

# ASSESSMENT OF JOB CAPACITIES OF YOUNG PEOPLE WITH MENTAL DISABILITIES ACCORDING TO THE EVALUATION OF MOTOR SKILLS

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## **Abstract**

Problem of employment talking about integration processes of people with disabilities in present economical situation is still unsolved. Changing labor market appreciates precise, productive and responsible workers. Employers look for employees who can easily deal with difficult situations, be creative and innovative. This viewpoint concerns adults with disabilities, who have problems in finding and keeping job after finishing training in professional rehabilitation centers. The aim of this research is to identify motor functions needed for successful integration into the labor market. It was set up that motor performance in static lifting and static pulling corresponds to the requirements of professions that are taught in the rehabilitation centre for young people with mental disabilities.

***Key words:** motor performance, motor functions, job requirements, people with mental disability.*

## **Problem of the research**

The intensive changes in social life, development of “network” society, spreading of social, educational, economic standards in EU determine the rapid alterations in politics, education, culture, economy and in other spheres of living society. While the tendencies of globalization are getting more vivid, the integration and multicultural interaction are becoming inevitable in the open labor market as well. At the same time, growth of the number of people with disabilities in the population has brought a new challenge in the area of employment (Radzevičienė, Juodraitis, & Kazlauskas, 2005; Jacobson, Mulick, & Rojahn, 2007). The physical capacities and motor performance of people with mild mental disabilities in mentioned context became a challenge talking about processes of inclusion.

The problem of employment due to insufficient motor performance of people with mental disabilities becomes more and more universal. Such persons require special interest and help if they are going to integrate into open labor market (Gilbride, Stensrud, Vandergoot, & Golden, 2003). Such situation places them into the certain group of social risk. People with mental disabilities usually are employed in specific areas. Job searching is becoming

more demanding due to factors such as increased unemployment, technological evolution and competition among applicants, products and job value (Lenz, Peterson, Reardon, & Saunders, 2010).

The labor market appreciates growing rates of productivity, precision, responsibility, creativity and innovations. This requires developing of certain abilities such as high skilled motor performance, adequate responses to changing situations dealing with stress and at the same time being open facing with risk. Because of this, the risk of social disadvantage for young people with mental disabilities rises. Many of them cannot deal in an adequate way with their duties (Baranauskienė, 2002; Kučinskas, 2000; Kučinskas & Kučinskienė, 2000; Boyt Schell, Gillen, Scaffa, & Cohn, 2013). People face with situation of strong need to train them additionally in a direction of better psychomotor performance. The situation of social risk and possibility to take part in additional trainings depends on many factors: on the quality of evaluation of person's psychomotor skills needed for job activity, on certain motor functions affected by disability, on the type of chosen job. Jucevičienė (1997) adds the factor of social environment on which positive (or negative) attitudes of society towards a person with disability in labor market depend. Therefore, the development of psychomotor skills of young people with mental disabilities serves for the whole process of social rehabilitation (Lingam, Hunt, Golding, Jongmans, & Emond, 2009).

The range, severity and combination of additional disabilities within this population group vary, thus creating a heterogeneous population. Young people with mental disabilities often have additional conditions that may include learning disabilities, physical disabilities, problems in speech and communication, social and emotional disturbances (Agnew, 2011; Vermeer & Davis, 1995). The psychomotor development and social performance of young people with mild and moderate mental impairment requires some expedient training, before getting into the labor market. Motor functions of people with mental disabilities depend on the severity of the mental retardation. People with mild mental retardation may not appear to be impaired at all, and they could be adequate in job performance. The other forms of mental retardation are usually associated with more significant impairments of motor functions. Insufficient motor performance of people with mental disabilities has many explanations that must be taken into the mind planning rehabilitation processes (Drew & Hardman, 2004; Agnew, 2011; Lenz, Peterson, Reardon, & Saunders, 2010). To perform any job coordinate and exact action of CNS is required. Adequate realization of a motion or sequence of movements requires the convergence of numerous pathways and a central system in charge of integrating the information. The motor cortex, cerebellum, and vestibular system (which provide input about directionality, gravity, and motion) are all part of this central mechanism (Lingam, Hunt, Golding, Jongmans, & Emond, 2009). Proprioceptive information (sensation of where the body is in space and about the positions of the limbs and parts of the body), visual input (where the body is in space and where it should go), and an adequate degree of alertness (the reticular formation activated to an optimal degree) all provide information to the CNS. If one of these systems is not functioning adequately (as it is common for people with mental disabilities) the resulting planned movement may not be satisfactory or smooth (Souayah, 2009).

Motor planning as one of the highly multiplex functions of CNS is needed in every kind of work. Motor planning consists of the ability to imagine a mental strategy to carry out a movement or an action (Souayah, 2009; Vermeer & Davis, 1995). Performance of the job requires some planning in the sequencing of movements, including body coordination, the amount of strength to achieve a specific job goal. It means that motor planning involves a number of abilities, including the visual detection of motion and errors in movement, selection of responses, and self-corrective motions. Attention, as indicator of forceful activity, is necessary. Therefore, in case of mental disabilities this sphere is usually insufficient, as well.

The necessity to view, to understand and to learn the job movement slows the performance.

Other serious problem which burdens job performance of some people with mental disabilities is insufficient sensory integration that is closely connected with motor responses and refers to the whole brain functioning (Souayah, 2009). The central concept is that person may struggle to integrate sensory input (visual, auditory, tactile, and proprioceptive cues) and develop aversions (to being touched, to being exposed to new sounds). These persons are often referred to as having “sensory integration disorder” or “sensory processing disorder” (Aryes & Robbins, 1979).

Motor functioning of people with mental disabilities is closely connected with adaptive behavior that primarily refers to the level of social integration. Adaptive functioning refers to practical or social nature skills that demonstrate ability of independent living, taking care of oneself, participation in labor market according to job and social requirements (Gilbride, Stensrud, Vandergoot, & Golden, 2003). Adults having mild mental disorders may be employed at minimum wage jobs and can likely be self-supporting. In cases of moderate mental disorders persons typically live with their relatives or in supervised group settings. This group of adults can learn limited vocational skills as participants in specialized training schools, but are not likely to be self-supporting (Jacobson, Mulick, & Rojahn, 2007).

Therefore, evaluation of motor skills of young people with mental disabilities has triple significance: first, for young adults, that are going to participate in labor market; second, for professionals of vocational training and rehabilitation and third, for employees, who are focused on the person’s abilities and matches the worker with the job requirements. Discussed situation points the need to evaluate motor skills of young people with mild mental disability for participation in the open labor market, even before vocational training process.

**Object of the research:** Assessment of motor performance needed for participant in open labor market of young people with mental disabilities, using Ergo2 equipment.

**Aim of the research:** According to the assessment results to single out characteristics of motor functions needed for certain jobs capacities of young people with mental disabilities.

**Goals of the research:**

1. To discuss theoretical backgrounds of psychomotor and social context for participation in the open labor market of young people with mild mental disabilities.
2. According to the evaluation results to single out characteristics of biomechanical movements in certain motor skills (static lifting ankle and bench height; static pushing and static pulling; reaching forward and standing bending) needed for participant in open labor market of young people with mental disabilities.

**Methodology and method of the research:**

Functional Capacity Evaluations (FCEs) are used to determine the physical abilities of individuals who have had an injury and are perhaps having a difficult time returning to previous levels of function. The ERGOS Work Simulator allows evaluating job capacities based on international industrial standards of Methods-Time Measurement (MTM) and the National Institute of Occupational Safety & Health. ERGOS is three-panel computerized equipment that duplicates various movements and motions of real jobs. The work simulator’s computer provides all task instructions while taking detailed measurements of job performance. The computer then generates a printed evaluation, which details ability, consistency of effort and expected hourly work tolerance during a work day.

The results of the research are presented according to the three blocks of motor performance of three different professions that are chosen by the participants of the research. Apart from social skills the professions of house decorators, hotel workers and woodworkers need some precisely determined physical abilities. According to the profession requirements

that are indicated in the Ergo2 testing procedure there are 2 parameters of physical abilities: 1) tests that require static and dynamic strength in lifting, carrying and pulling in standing and bending, and 2) tests that evaluate the whole body range of motion in forward and overhead reaching. Following methods in the research were used:

1. Analysis of theoretical backgrounds of motor skills of young mentally impaired people.
2. Quantitative research was based on the assessment results of ERGO2 (work simulator) tests. According to the results of the tests the characteristics of biomechanical movements in certain motor skills (static lifting ankle and bench height; static pushing and static pulling; reaching forward and standing bending) needed for participant in open labor market of young people with mental disabilities were singled out.
3. For the processing of the research data, the descriptive statistical methods using computer programs SPSS and Excel were used. Significance of dependent variables was verified using Chi-square test.

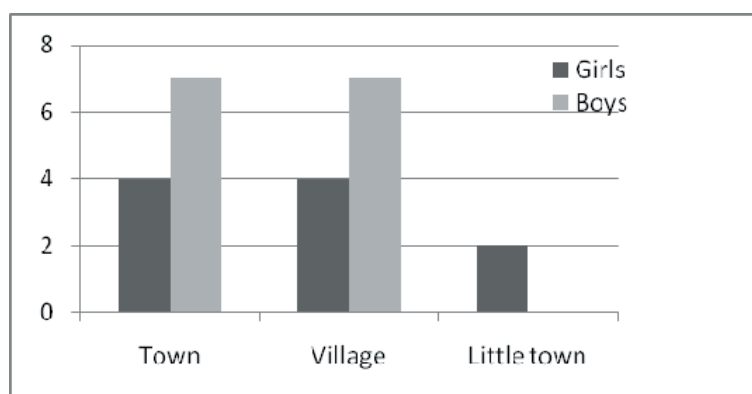
### Sample of the research

25 young people with mental disabilities from 18 to 27 years of age, visitors of Centre of Vocational Rehabilitation in Radviliškis took part in research.

#### 1. Results of the Research and Discussion

##### 1.1. Characteristics of the participants

Centre of Vocational Rehabilitation is an institution where young adults with mild and moderate mental disabilities are trained for certain professions. Centre give services according to the LR Law on Occupation Support (LR Socialinių paslaugų įstatymas, 2006), LR Law on the Social Integration of People with Disabilities (LR Neįgaliųjų socialinės integracijos įstatymas, 2011), LR Law on the United Nations Convention on the Rights of Persons with Disabilities (Jungtinių tautų neįgaliųjų teisių konvencija ir jos fakultatyvus protokolai, 2010) other state laws concerning occupation and vocational training of people with disabilities, it means that clients could get appropriate education and vocational training.



**Figure 1.** Respondents according to living place

25 young adults with mental disabilities at the age of 18 to 27 took part in the research. In ordinary life style, this group is clients of Rehabilitation Centre in Radviliškis who participate in vocational training education for 2 years. Together with professional skills they get some academic knowledge and develop their social skills actively. Because of mental disability they belong to the group of social risk that is why participation in open labor market is a serious

challenge for them. Participants of the research (young adults with mental disabilities) are a population of northern part of Lithuania that in the socioeconomic terms is described as economically depressed (Kavaliauskas, 2004).

This statement is illustrated with the analysis of living places from where the clients come (see Figure 1). In little towns and villages it is hard to find a job for women, because in rural area works that need more physical strength (stock-raising, agriculture, forester works, etc.) prevail.

Number of girls is larger. It could be that parents or care givers support girls' training in the centre of rehabilitation, because of wider opportunities to get job in the towns.

In the Centre of rehabilitation clients are trained to work in various fields of services (see Figure 2).



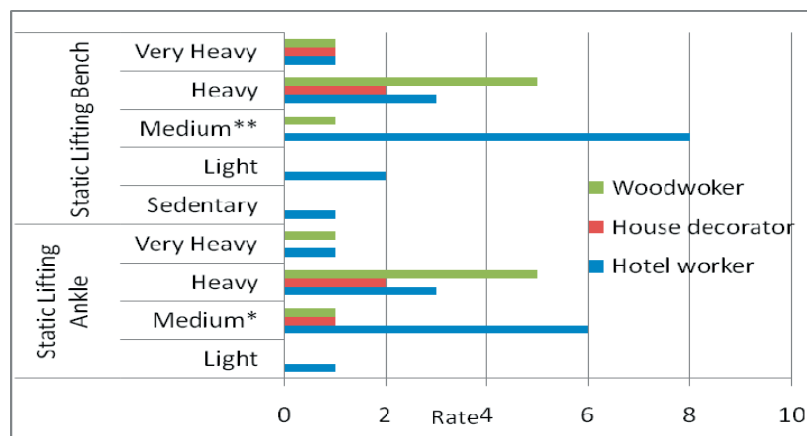
**Figure 2.** Professions chosen by the clients of rehabilitation centre

The representatives of 3 professions participate in the research. The hotel worker is the most popular profession among centre clients ( $p=0,00$ ) and especially among girls. The professions are mostly common to the town's service sectors. These professions require from workers active, creative attitudes, sufficient self-confidence dealing with different types of social situations in their professional life. They must be responsible not only for themselves, but for their nearest environment, as well. It means that adequate social skills and adaptive behavior for professional activity are in necessity.

### **Evaluation of motor functioning for job capacities of people with mental disabilities**

#### ***Results of static and dynamic strength***

Static and dynamic strength is one of essential requirements for any kind of job. Static and dynamic strength include evaluation of lifting, carrying and pulling activities in different positions: ankle and bench. Professions chosen by the clients in the centre of rehabilitation for young people with mental disabilities sometimes do not correspond to person's physical capacities. Any chosen profession requires certain abilities that could differ from another one. In order to train high skilled professional some additional trainings must be organized according to individual physical characteristics of clients.

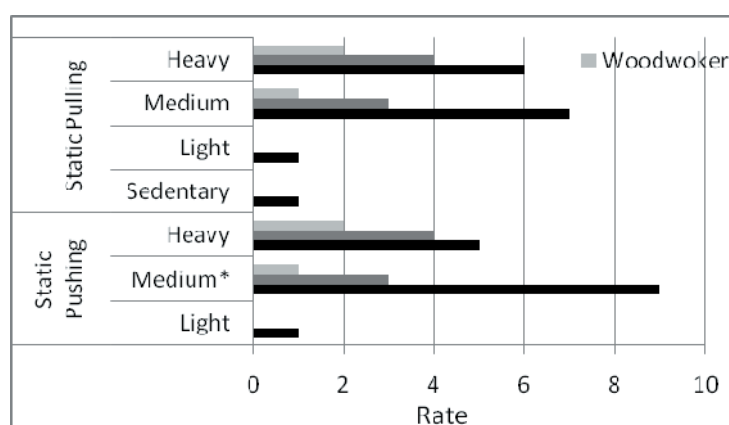


**Figure 3.** Comparison of static lifting (ankle and bench height)

Note: level of significance \* $p=0,00$ ; \*\* $p=0,02$

As the groups were different in their size job capacities were compared using *exact-test* for more reliable results. Static lifting in different height (bench and ankle) is important for the most of the professions. Starting position for evaluation of job capacities is industrial standards of certain job. There are different requirements for the level of static lifting for hotel worker (medium), house decorator (heavy) and woodworker (very heavy). It was set up (Figure 3) that results of three groups differ in their characteristics according to the respondents' capacities to perform a chosen job. Hotel workers show the best results in static lifting bench height ( $p=0,00$ ) (medium level) and most of all fit to the requirements for chosen profession. Talking about house decorators and woodworkers ( $p=0,02$ ) it must be mentioned that their job capacities do not correspond to the needed level. It means that addition physical trainings for students of Radviliškis Centre of Rehabilitation must be organized.

Comparing results of static lifting from different heights it is obvious that results in static lifting bench level are better than in ankle level. Differences could be explained in physical characteristics of participants. Most of them have additional health conditions (impairments in skeletal, muscular system, heart and lung pathology). These conditions could influence physical strength of young people with mental disabilities.



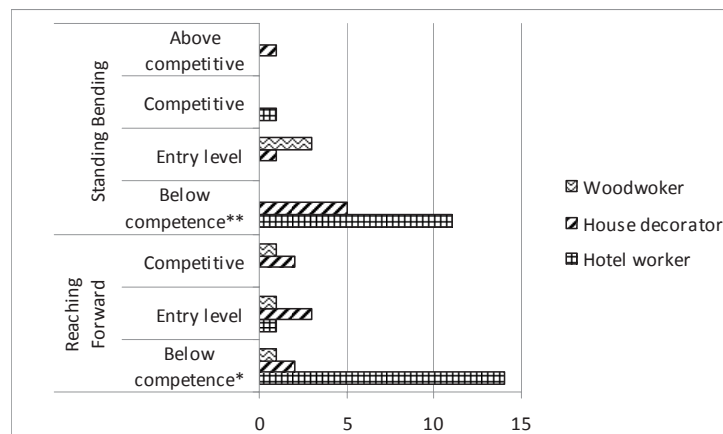
**Figure 4.** Results of Static Pushing and Static Pulling of young people with mental disabilities

Note: level of significance \* $p=0,04$



The representatives whose profession requires medium or light job capacities show better results in test performance. Sufficient job capacity (medium) level was demonstrated by hotel workers in static pulling and pushing ( $p=0,04$ ) tests. However, these results show that house decorators and woodworkers are stronger than hotel workers (Figure 4). Their job capacity must correspond to levels *heavy* and *very heavy* and in most cases it meets the demands of profession. Usually professions of house decorators and woodworkers are chosen by boys, so in comparison with girls they show higher upper muscles strength.

Comparing the results of static pulling and static pushing it seems that results of static pushing are better and it could be influenced by more developed forepart muscles, as well as by disorders of motor development due to the neurologic impairments that are common for people with mental retardation. For 18 participants of the research neurological impairments were fixed, they had problems of motor development in childhood and at present moment their consequences are felt. The same is in case of characteristics of static lifting, strength of the muscles of upper body must be developed pointing training of pectoral muscles especially. For the static pushing movement usually upper body weight is used and it is one more reason why results of static pushing are better. Anyway the results of the tests are not sufficient to the demands of Industrial Standards.



**Figure 5.** Results of Reaching Forward and Standing Bending of young people with mental disabilities

Note: level of significance \*  $p=0,00$ ; \*\* $p=0,03$

Motions of reaching forward and standing bending are more multiplex and they need certain level of attention, motor reaction and motor planning abilities, and appropriate level of motor development, as well. Physical readiness, functions of body coordination and trunk rotation permits in an appropriate way to perform job tasks. These motions involve person's psychical and physical abilities, that is why talking about people with mild mental disabilities it has some specific features.

For all professions that were chosen by participants of the research these functions are in high need. According to the requirements of job standards it must correspond to the level *competitive*. Comparing test results between groups future hotel workers show the lowest (*below competence*) results in reaching forward ( $p=0,00$ ) and standing bending ( $p=0,03$ ) tests. In a few cases the levels of capacities *competitive* and *above competitive* were set. Results of house decorators and woodworkers were better. It happens because these professions are prevailing mostly among boys and they are stronger and more developed physically than girls. Most of the participants show entry level and it means that wards of Radviliškis Center of

professional rehabilitation are not ready to go into the open labor market without doing harm for their health while performing motions of reaching forward and standing bending.

It must be mentioned that for 2 girls passing these tests health problems appeared. They stopped the test because of giddiness and enervation. These cases show indirectly that mental disabilities have brain damage conditions that influence job capacities and are not visible externally. As reaching forward and standing bending tests are multiplex and requires good integration of sensor, motor and psychical functions for the young people with mental disabilities they could be used as one of diagnostic methods while choosing future profession.

Discussed results are important trying to understand how condition of mental disability influences job capacities of young people with mental disabilities and what additional trainings are needed for participation in open labor market. The results of the research show that young people with mental disabilities are participating in the process of professional rehabilitation, they are choosing professions, but physically they are not ready for active work.

### Conclusions

1. Analysis of scientific studies shows that range, severity and combination of additional disabilities within group of people with mild mental retardation vary, thus creating a heterogeneous population. The psychomotor development and social performance of young people with mild and moderate mental impairment requires some expedient training before getting into the labor market.
2. Comparing results of static lifting from different heights it was set that results in static lifting bench level are better than in ankle level. Differences could be explained in physical and health conditions of participants (impairments in skeletal, muscular system, and heart and lung pathology). These conditions could influence physical strength of young people with mental disabilities. All groups show better results in static lifting bench level. Results of woodworkers and house decorators are better than of hotel workers, therefore, it means that future woodworkers and house decorators are physically stronger and better prepared for chosen profession. Results in static lifting ankle level in all groups were lower.
3. Comparing the results of static pulling and static pushing, the results of static pushing are better and it could be influenced by better developed forepart muscles, as well as by disorders of motor development due to the neurologic impairments that are common for people with mental retardation. For static pushing movement usually upper body weight is used and it is one more reason why results of static pushing are better than results of static pulling. Anyway the results of the tests are not sufficient to the demands of Industrial Standards.
4. According to the requirements of job standards reaching forward and standing bending capacities must correspond to the level *competitive*. Comparing test results between groups future hotel workers show the lowest (*below competence*) results in these tests. Results of house decorators and woodworkers were better. Most of the participants show entry level and it means that wards of Radviliškis Center of professional rehabilitation are not ready to go into the open labor market without doing harm for their health.

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