

# Social Integration of Disabled People in Russia Using Virtual Computer Technologies

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## Abstract

The article is devoted to the topical problem of persons with disabilities integration into society. Intensions and realities of social policy for disabled people in Russia are introduced. social and psychological barriers, obstructive to this process are described. The results of the survey in a sample of 268 disabled individuals are presented. It is concluded that the low level of community literacy, the lack of communication skills, social stereotypes concerning disabled people and "rental income attitude" of persons with disabilities are the most severe social and psychological barriers. Virtual computer technologies are offered as one of the modern tools, aimed at overcoming the barriers. Global and domestic experience of using virtual technologies for rehabilitation of disabled people are discussed. Technology of improving the life quality of persons with disabilities by means of virtualistics is proposed.

**Keywords:** disabled people, the disability situation in Russia, psychosocial adaptation, social and psychological barriers, social integration, virtual computer technologies

## 1. Introduction

In most countries there are articles in constitutions and other legislative documents on granting equal civil rights to all citizens, often the principle of social justice is also proclaimed. However, in any country of the world, there are categories of citizens, that require special conditions for life activity that, in practice, are not always provided. This is especially true for people with disabilities. In modern Russia, stereotype of perception of disability is partly preserved mainly as a restriction of human capabilities for health reasons, by virtue of which such persons are separated from the rest of society. In accordance with applicable law, disability in the Russian Federation is understood as a violation of human health with a persistent disorder of body functions, leading to a total or substantial loss of employability and to other significant difficulties in life.

Differences in the content, embedded in concepts of "disablement", "disability" in the English language, and "disability" in the Russian language characterize the difference in the attitude of society towards this category of people. Russian term "disabled person" ("invalid") looks rather offensive as it focuses on "incomplete capacity" of a person because of his physical problems and partly on his "inequality". In the west, the state policy of disability is mainly focused not on restricting the employment of such people, but on providing them with specific jobs and most favorable conditions for full inclusion in society.

To date, there has been a positive change in the social policy of the Russian Federation. There is a number of social programs aimed at the integration of citizens with disabilities into society, since the aim of social integration is to create a "society for all", in which everyone have social subjectivity, rights and obligations, regardless of their health status. (Petrosyan, 2011).

It should be noted that rehabilitation of disabled people is necessary for society not only for moral, but also for economic reasons. According to calculations made by the Office of Rehabilitation Services of USA, for every \$ 1000 invested in such activities, \$ 35000 is returned to society due to subsequent work of a disabled person. According to forecasts, by 2015 the number of people with disabilities will increase to 21.1 million people in Russia. (Gosbook.ru, 2006). To make full use of their labor potential it is necessary to optimize rehabilitation measures aimed at improving their quality of life.

## 2. Overview of Studies

### 2.1 Russian Social Policy for Disabled People: Intentions and Realities

In terms of implementing legally proclaimed guarantees of rehabilitation of disabled people, state must provide them with technical means of such rehabilitation. According to the Federal Law "On social protection of disabled people in the Russian Federation" dated 01.02.2012 № 181, technical means of rehabilitation of disabled people include devices containing technical solutions. There are special ones, used to compensate or eliminate persistent limitations of life activity of a disabled person, including special means for training, education (for example, literature for the blind) and labor activity.

Overview of the current state of affairs in different regions of the Russian Federation shows that the state and society has made efforts to implement social rehabilitation programs. This primarily relates to the field of healthcare, education (including vocational education) and communications, to measures to ensure their employability. Leaving aside the medical aspects, three main directions of assistance for citizens with disabilities can be distinguished.

The first approach includes measures to create a barrier-free urban environment. A program to adapt the urban infrastructure to the needs of people with disabilities is implemented in Russian cities. Public buildings that are socially important facilities (healthcare, education, social protection, culture, consumer sector, and others) and public transport are gradually adapting to the needs of people with disabilities. At the same time information about the availability of objects of urban infrastructure with detailed information for a specific category of persons with disabilities (wheelchair users, people with musculoskeletal system, sight and hearing disorders) is placed on the city web portal. (Dszn.ru, 2014).

In order to improve the quality of life of persons with disabilities steps to adapt educational technologies to their needs are made. The main contingent of the recipients of this trend are children with disabilities, and the development of distance education for disabled children is one of the most important sections of the national priority project "Education" for the 2009-2012 period and subsequent years.

Finally, in recent years much has been done for the organization of social interactions of people with use of information and communication technologies. This trend is developing today most rapidly. In particular, Internet communities of persons with disabilities are being organized. For example, in Samara in 2013 for the first time at the level of regional program virtual space was used to expand the boundaries of communication and social development of children. The website "The world is one for all" was created and it successfully operates now. Long-term target program "Samara is for children: we are different - we are equal" is being realized. This program aims to improve the quality of life of children with disabilities, their socialization and integration into society in conditions of family education. In particular, on the results of the 2013 year the activities of the program covered more than two thousand disabled children. (City.samara.ru, 2014).

However, the rate of complete rehabilitation of disabled people in the Russian Federation does not exceed 3-4%. This means that 96-97% of disabled persons live their whole lives with a mark "disability." (Dszn.ru, 2014). People with disabilities, as shown by M.E. Halak, have less psychological rehabilitation potential compared to people who do not have a mark "disability". In addition, the decrease of psychological rehabilitation potential is exacerbated by the following factors: features of family relationships, unstable state of intellectual-mental and emotional spheres, duration of a disabling disease, low rehabilitation competence. (Halak, 2012).

Thus, despite all the measures to ensure persons with disabilities with ability to fully participate in public life, to be active citizens, there are still important unsolved problems in the social policy. Let's see what kind of character they are.

### 2.2 Factors Affecting the Efficiency of the Integration of Disabled People into Society in Russia

For a significant proportion of people with disabilities the problem of mobility is paramount. Most of them move using assistive devices (wheelchairs, canes, crutches). Efficient use of modern technical rehabilitation means by disabled people will help to solve this problem. But among the reasons that reduce social activity of people with disabilities, including their competitiveness in the system of social relations, disabled persons themselves allocate physical and socio-psychological barriers of environment, because of which they have difficulties with movement and discomfort caused by lack of or poor quality of rehabilitation devices. Therefore, if currently existing social and psychological barriers were eliminated or minimized, the physical (objective) environment would be more accessible to them.

Unfortunately, problem of low living standards of many families of Russian persons with disabilities is added to named difficulties. (Kolesnikova & Novikov, 2014). Their lives in social exclusion from the outside world

produces ignorance of their rights and lack of awareness of assistive ergo-therapeutic, rehabilitation and orthopedic tools that they could use. One of sociological researches has revealed a paradoxical fact that in Russia today there is a possibility of obtaining latest rehabilitation means by a majority of disabled people, but in practice they can not use the right to the benefits that the state social protection guarantees them. (Naberushkina, 2011). This is partly due to low awareness of people with disabilities, partly due to psychological reasons (in particular, their inability and unwillingness to fight for their rights). Social and psychological problems prevent from solving physical and material problems.

Life of a person with disabilities is associated with constant stress, with expectation of the need to overcome another obstacle. Still inaccessible urban space of our country imposes citizens with disabilities either passive, or, on the contrary, aggressive lifestyle. Such an attitude imposes a negative impact on the nature of their social relationships and literally immobilizes the person causing him to remain in place, fall into a stupor and acquire phobias associated with movement. (Efremova, 2011; Naberushkina, 2011). Therefore, this is neither technical nor medical but a socio-psychological problem.

Analyzing the above, we can come to a conclusion about the importance of social and psychological factors hampering the integration of people with disabilities, and in some cases making it almost impossible.

Thus, on the one hand, society is taking measures to help people with disabilities in full or partial restoration of capacity for domestic, social and professional activity. It is implemented mainly in the field of technical solutions to problems of persons with disabilities. On the other hand, people with disabilities, due to existing complexities of unsolved social and psychological problems, can not - partially or completely - take advantage of help provided by society. In addition, as noted above, it is noticeable that efforts to fully integrate people with disabilities are addressed mainly to children. They are provided with distance learning, educational programs, various rehabilitation centers. Adult people with disabilities are offered with ways to maintain their livelihood, rather than with possibility of full functioning and fulfillment.

Thereby, the problem of optimization of psychological support to disabled people is particularly topical. Psychological support of rehabilitation of disabled people is an important component in the system of rehabilitation measures, as the transformation of social situation of person development, associated with chronic illness and disability, leads to specific changes in his personality, which affects all spheres of his life. Evidence-based rehabilitation system may contribute to the almost total or partial return of this category of persons to a habitual way and rhythm of life. (Hallak, 2012).

### *2.3 Virtual Computer Technologies as a Modern Tool for Integration of Disabled People*

Scientists in Russia and in many other countries of the world call the virtual computer technologies (VCT) as modern means of psychosocial adaptation of disabled people. There are several perspective approaches to the study of virtual reality: phantomatic, virtual-social, communicative, wave, simulative, polyonthic, dialogic, subjective. (Yukhvid, 2011). Concept of virtuality has received active development in the second half of the twentieth century. Many scientists were involved in the field of this problem. Morton Heilig presented the first prototype of the sensor simulator "Sensorama". Stanislaw Lem coined the term "phantomology" describing the mechanism of creating an artificial reality. Myron Krueger introduced the concept of "artificial reality". Ivan Sutherland described and created the first virtual reality helmet with visual feedback. William Gibson formulated the concept of "cyberspace". The concept of "virtual reality" in relation to the field of computer technology was introduced by John Lanier. Thus the terms "virtual reality" and then "virtual technologies" were created by the efforts of philosophers, computer scientists, programmers, sociologists, psychologists, writers. (Kolotilova, 2011).

Now VCT are used in various fields of science and practice - military, educational, medical, industrial, energy, engineering, architecture, presentation, entertainment, communication and others. The priority areas of research include: creating new virtual technologies and new software for virtual technologies; using VCT in various spheres of human activity; studying feasibility of complex application virtual technology, nanotechnology and biotechnology, and some others. (Yukhvid, 2011).

Virtual issue is extremely multifaceted, since it is actually a reflection of the physical world - on the one hand, and it embodies all that is impossible in the physical world - on the other one. Virtual is an image that is perceived and experienced by a person, not as a result of a spawn of his own mind, but as an objective reality. (Nosov, 2000). There are three levels of phenomena of reality: virtuality, virtual reality and virtual computer technologies. Virtuality is a basic information code of a computer program; it is understood as an interactive environment created by a computer that has graphic, acoustic, plastic, and other properties, in which the user is immersed as a spectator or a creator. So, VCT is a tool for immersion into virtual computer reality, its perception

and cognition, as well as actions in it. (Yukhvid, 2013).

Thus, the experience of events taking place in virtual reality, exists for a subject like "here and now" and gives the effect of direct participation in the events forming the basis of personal change. This is particularly important in terms of possibilities of application of virtual reality in education, rehabilitation, psychological counseling of disabled person because it gives them the opportunity to use virtual experience in their real life.

Social and psychological rehabilitation with aim to integrate people with disabilities into society with use of VCT has other positive aspects: virtual reality technologies allow us to study and predict the behavior of models of a complex system in cases where an experiment with this system is impossible or undesirable in real conditions of its existence. (Aleshin et al, 1995). So, simulation model is the only alternative to obtain information about the behavior and some other characteristics of people and social groups. Cognitive and social studies by Russian scientists note the unique benefits of using virtual technology in relation to classical experimental techniques:

- choice of the necessary characteristics for an experimental exposure at the stage of creating a computer program (model);
- possibility of multiple repetitions;
- program's ability to recreate polymodal sensory environment, up to tactile and olfactory sensations. (Zinchenko et al, 2010).

In terms of socio-psychological and socio-cultural rehabilitation, it is important for social-domestic adaptation of persons with disabilities to interaction with the outside world that virtual reality technology allow the use of sensory nature of interaction of a person with a computer program. Full contact of subject with simulated environment in virtual reality system, which can cover virtually all systems of human interaction with the "usual" outside world - both objective and social, as modern computer technology bring human-computer interaction to normal human behavior in the outside world, is achieved through feedback (interactivity).

Training with VCT is like modeling of different situations (professional, social) in the context of interactive teaching methods, such as business games. Learner, understanding the convention of a game situation, solves "game" problems in same ways as in life, outside the game context. Thus, spaces of the "game" and "reality" are getting through each other, and the experience gained in one of them can be implemented in another (Aisina, Maksimenko & Potutkova, 2011).

In addition, VCT significantly expands the range of human possibilities. Through the use of virtual computer technology, user acquires special features of sight, hearing, smell, touch and taste, new physical, intellectual and creative abilities, nonclassical abilities to move in space and time, etc.

One of the main themes in discussion of rights of disabled people is the problem of availability of computer technologies in the world. People with physical, sensory and cognitive disabilities have access to modern communication and information processing devices. There are technologies called "assistive". They provide adaptation of computer equipment management, as well as data entry and information presentation to people with disabilities in accordance with their physical limitations. (Jeffs, 2009; Levac, Miller, & Missiuna, 2012). For example, a virtual reality helmet with look management VR-FOVE was presented recently in Tokyo. (Vr-oculus.ru, 2014). The system of virtual screens is being successfully applied for children with autism for the purpose of correction of fears in the UK, in the Newcastle University. Italian scientists are carrying out a correction of autism using virtual environment. (Bellani, Fornasari, Chittaro, & Brambilla, 2011). Joint developments of Russian and Israeli scientists are widely used in practice of rehabilitation of children with special needs. One of them is a didactic-correctional complex with video bio-control called "Timokko". (Amaltea-spb.com, 2015).

In Russia, the problem of providing persons with disabilities with means of VCT has also received increased attention in recent years. In particular, the interface requirements of websites of Russian State institutions have a point about the need for a version for the visually impaired. (Protect.gost.ru, 2014). Recent developments relating to the VCT, have been successfully used for the rehabilitation of children with cerebral palsy. The idea of effective motivation of the patient by his immersion in the game virtual 3D-sea environment is the basis of one of the newest programs. It's a highly realistic computer environment, accessible to children with motor disabilities. It allows a child with disabilities to show activity, inherent to his more healthy peers, in the context of the game. The essence of the simulator is that the patient himself builds the movement of his body. The model uses a wireless controller with transfer technology called "Bluetooth low energy", which includes accelerometers and gyroscopes. The controller is mounted on the body of a patient and used to control the avatar (character) in

the virtual environment. In addition, the controller recognizes gestures of the patient, each of which corresponds to a specific action in the virtual world. Intuitive controls immerse patient in a virtual reality, where he feels the most natural. (Kabakov, 2014).

Finally, there is another example of non-standard use of VCT as means of socialization and rehabilitation of disabled people. "School of virtual flight" was opened in Russia in 2013. Creators and participants believe that, plunging into this environment, a person with a disability receives an additional incentive for rehabilitation, theoretical study of new disciplines and subsequent use of knowledge in practice of flight operations. Website visitors write that a disabled person ceases to feel himself "trapped within the four walls", and realizes that he is a part of something big across the Internet. While increasing his experience, he raises his self-esteem, which has a very positive effect on the integration of a person into the real world environment. (Sky-open.com, 2014).

Summarizing, we note that the problem of ensuring fulfilling life and improving the life chances of citizens with disabilities can be solved by complementing the existing system of psychological support for their rehabilitation with new high-tech means. They must meet urgent needs of this category of customers, on the one hand, and take advantage of modern information and communication technologies, on the other one.

### 3. Method

In order to identify the main socio-psychological barriers that obstruct successful adaptation of people with difficulties, we conducted a pilot study, which was attended by 268 persons with disabilities. 55.9% of them were women and 44.1% of them were men.

Age characteristics of the sample of respondents are indicated on Figure 1.

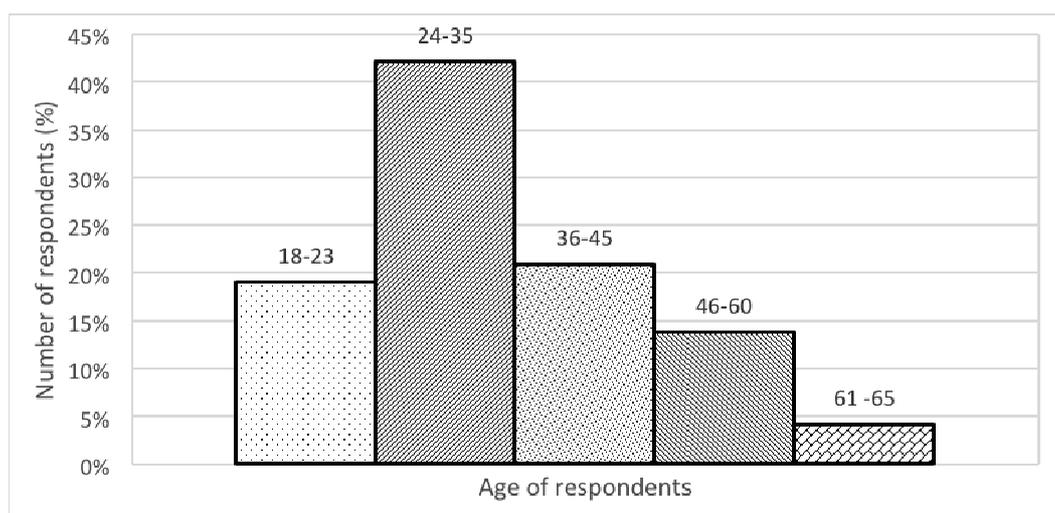


Figure 1. Age characteristics of sample

The age of respondents is from 18 to 65 years. Figure 1 shows age of the respondents as a percentage. 19% of the sample consisted of people aged between 18 and 23 years, 42.1% of the sample were the age of 24-35 years, 20.9% were the age of 36-45 years. The age group of 46 to 60 years old represented 13.8% of the questionnaires. Respondents older than '61 amounted to 4.2% of the sample.

Respondents with disabilities that are able to work made up 78.7% of the sample. Among them 39.3% (83 persons) are employed (full-time or partial employment), and 60.7% (128 people) are unemployed.

Each participant was asked to complete a specialized questionnaire, which included 11 items and was designed by ourselves to achieve the objectives of this study. The first part of the questionnaire (items 1 - 8) is aimed at collecting factual information on the respondents. It deals with demographic characteristics, type of disability (working / non-working), the duration and nature of the acquisition of disability, education, employment. Respondents could choose only one answer in this part of the questionnaire.

The second part of the questionnaire (items 9 - 11) provides information on the social and psychological barriers that obstruct successful social adaptation of persons with difficulties; it allows to ascertain the views of disabled people on the most effective methods of their social and psychological adaptation; to determine which categories of persons with disabilities respondents believe to be the most socially isolated (on nosology of the disease).

Respondents were asked to choose up to two answers in this part of the questionnaire.

**4. Results**

The results of the analysis of respondents' answers are shown in Figure 2.

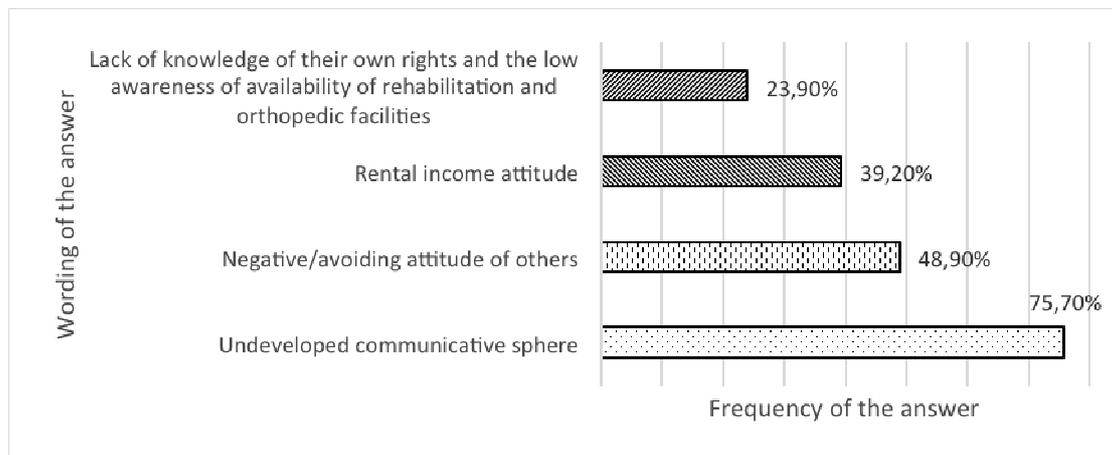


Figure 2. Barriers of social and psychological adaptation of people with disabilities

Figure 2 shows that underdevelopment of communicative sphere to the greatest extent prevents the successful socio-psychological adaptation of people with disabilities: the low level of development of communication skills, a limited number of ways of social interaction, lack of knowledge of the public areas (transport, shops, pharmacies, etc.) behavior rules (social illiteracy). This answer was chosen by 75,7% of the respondents (203 people). The next in frequency of the answers are two options: the negative or avoiding attitude of others towards people with disabilities - 48.9% (131 people) and "rental income attitude" (the feeling that the surrounding society does not make enough effort to compensate people with disabilities for the inconvenience and problems associated with disabilities) - 39.2% (105 people). Answer "Lack of knowledge of people with disabilities of their rights and lack of awareness of availability of rehabilitation and orthopedic products" also proved to be quite significant, it was chosen by 23.9% of the respondents (64 people).

Training for getting skills of social interaction and public places behavior using high-tech means is in the first place among the methods of social and psychological adaptation of people with disabilities. This answer was chosen by 88,4% of respondents. Also, according to the respondents with disabilities, assistance of experts (psychologists, social workers) is effective as a means of social and psychological adaptation. This answer was chosen by 77.2% of respondents chose.

The opinion of the respondents regarding the most isolated categories of people with disabilities is presented in Figure 3.

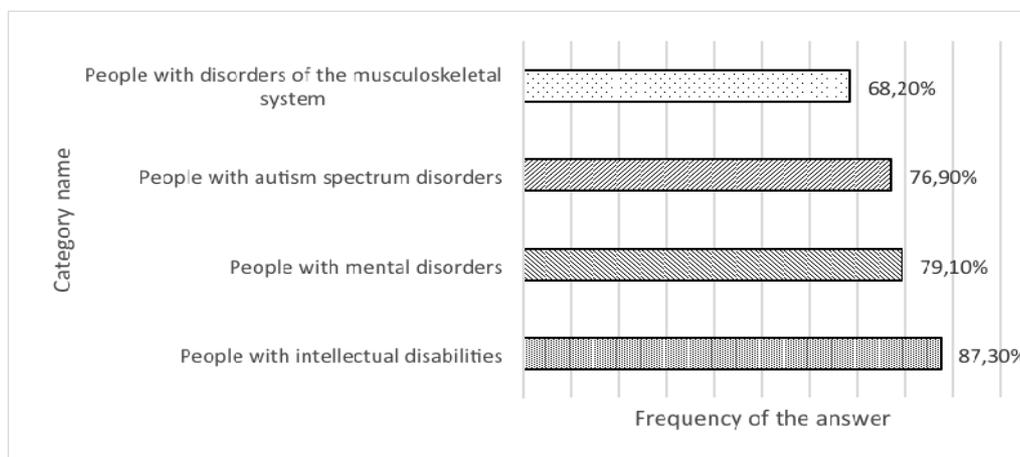


Figure 3. Socially isolated people with disabilities (according to respondents)

As can be seen in the Figure 3, respondents noted people with intellectual disabilities (87.3%), mental disorders (79.1%), autism spectrum disorders (76.9%), disorders of the musculoskeletal system (68.2%) to be the most socially isolated categories of disabled people, hearing, eye, severe speech disorders and somatic diseases in this question were selected by respondents less frequently.

## 5. Discussion

Survey results clearly indicate the presence of socio-psychological barriers that obstruct successful social adaptation of people with disabilities in the Russian society. First of all it refers to the lack of development of communicative sphere of disabled people, their low level of social literacy. This is obviously due to the fact that the communication skills are developed in direct contact with other people in a wide range of social situations. Disabled people often lack such opportunities, the scope of their communication is limited to family members and medical personnel. (Kolesnikova & Novikov 2014). As for the Russian people with disabilities, who grew up and were educated in private institutions (boarding schools), the situation is complicated by the fact that since childhood they are accustomed to solve problems within a closed team and with a limited set of instruments: insults, boycotting, fights, ignoring, which is ineffective in adult life outside the walls of institutions. The earlier the occurrence of disability the more it is expressed. (Lubovin, 2015). Along with this, the development of communication skills is obstructed by "rental income attitude" of disabled people, it prevents them from taking responsibility for their quality of life. This setting, as shown by our study, is inherent in many Russian people with disabilities. This is also confirmed by other data. For example, in 2013 3,066 people with disabilities were surveyed by medical and social expertise of the Employment Service of the Russian regions: 94% of them had no work experience, 93% had no profession, as a result the conclusion was the following: young able-bodied people with disabilities occupy a dependent position, and this point of view is shared by both professionals and people with disabilities themselves (Kabakova, 2015).

"Rental income attitude" shall not be interpreted unambiguously. Partly it can be explained by negative or avoiding attitudes of society towards disabled people. This can be confirmed by, for example, a situation where Russian employers are increasingly willing to hire disabled only as unskilled staff - a situation which is partly the result of inactivity of disabled people, and partly a consequence of a mismatch in the state structures and gaps in the legislation, and sometimes -it is just a desire to ignore the needs of actually existing social categories of people. (Kabakova, 2015). At the same time it is likely that the disabled people's perception of attitudes of others towards them as negative or avoiding is a direct projection of their social fears and concerns, attributing their own attitude to others. This opinion is a hypothesis that needs further verification.

Naberushkina (2011) data that the majority of persons with disabilities does not use the rehabilitation facilities and privileges granted to them by the social security that were discussed earlier, can also be explained by their lack of development of communication sector and a low level of responsibility for the quality of their life ("rental income attitude"). (Naberushkina, 2011).

At the same time the most vulnerable categories of people with disabilities in terms of social adaptation, according to the people with disabilities themselves, are people with intellectual disabilities, autism spectrum disorders, mental disorders and disorders of the musculoskeletal system (categories are listed in descending order of the number of choices). However, if social exclusion of the last category of disabled people may be partly explained by their limited mobility, inaccessibility of social facilities and public places, it is clear that the exclusion of the other three selected categories of people with disabilities to a greater extent can be explained by deficiencies in the development of their communicative sphere. Disabled people with hearing, eye, severe speech disorders and somatic illnesses, according to respondents, are less socially isolated.

Almost all respondents noted training for getting skills of social interaction and public places behavior using high-tech means to be the most popular means of social and psychological assistance.

Russian society now actively uses virtual space as one of means to solve the stated problems. Communication of persons with disabilities with other people (such as people with disabilities, and without) is organized with its help. It should be noted that the nature of virtual communication is associated with some specific features. When communicating over the Internet one interviewee does not see the other (unless he uses a special service that supports video transmission via webcams), and each of communication participants receives only the information that the opposite side found it possible to tell. Consequently, disabled person can calmly communicate "on equal terms" with any person on interesting for both of them subject without discomfort caused by their disability. (Kholostova & Dementieva, 2006).

At first glance, communication in virtual space seems like a perfect way to overcome the wide range of social and psychological difficulties specific to people with disabilities. In this regard, it is understandable why people

with disabilities so readily use virtual communication. This preference is defined as by objective (complexity of movement, financial matters) and subjective (lack of or poor development of essential life skills, and fear of real interactions) reasons. Person that is forced to be in a confined space for a long time often resides in a depressed mental state and is subject to the manifestation of frustrating emotions such as self-pity, malevolence towards others, expectation of overprotection, desire to blame someone for his defect, desire for isolation and etc. All of the above social restrictions lead to the breakdown of communication, to emergence of the communication gap, and virtual communication certainly reduces the severity of social exclusion.

Internet-technologies:

- allow anonymous communication, users may not tell their real names, gender, age, etc. (hiding confidential information allows you to feel relaxed);
- ensure the implementation of ideas, fantasies with feedback (users can create new "self" images, verbalize fantasies that are difficult to realize in life);
- contribute to finding an interlocutor that meets specified criteria (it provides by a large number of network users);
- offer unlimited access to information (on the internet you can find information on various subjects).

Based on the nature of existing problems of disabled people associated with limitations in communication, it can be assumed that they find such a format for communication much more attractive both because of availability and a number of other reasons above. Nevertheless, the need for real social interactions remains highly relevant. For example, many people with disabilities believe that with all the obvious advantages of distance learning, full-time education is much more suitable for them in terms of their possible integration into society. (Nios.ru, 2014).

Also, the survey results showed demand for the help of psychologists and social workers among people with disabilities. These data seem to us optimistic, because, despite the psychological characteristics of Russian people with disabilities ("rental income attitude", poor communication sphere, the complex nature of their relationship with the society), they indicate the positive dynamics of the integration processes in Russian society. So, people with disabilities are willing to accept the social and psychological assistance, particularly aimed at improving their communication skills, improving their social literacy. We assume that the modern Russian disabled people have fully appreciated the advantages of modern technologies, and are ready to use them for their own learning and development, to expand their repertoire of social behavior, which ultimately will improve the quality of their life in general.

Given the need to optimize the social and psychological rehabilitation of disabled people, development and introduction of technology, that involves psycho-diagnostics, analysis and correction of behavioral patterns and negative emotional reactions of people with disabilities related to the problems of ensuring their ability to live in the modern world, seems timely. Creation of different scenarios of social-domestic situations, describing the movement of people with disabilities in urban infrastructure and their interaction with different categories of people (doctors, social workers, vendors, pedestrians, passengers, etc.) is expected. The user will make movements and / or interact with characters of the virtual space, being in a psychologically safe space in the real world. Stories of virtual scenes must take into account the nature of the difficulties of people with disabilities in certain social and domestic situations that has to be determined on the basis of the preliminary analysis. In the process of performing actions by a user in virtual space, experts should be provided with opportunity to obtain data on the dynamics of his physiological changes. This data will help to understand the peculiarities of his emotional response to specific events and characteristic behaviors and serve as a basis for analysis and correction. Also, all the information can be obtained in "on-line" mode, without the need for a real movement of a disabled person in the physical space, which will save significant time and financial resources. Correction of behavior will also be carried out first in the format of the virtual space, and only after a successful fixation of elements of constructive behavior it can be gradually transferred to the real space.

Thus, the proposed technology uses unique advantages of virtualistics: when creating a scene of virtual interaction of user with objects, the focus is on the most problematic areas (specific social and psychological difficulties). Application of VCT allows the possibility of as many repetitive actions as necessary to achieve the desired effect. Finally, modern computer tools allow to achieve realism of recreation of the world, needed to achieve the effect of presence. The latter, in turn, affects the possibility of personal transformation, i.e. emotional and behavioral reactions of a user.

We believe that by complementing existing social programs with proposed technology using VCT, the conditions

for overcoming the inherent to disabled people socio-psychological barriers, obstructive to their full integration into society and negatively impacting their quality of life, will be created. In addition, on the basis of the analysis of results of this technology, categorization of social-psychological barriers depending on the particular disability (duration, severity, type - intellectual and mental disorders, musculoskeletal system, vision, hearing, etc.), which hasn't been presented to national science so far, will be possible.

The study of social and psychological barriers that obstruct successful integration of disabled people in the Russian society, is pilot. Obtained empirical data are the results of the survey and require further verification using valid diagnostic techniques. Clarification of the most problematic areas of social functioning of people with disabilities in Russia and social-communication skills, the formation of which can be optimized using virtual computer technologies is a promising object of subsequent randomized controlled trials.

## 6. Conclusions

In order to integrate disabled people into society in Russia, in addition to providing them with medical care, programs to adapt urban infrastructure, educational technologies to their needs are being successfully implemented, communication process is being organized and assistance in finding a job is being provided.

Most Russian disabled people can not take advantage of their rights to benefits (including technical means of rehabilitation, educational programs, etc.) because of their social and psychological barriers, which significantly reduces their quality of life.

Virtual computer technologies are modern means of rehabilitation and integration of disabled people into society, that has several advantages compared to traditional means. From the perspective of psychosocial adaptation of disabled people by means of virtualistics, the possibility of transferring their experience in dealing with domestic and social problems from virtual reality to the physical and social space of their real life is principal.

According to the results of the survey undeveloped communicative sphere of disabled people, low level of their social literacy are the social and psychological barriers that obstruct successful social adaptation of people with disabilities in the Russian society. Two other important factors are negative or avoiding attitudes of society towards people with disabilities and "rental income attitude" of disabled people. The most popular methods of social and psychological adaptation of people with disabilities include training for getting skills of social interaction and public places behavior using high-tech means, as well as psychosocial care of professionals.

We have proposed a virtual computer technology as one of the tools for optimizing social and psychological assistance for citizens with disabilities, providing the possibility of psycho-diagnostics, analysis and correction of negative emotional and behavioral reactions of Russian disabled people caused by difficulties of their social adaptation in conditions of the modern world. This technology includes scenarios of various social situations that disabled people face in everyday life.

Mastering of effective ways of behavior in virtual problematic situations will subsequently allow disabled people to transfer acquired skills to reality. Implementation of the proposed technology in programs of socio-psychological support of disabled people can contribute to the enrichment and development of their life experience, improve their quality of life.

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## References

- Adaptation of urban infrastructure. Main results of the work in 2012-2013 on the formation of a barrier-free environment in the framework of implementation of the State program called "Social support for residents of the city of Moscow in 2012-2016". (2015). *Official website of the Department of Social Protection of Moscow*. Retrieved from [http://www.dszn.ru/activities/sotsialnaya\\_adaptatsiya\\_i\\_reabilitatsiya\\_invalidov/adaptatsiya\\_gorodskoy\\_infrastruktury/](http://www.dszn.ru/activities/sotsialnaya_adaptatsiya_i_reabilitatsiya_invalidov/adaptatsiya_gorodskoy_infrastruktury/)
- Aisina, R. M., Maksimenko, J. A., & Potutkova, S. A. (2011). Pedagogical technologies of formation of professional competence of psychology students. *Social Policy and Sociology*, 7, 212-220.
- Aleshin, V. I., Afanasiev, V. O., Makarov-Zemljanskij, N. V., Tomilin, A. N., & Chumakov, V. A. (1995). Some aspects of the use of simulation models with interface "Virtual Reality". *Problems of Cybernetics*. Moscow, M: IP RAS.

- Bellani, M., Fornasari, L., Chittaro, L., & Brambilla, P. (2011). Virtual reality in autism: state of the art. *Epidemiology and Psychiatric Sciences*, 20(3), 235-238.
- Didactic-correctional complex with video bio-control "Timokko". (2015). Retrieved from [http://amaltea-spb.com/index.php?path=76\\_93&route=product/category](http://amaltea-spb.com/index.php?path=76_93&route=product/category)
- Efremova, G. I. (2011). Social and labor adaptation of physically disabled people: requirements and restrictions. *Social policy and sociology*, 11(77), 203-207.
- GOST R 52872-2007 "Internet resources. Accessibility requirements for visually impaired people". (2014). *Official website of the Federal Agency for Technical Regulation and Metrology*. Retrieved from <http://protect.gost.ru/document.aspx?control=7&id=173349>
- Halak, M. E. (2012). *Psychological support of rehabilitation treatment of people with disabilities and low psychological rehabilitation potential* (Unpublished PhD thesis). Nizhny Novgorod State Pedagogical University named after Kozma Minin, Nizhny Novgorod.
- Japanese helmet VR Fove - eye control. (2014). *VR-OCULUS.RU future of virtual reality*. Retrieved from <http://vr-oculus.ru/102-yaponskij-shlem-vr-fove-upravlenie-vzglyadom.html>
- Jeffs, T. (2009). Virtual Reality and Special Needs. *Themes in science and technology education (Special Issue)*, 2(1-2), 253-268.
- Kabakova, V. (2014). Virtual environment for the treatment of cerebral palsy. *Parliamentary newspaper "Tyumen news"*, 117(6027). Retrieved from <http://www.t-i.ru/article/new/2326>
- Kabakova, Ya. (2015). Invisible people. Whether there is "a place for disabled people" in modern society? *New site of disabled people of Zelenogorsk (Krasnoyarsk Krai)*. Retrieved from [http://ortolife3.ucoz.ru/publ/invalidy\\_i\\_obshhestvo/nevidimye\\_ljudi\\_est\\_li\\_mesto\\_dlja\\_invalidov\\_v\\_sovremennom\\_sociume/1-1-0-1241](http://ortolife3.ucoz.ru/publ/invalidy_i_obshhestvo/nevidimye_ljudi_est_li_mesto_dlja_invalidov_v_sovremennom_sociume/1-1-0-1241)
- Kholostova, E. I., & Dementieva, N. F. (2006). *Social rehabilitation* (4th ed.). Moscow, M: Publishing and Trading Corporation "Dashkov and C°".
- Kolesnikova, E. Yu., & Novikova, E. M. (2014). Family influence on the formation of motivation to acquire higher professional education among students with disabilities. *Social studies*, 4, 124-131.
- Kolotilova, I. V. (2011). Features of formation of addictive behavior among adolescents. *Social Policy and Sociology*, 7, 234-244.
- Levac, D., Miller, P., & Missiuna, C. (2012). Usual and virtual reality video game-based physiotherapy for children and youth with acquired brain injuries. *Physical and Occupational Therapy in Pediatrics*, 32(2), 180-195.
- Lyubobina, E. (2015). How to help graduates of correctional schools to find their own place in life? *Dislife 2.0 - Portal for people with SEN*. Retrieved from <http://dislife.ru/articles/view/38054>
- Naberushkina, E. K. (2011). City for All: a sociological analysis of urban space accessibility for disabled people. *Journal of Sociology and Social Anthropology*, 3, 119-139.
- Nosov, N. A. (2000). *Virtual Psychology*. Moscow, M: Agraf.
- Petrosyan, V. A. (2011). *Integration of people with disabilities into the Russian society* (Unpublished doctoral dissertation). Russian state social university, Moscow.
- Use of ICT for the rehabilitation and integration of disabled people in modern society (draft concept of the program). Expert Network for Public Administration. (2006). Retrieved from <http://www.gosbook.ru/node/29732>
- Virtual flight school for disabled people. Russian Sports Association of People with Disabilities*. (2013). Retrieved from <http://sky-open.com/runews/2013/7728898979.html>
- Virtual pedagogy for children with disabilities*. (2015). Novosibirsk's informational and educational site. Retrieved from <http://www.nios.ru/node/5495>
- Virtual space helps in the work on socialization of children with disabilities. (2014). *Official site of administration of the city of Samara*. Retrieved from <http://www.city.samara.ru/node/22786>
- Yukhvid, A. V. (2011). Virtuology and virtual issues: modern conceptual approaches. *Social and humanitarian knowledge*, 1, 285-293.

- Yukhvid, A. V. (2013). *Computer virtual technologies as a new techno-social phenomenon* (Unpublished doctoral dissertation). People's Friendship University of Russia, Moscow.
- Zinchenko, Yu. P, Menshikova, G. Ya., Bayakovskiy, Yu. M., Chernorizov, A. M., & Voiskounsky, A. E. (2010). Technologies of Virtual Reality in the Context of World-Wide and Russian Psychology: Methodology, comparison with traditional methods, achievements and perspectives. *Psychology in Russia: State of the Art*, 3, 11-45.

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