

FUTURE IDEAS

1. Developing an extendable aid

We think that this aid is a developed variety of the long white cane, used by the blind. The aid is light, fireproof, with variable length, and can produce sound.

During practice we found it useful because it:

- lengthens the arm, so increases the space to be examined
- is applicable for recognising surfaces and their changes
- is applicable for defining the quality of material without approaching or touching it
- is applicable for trailing, keeping directions and distances by walls or other guidelines
- is applicable for indicating differences of level, and the danger of falls at sudden drops in level decreases
- is applicable for facilitating and accelerating searching under and above objects being examined

- is applicable for helping to define direction and space, due to its sound producing ability

Naturally, we are in the testing phase of the device. The method needs further consideration and development.

The questions under consideration are:

- Who and When to use it?
- How many firefighters should take one?
- In what phase of work should it be used?
- In what posture would it be safest and most efficient to use it?

2. Introducing a special sport to promote the success of training

By all means a special type of sport is worth mentioning, a type which is suitable for supporting and developing a more subtle use of our senses. It strengthens our beliefs that blind-like techniques can be an integral part of firefighter training and that they can be practised every day.

The sport is goal-ball, which appears to be the free-time and paralympic sporting activity of people who are blind. It is an indoor ball-game, played by two three-member teams.

We would like firefighters to play it because it:

- develops orientation in space
- develops hearing and concentration
- develops communication skills
- develops familiarisation with blind-like situations
- develops moving techniques
- needs minimal demand of equipment
- is adjusted to training and maintains acquired skills

The game, beyond the experience and its positive physiological effects, contributes to teamwork, develops the ability to concentrate, and makes blind-like moving more confident.

We cannot ignore the fact that, in this type of sport, the possibility of injuries is minimal, and that is the reason why days on sickleave can be reduced. Finally, it requires minimal financial resources.

3. A sound-map for fire departments

In Hungary the accessibility of public buildings is regulated by the Law. Physical accessibility is accomplished by Info-Communication Accessibility, an element of which is a sound-map for people with visual impairment.

One part of the sound-map is an overview map which contains and describes the numbers of floors, levels, locations and structures of corridors, elevators and staircases, quality of covering materials on floors and walls, and the presence of guidelines within buildings.

The number of the available sound-maps of hundreds of buildings and the database has been continually increasing, and its introduction is in progress.

DEVELOPMENT AND DISSEMINATION

At a higher level of education, a syllabus of trainer-training is also being developed, which, according to our plans, could be carried out in a 60-lesson accredited course.

During the course, the student obtains theoretical and practical knowledge in teaching methodology, and, later, a trained professional firefighter-trainer trains his companion according to syllabus described above in the presence of a supervisor.

Obviously, the firefighter trainers' further training could be carried out under the supervision of the professionals of the School of the Blind, owing to the developments related to their experiences and the developmental possibilities.

The publication of the study has resulted in increasing interest in the training both at national and international levels. We have been invited to give presentations on the method, the training structure and the present situation in different places.

To date, organisations for people with visual impairment in different European countries (eg.:Germany, Denmark, France, Holland, England, Ireland, Romania) have turned to the School for the Blind, expressing their intent to use the method. Some of the organisations have already had contact with their local fire departments.