

# VISUALLY IMPAIRED PERSONS AND TOOLS OF THEIR PREPARATION TO CIVIL PROTECTION

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## Abstract

*The paper is aimed at the problems related to the training of disabled people for civil protection with the emphasis on visually impaired persons. It deals with the division of disabled people, analyses contemporary approaches of competent institutions to these problems, offers possible way-outs for the training of this group of persons for the occurrence of extraordinary events and analyses contemporary possibilities for using technical resources for visually impaired persons related to this training. In the conclusion the paper states these problems are soluble, however, it depends on the interest of competent bodies.*

## Keywords

*Handicap, tools of preparing, preparing, protection of population, visually impaired persons.*

## INTRODUCTION

Preparing of the Czech Republic citizens for the emergency situations is currently included in the specific legal norms in the field of population protection and crisis management. At what level (if at all) it runs, is however the matter to discussion. It can be said that only about 12% of municipalities (1) are seriously engaged in this preparation. There is missing an embodied recommended content, form, or periodicity of this training especially in the Act 239/2000 Coll., on the Integrated Rescue System (see § 15, par. 4) that explicitly concerns the preparation. In current professional materials relating to this issue, perhaps up to (2), and some other exceptions, there is missing any recommendation or methodology including the appropriate content, performance or recommended time intervals to carry out population preparation by responsible bodies (municipalities in this case), and moreover preparation of disabled people. The article thus concerns this deficit and possible ways of improvement of the subjected area.

## 1 DIVISION OF HANDICAPPED PERSONS

The division of of handicapped persons can be performed using different

criteria. One of the basic criteria would surely be:

- the type of disability;
- the age group of disabled.

### **Division according the type of disability**

Different subjects take a considerably different stands to this division according the focus of their activities. To prepare to emergency situations, it will be necessary to take into account types of handicap that can be divided into the following disabilities:

- visual;
- auditory;
- speech;
- physical;
- mental;
- psychical;
- long-term and permanent diseases;
- social disturbance and social failure;
- specific learn and behavior disorders;
- combined (3).

It is clear that training of any group named above demands highly individual approach. And also, among others, especially because it is necessary to consider other possible division – according the age, or see again (3).

### **Division according the age categories**

The division of disabled persons into categories according their disabilities itself is not sufficient. When planning their preparation, the age structure must be taken into account, too. The view of this structure is again not unified. It is possible to meet the number of concepts of this division. From the viewpoint of the subject preparation, the age structure relation can be simplified. In this regard it has no sence to deal with population protection preparedness of individuals e.g. from the so called first childhood (period between birth and 3 years). The question is whether to deal with training of disabled persons in also in the first period of the so called second childhood, i.e. in the age of 3 – 6 years, when this category is significantly marginalized also in the relation to the preparation of people without any disabilities. It is more then clear that especially disabled persons in this age group are much more vulnerable than persons (children), which live without any disabilities.

Another question also remains, if and how deeply should be dealt with the preparation of disabled persons in the period of the so called senia, i.e. in the age of 60 - 70 years and period of senility, i.e. 75 - 100 years. Here it can be said, for the both age categories, that undoubtedly should. These two age categories are significantly represented by the population that is able, despite of their age, to perceive. Not only individuals, but also the whole groups are very vital, they are

interested in the population protection issue (e.g. population in the affected or endangered area, etc.). But again these age subcategories without disabilities as well as disabled ones do not meet any population protection training or very rarely after graduating high schools (see the facts concerning the preparation realization in the article introduction).

The number of disabled people living in the Czech Republic can be found in the outputs of the Czech Statistical Office survey, elaborated in 2007 – see tables 1 and 2. Since the numbers of individual disabilities displayed in the table 1 are partly overlapping the division according (3), they can be used for further research of the issue.

*Table 1*  
*Type of disability according the age*

Age group	Disability (without gender division) [No. i]							Total No. of individuals [No. i]	Fre- quency of dis- ability on 1 pers.
	visual	auditory	physical	mental	psychical	internal	total		
<b>0-14</b>	7 964	2 902	16 687	11 604	4 846	22 343	66 346	46 208	1.436
<b>15-29</b>	6 318	3 835	25 710	22 964	9 152	20 931	88 910	60 621	1.467
<b>30-44</b>	7 597	4 733	43 107	19 306	22 276	34 990	132 009	101 331	1.303
<b>45-59</b>	12 778	11 226	127 959	20 302	34 662	118 547	325 474	245 743	1.324
<b>60-74</b>	18 642	15 205	152 860	13 327	23 662	186 368	410 064	283 274	1.448
<b>75 years and more</b>	34 140	36 684	183 604	19 012	33 130	187 672	494 242	276 744	1.786
<b>total</b>	<b>87 439</b>	<b>74 700</b>	<b>550 407</b>	<b>106 699</b>	<b>128 065</b>	<b>571 734</b>	<b>1519044</b>	<b>1015548</b>	<b>1.496</b>

Source: (4), with the author's modification

*Table 2*  
*Division of disabled persons according gender and age*

No. of the CR inhabitants	CR population (situation in 31.12.2006) 10 287 189	Disabled persons in the CR 1 015 548
Gender [No. i]		
<b>men</b>	5 026 184	490 427
<b>women</b>	5 261 005	525 121

Source: (4), with the author's modification

Although the number of disabled men and women is different, it is not fundamental. It would be difficult and also useless to do gender differentiation within the potential emergency situations preparation.

## **2 CURRENT APPROACHES AND POSSIBLE SOLUTIONS OF THE TRAINING OF VISUALLY IMPAIRED PERSONS IN THE FIELD OF POPULATION PROTECTION**

People with the visual disability make up almost one percent of the CR population, which is certainly a significant number. Not only for this reason, but also because these people are mostly unable to prepare to the emergency situations by themselves, it is important to pay an advanced attention to their preparation and education.

These people often associate because of their disability, and they are registered in different organizations, which is an advantage, because of the possibilities of cooperation with such organizations. Among such organizations can be particularly included the Czech National Disability Council, Czech Union of Disabled Persons, Czech Union of Blind and Weak-eyed Persons, etc. Within the Czech Republic there operates also a network of non-profit organizations Tyflo-Center. The above named organizations are dislocated in the regional cities (they have the legal status) and provide a complex of social services for visually impaired persons, incl. compensatory instruments loans (5). Establishing a close cooperation between the regional and lower level centers in education in the field of population protection is clearly necessary. Besides these regional Tyflo-Centers, there is another non-profit organization named Tyfloservis with its organizational and methodological center in Prague, and ambulatory centers in the regional cities as well (6), which can also be considered as a potential partner for cooperation in the subject area.

### **Current approaches of responsible authorities to the realization of visually impaired persons preparedness**

Examination of the current approaches to this issue can be divided into two parts - within the Czech Republic and abroad. Information on these approaches is relatively rare, however they exist – see for instance (7). These were found out in both cases through the surveys, as one of the most recent information sources.

Within the CR, there can be indicated a common feature of the individual responses. It is the fact that there is not any regular and targeted training (preparation) focused on population protection issue, provided for visually impaired people of all age categories, in progress. Though, it is possible to discuss at least a partial fulfillment of this issue, for example in connection with the South Moravian region - see (8), Olomouc region, Region Vysocina, etc. In many regions, however, there is an effort to register this population category and, subsequently, to establish the cooperation between rescue services and these

people within their notification and rescue in emergency situations. A member of the Instruction and Training Department, Population Protection and Crisis Management Division of the Ministry of Interior - General Directorate of Fire and Rescue Service was addressed in this context. He acknowledges that the issue of the training of disabled persons in the field of population protection is not solved at the state level at all, and there is not any future concept. The issue is basically given up to the individual regions. He admits further that there are no teaching materials for this group of people available.

From the evaluation of responses of neighbour state institutions (e.g. top authorities in the field of population protection or professional facilities for education and research with national competencies), it can be concluded that generally none of these states attends to this issue. In fact, there are missing training fundamentals in the legal norms, and also there are no teaching materials available. Creation of databases of disabled people, intended for their notification and protection in emergency situations, often encounters the problem of personal data protection, although these databases are locally continuously developed.

However, it is difficult to find any special literature either domestic or foreign, which would at least partly deal with the preparation of disabled people to emergency situations.

### **Possible ways of solution of visually impaired people preparation to emergency situations**

The preparation of visually impaired people to population protection (and not only to that) itself will certainly not be an easy procedure either technically, pedagogically or psychologically. The specific training will require particularly:

- A. Highly professional approach to organization and realization of education training itself provided by responsible institutions – municipal offices. These authorities organize training based on law (9), but it doesn't mean that any other subject can organize the preparation. This includes also ensuring of "ideal" training area, which must be either accessible for visually impaired people, and must meet the safety and security requirements.
- B. Ensuring of specific equipment to support the visually impaired persons training.
- C. Specific pedagogical and psychological approaches from the instructors. The instructors should be experienced in working with visually impaired people on one hand, and should have professional skills in the population protection issue on the other hand. The question is where to find these instructors if at all possible. Nevertheless, it is possible to select a group of professionals (at the regional level) in the field of population protection and crisis management and provide them a special training to be able to manage the task.
- D. Interest of the responsible authorities to organize such training for the disabled ones.

In this respect there should be considered also training of accompanists. Visually impaired person is able, without any help, to perform many activities, and

to move in the buildings and outside after some time. In emergency situation, however, his/her handicap could be multiplied by the influence of specific negative factors, and it could threaten his/her health or even life. It is now clear the importance of properly trained accompanists, especially in the place of permanent residence, who would take the disabled one out of the danger before arrival of fire-brigade units, provide first aid, etc. Preparation of visually handicapped on one hand, and accompanists on the other hand can be done in a corporate way, for instance within lecture activities.

### **3 TECHNICAL MEANS TO SUPPORT THE PREPARATION OF VISUALLY IMPAIRED PEOPLE**

When planning the preparation of visually handicapped people, a specific problem could come out in the selection of technical means to support the special training, for example within lectures or self preparation at home or elsewhere. Not less important will also be the cost of these means. A part of the visually impaired people owns undoubtedly these technical instruments, we can meet them also at TyfloCenters (see above), or in the libraries. After completing a survey at randomly selected libraries, both public and special ones, it can be concluded that there is a significantly different level of equipment of the respective libraries, where the level depends rather on fundings and demands, than on the library status.

#### **Division and cost of the technical means to support the preparation of the visually impaired people**

As it was mentioned above, the technical means to support the preparation of visually handicapped people are available, and their improvement and development is permanent. These means could be classified subsequently:

#### **A. Teaching materials in the Braille**

Braille is a special font designed for visually impaired people. The principle is a perception (reading) of embossed plastic points by touching. The touch of the blind people is abnormally developed. Healthy people could hardly be able to read this font. This font represents not only letters and numbers, but also punctuation and other marks in mathematics, music, etc.

**However, the Braille has got several shortcomings.** The main one is that the characters are significantly larger than those of the normal font (Arial or Times New Roman). The basic character size is 7.5×5mm because of the readability. It allows to put only 850 characters in average on a page of A4 size. At the same time using a normal font on the same page it will fit to approximately 4 – 5 thousand characters. Printed materials in Braille are thus considerably larger. Other shortcomings are typographical problems when creating the tables etc. - one row allows only about 30 characters. The price of one page created in Braille is 10 – 20 CZK (depends on the number of printed pieces). A potential text edition

before printing and final correction after printing has to be also included. Some printing offices are able to print palpable pictures (or other teaching instruments for better imagination) on the thermal relief pictures printer (so called fuser). See for instance (10). The printing prices for students are subsidized and are lower – see (11).

### **B. Audio recordings**

Currently, there are a lot of publications, which support the preparation in the field of population protection, and that can be converted into the form of audio recordings. Listening to audio recordings is considerably less difficult for visually impaired people, than reading by touch. Before the conversion, it is useful to correct the written text, so that the listener would not be burdened with details, to which can people without any disabilities get back, in the case they do not understand something.

The price of the recording is either related to an hour, or to a standard text page. One hour of the recording costs 60 – 80 CZK, see (12). Audio recordings can be realized in different media in very favourable prices. The price of one audio tape can be even less than 20 CZK (the price of a copy is less than 10 CZK) – see again (12). CD designed for audio recording, e.g. in 1000 pieces, can be bought from 10 CZK, including burning and printing (the price depends on the number of pieces, type of printing and cover). When using DVD, the price is a little bit higher - see (13). There are a lot of companies that deal with making CD or DVD audio recordings and their copying. On the other hand, there are minor problems with the tapes recording and their copying, because these carriers are gradually abandoned.

### **C. Screen readers and magnifiers**

These devices can be either with voice output only or a combination of voice and tactual output. Again, there are a lot of companies dealing with their production and distribution. To ensure the voice output, it requires only a special software. The tactual output is ensured by Braille terminals, where the computer text (notebook, mobile phone, etc.) is generated at a connected Braille terminal. The connection can be solved via USB cable, or a Bluetooth transmission. Most of the readers work with Windows XP, Vista and Windows 7. They are able to read both - web pages, Skype, Outlook Express, etc., and also Word and Excel documents, etc. The price of these software programs is in average over 20 thousand CZK. The price of individual additional devices is significantly higher (depends on their equipment). For closer information see (14) or (15), where there is a demoversion available to a free download. Some special readers can be equipped with integrated advanced functions like screen zooming, highlighting, etc. With that, of course, increases the price.

Another devices to support the preparation of people with moderate or severe eye-weakness can be single screen magnifiers or magnifiers in combination with screen readers. This is solved by special software programs. One of the most frequent member of this special software programs is ZoomText9. (16).

### Evaluation of the instruments designed to support the preparation

Each of the named devices has its positives and negatives. At the same time their properties can be evaluated according the various criteria: The basic ones are the following:

- affordable;
- demands of control;
- possibility of another use of the device by the visually impaired person, etc.

Comparison of individual technical instruments according the selected criteria using the ordinal classification scale method, as it is shown in the table 3.

*Table 3*

*Comparison of the technical instruments to support the visually impaired persons training.*

*(1 – best, 7 – worst evaluation according the selected criteria)*

<b>instrument criterion</b>	<b>Braille</b>	<b>audio tapes</b>	<b>CD</b>	<b>DVD</b>	<b>screen readers</b>	<b>Braille terminal</b>	<b>screen magnifiers</b>
<b>affordability</b>	4	1	2	3	6	7	5
<b>demands of control or use</b>	7	1	2	3	6	5	4
<b>possibility of another use of the device</b>	7	4	5	6	2	3	1
<b>final evaluation</b>	<b>18</b>	<b>6</b>	<b>9</b>	<b>12</b>	<b>14</b>	<b>15</b>	<b>10</b>

Source: Author

Comprehensive and thorough evaluation assumes of course a slightly different approach with determination of criteria weigh, etc.

### Evaluation of usefulness (contribution) of the visually impaired people preparation to emergency situations

A query can result from the text above, with the contribution of implementation and systematic and regular preparation of visually impaired people itself. Determination of the benefit is however very difficult, particularly because of the complexity of input costs calculation – costingness of preparation realization, acquisition of the technical instruments to support the education, etc. Furthermore, this quatification (especially accurate one) will be affected by a number of other factors – see below, which would be necessary to cope with. On the other hand, this

preparation is imposed by law (9), which corresponds this way to the Charter of Fundamental Rights and Freedoms, and any benefit is not a point.

Factors that influence the accurate determination (calculation) of the mentioned usefulness, can be following:

- absence of statistical information on dead or injured people within the emergency situations, how, to what extend, and whether these people were prepared to emergency situations, or what was the level of their preparation;
- absence of statistical data on possible disabilities of dead or injured people, if any at that time were;
- lack of the relevant outputs from the practical training of disabled people, and their comparison with the training results of people without any disabilities;
- above mentioned calculation of the costingness of selected inputs for the analysis;
- evaluation of the contribution of disabled people to the society in relation to their disability, or to other disabilities, caused by emergency situation, etc.

Even when using available methods for the determination – quantification (Cost-Benefit Analysis, Cost-Effectviness Analysis and **Cost-Utility Analysis**, etc.), the result will be, without further verification, only hypothetical, though perhaps interesting and useful for the practice.

#### 4 CONCLUSION

The issue of the preparation of disabled people to sudden, health or lives threatening emergency situations is not simple, and when using special instruments to support this education, also far from cheap. But this preparation is currently feasible. The basic premise is at least the minimal interest of the responsible authorities. In this case, especially the municipal offices are engaged. Employees of these offices would certainly be able or even more should take the initiative in this direction, but without any experiences, expert advice, or proven methodology in the pilot project, they can probably not be blamed for their inactivity (if not blame them for non-fulfilling of law). Moreover, as it is stated in the Charter of Fundamental Rights and Freedoms (17), people are free and equal in the dignity and rights, fundamental rights and freedoms are indefeasible, unalienable, imprescriptible, and irrevocable. So why to deny to disabled people the right of this preparation and education in the field of population protection that is stated in law? Although the Population Protection Concept (18) pays attention to disabled people, there are no efforts in any preparation to emergency situations.

Not only the mentioned, still absent methodology of the preparation of visually impaired people (and not just visually), but also the evaluation of usefulness of this preparation deserves also a significant attention and individual solutions that would however be beyond this article.

## Literature

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