

EVALUATION OF THE SPEED OF PSYCHOMOTOR REACTIONS AND DYNAMIC CARRYING OF VOCATIONAL SCHOOL STUDENTS WITH ERGOS II WORK SIMULATOR

Introduction. The aim of the research — to evaluate the change in work capacity in students of the speciality of decorator applying for vocational rehabilitation programmes. The students of the vocational training study programme of the decorator in the vocational training centre ($N = 10$) participated in the research. In performing the present research the method of linear experiment has been chosen. The respondents were evaluated with ERGOSII Work Simulator. Individual rehabilitation programme for training work capacity was created for every respondent and performed for three month time period. After three months the re-evaluation was performed.

Relevance of the topic. People in choosing a job should be ready to appropriately physically participate in professional activities, to have personal abilities to perform a certain job. Therefore, it is very important to pay attention to people's physiological, psychological and social preparedness for work so that people's health is not damaged during work (Čyras, Girnius, Kaminskas, Nainys, Šukys, & Tartilas, 2003; Kaminskas, 2005; Krikščiūnas, Mingaila, Petruševičienė, Rapolienė, & Bikutė, 2009; Zaikauskienė, 2009). It has been noticed that working under any adjusted and well-organized conditions it is not possible to avoid professional illnesses or at least to decrease the scope of their spread. According to the Hygiene Institute of Lithuania, the data of the spread of professional illnesses caused by physical or ergonomic factors: 2011 — 95,02 per cent out of 402 people evaluated, 2012—94,15 per cent out of 393 people evaluated, in January—March 2013—97,22 per cent out of 108 people evaluated (Lietuvos higienos institutas (2013). It is the highest per cent of morbidity in comparison with other groups of professional illnesses.

In the system of ergonomics a human being is the most sensitive part of the system. Human work in this system is influenced not only by machinery and physical environment but also by many social and psychological factors. The parameters of physical features of a person in this system are also important (Čyras et al., 2003; Muckus, 2006; Kaminskas, 2005; Zaikauskienė, 2009). In Lithuania only the evaluation of ergonomic risk factors is performed, however, the importance of physical abilities in work activity, i. e. whether a person is physically capable to ergonomically perform a certain job, is not taken into account. The evaluation of ergonomic risk factors is based on the order of the Minister of Healthcare of the Republic of Lithuania and the Minister of Social Security and Labour of the Republic of Lithuania (LR Sveikatos apsaugos ministro ir LR Socialinės apsaugos ir darbo ministro įsakymas “Dėl ergonominių rizikos veiksnių tyrimo metodinių nurodymų patvirtinimo”, 2005) on the approval of methodological regulations of studying the ergonomic risk factors. In the regulations the order of the evaluation of ergonomic risk factors (ergonomic factors) is set and general preventive measures for workers' security from risk for their health and safety that is caused or may be caused by ergonomic factors are indicated. In the supplements of the order the methodologies of evaluation that cover the classification of ergonomic risk factors and methodology of measuring are presented. It is the methodology that is referred to in Lithuania in order to identify ergonomic risk factors, however, this methodology does not help to reveal the level of human work (physical) capacity and it is not measured. Namely ERGOSII Work Simulator is created to evaluate functional and physical human abilities and compares them to work requirements (Baker, 2012). The evaluation of human physical abilities before choosing a job is a very important factor that may have positive influence on the decreasing of professional illnesses because of physical and ergonomic factors.

Aim is to evaluate the change in work capacity in students of the speciality of decorator applying for vocational rehabilitation programmes. Object — change in work capacity. Research methods:

1) testing and evaluation by standard tests: evaluation of the speed of psychomotor reactions; dynamic carrying (weight 5 kg; distance — 6 m); handling dexterity (left/right hand); 2) linear experiment; 3) analysis of statistical mathematical data (SPSS 19.0; Microsoft Excel 2007).

Sample of the research. The students of the vocational training study programme of the decorator (builder) in the vocational training centre ($N = 10$) participated in the research. The sample group consisted of 9 boys and 1 girl. The average age of the respondents — 19,6 years.

In performing the research the method of linear experiment has been chosen. According to the specifics of this method the organization of the research is divided into three stages:

Stage 1 — creation of the sample group and its evaluation with ERGOSII Work Simulator. The respondents ($N = 10$) were evaluated with ERGOSII Work Simulator. This instrument is used to measure physical work capacity and its level defining whether the respondent meets physical requirements necessary for work.

Computer programme helps to identify it according to the analysis of work and general work (physical) features of the respondent. The system is fully related to work (physical) activity (Baker, 2012).

Stage 2 — creation and realization of individual vocational rehabilitation programme for training work (physical) capacity. In creating vocational rehabilitation programme for the development of work capacity the following main principles of rehabilitation have been referred to: gradation, individuality, accessibility, versatility, consciousness, activeness (Dadelienė, 2006; Krikščiūnas, 2009). The classes of training work physical activities lasted for 3 months, 2 academic hours twice a week.

Stage 3 — re-evaluation of work (physical) capacity with ERGOSII Work Simulator.

In order to reveal the changes in decorators' work capacity the means of the tests of dynamic carrying, the speed of psychomotor reactions and the handling dexterity performed by the respondents have been compared. The means of speed of performing tests have been compared to the obtained results before and after rehabilitation. The respondents' results of the speed have also been compared to the set criterion of the requirements for the decorators' profession, standard deviation (SD) and statistical significance according to Wilcoxon rank criterion have been taken into account.

T a b l e 1 — Changes in the speed of psychomotor reactions and dynamic carrying among decorators ($N = 10$)

Tests	Before rehabilitation, % (SD)	Criterion MTM, %	After rehabilitation, % (SD)	Positive change (N)	Negative change (N)	p
2-T (dynamic carrying (weight 5 kg; distance — 6 m))	136,7 (29,1)	81,0	144,9 (27,1)	6	4	Statistically insignificant change ($p > 0,05$)
7-T (reaction to the stimulus reaching forward)	69,6 (19,3)	81,0	72,4 (12,8)	4	6	
8-T (reaction to the stimulus bending/stooping)	68,1 (17,7)	81,0	79,8 (18,4)	9	1	0,008
9-T (handling dexterity, left hand)	63,4 (12,1)	81,0	73,3 (16,0)	10	—	0,005
10-T (handling dexterity, right hand)	66,3 (11,1)	81,0	77,6 (14,2)	9	1	0,009

Note. SD — standard deviation; criterion — the level of the evaluation of the speed of the reaction: below competitive — MTM — $0\% < 80\%$; competitive — MTM — $81\% < 100\%$; above competitive — MTM — $100\% < 100\%$ (MTM — movement time measurement standards).

In Table 1 the changes in the strength during the tests of the speed of psychomotor reactions among decorators and dynamic carrying before and after rehabilitation have been presented. The means of the speed of psychomotor reactions and dynamic carrying have been compared to the set competitive level (competitive — MTM — 81 per cent — 100 per cent). Having analyzed the obtained data it has been noticed that the results of all the tests of the speed of psychomotor reactions have increased after rehabilitation, i. e. the change is positive. The meaning of the respondents' results of the test (2-T) in dynamic carrying (weight 5 kg; distance — 6 m) before and after rehabilitation corresponds to the level above competitive MTM — 100 per cent <, i. e. the highest result of evaluation. The mean of the results of the test of the reaction to the stimulus reaching forward (7-T) has increased by 2,8 per cent, the mean of the results of the test of the reaction to the stimulus bending/stooping (8-T) has increased by 11,7 per cent, and the results of the tests of handling dexterity of left hand (9-T) and right hand (10-T) have increased respectively by 9,9 per cent and 11,3 per cent. The results of all these tests have increased, however, the means of the speed of the respondents' reactions before rehabilitation and after rehabilitation correspond to the level below competitive MTM — $0 < 80$ per cent. To evaluate the difference in strength among the respondents Wilcoxon rank criterion has been applied. This criterion reveals that the strength of performing tests of the reaction to the stimulus bending/stooping (8-T — $z = -2,67$, $p = 0,008$, $r = 1,19$), handling dexterity of left hand (9-T — $z = -2,81$, $p = 0,005$, $r = 1,13$) and right hand (10-T — $z = -2,60$, $p = 0,009$, $r = 1,21$) after rehabilitation has changed statistically significantly. After rehabilitation the strength of performing the tests 8-T and 10-T in 9 respondents has changed positively, in 1 respondent — negatively, the strength of performing the test 9-T in all the respondents ($N = 10$) has changed positively. With regard to the standard deviation it has been noticed that before and after rehabilitation the respondents' results in performing these tests were different, especially the results of the test of dynamic carrying (SD = 27,1).

Conclusions. 1. The speed of psychomotor reactions and the results of dynamic carrying have increased, i. e. the change is positive. The reaction to the stimulus bending, handling dexterity of the left and right hands have changed statistically significantly ($p < 0,05$). 2. The results in dynamic carrying before and after rehabilitation correspond to the level above competitive MTM — 100 per cent <, i. e. the highest result of physical requirements. 3. The speed of psychomotor reactions after rehabilitation as well as before rehabilitation corresponded to the level below competitive MTM — $0 < 80$ per cent, although the results have improved and the difference from the set competitive level has decreased. Referring to standard deviation the changes in performing tests in all evaluated areas are different, i. e. the changes in the respondents' physical capacity were individual.

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ЭТНОКУЛЬТУРНАЯ СОСТАВЛЯЮЩАЯ В ПРОФЕССИОНАЛЬНО-ПЕДАГОГИЧЕСКОМ СТАНОВЛЕНИИ СТУДЕНТОВ

Введение. Активным элементом педагогической терминологии сегодня становится понятие «этнокультурное образование». Это обусловлено процессами, происходящими в мировом масштабе, — стремлением народов к возрождению нравственного потенциала каждого этноса, всплеском осознания миллионами людей своей принадлежности к определённому этносу. В этих условиях университет призван не только дать профессиональные знания, но и сформировать ряд профессионально значимых и социально необходимых качеств, относящихся к взаимодействию человека и социальной среды и к самому человеку как личности. В содержании образования важное место должна занять этнокультурная составляющая, основанная на процессе изучения и практического освоения этнокультурного наследия. Этнокультурный материал, аккумулирующий в себе огромный исторический, духовный и нравственный опыт, представления народа о мире и человеке, способствует процессу становления и воспитания личности на традициях культуры этноса, осмыслению ею своего места и предназначения в окружающем социокультурном пространстве, сочетающем моноэтническую глубину родной культуры и полиэтническую широту.

Этнокультурный подход даёт возможность в процессе подготовки специалиста познакомить его с истоками возникновения этнических культур, с основными этапами становления и развития родного края и его народа, с основными датами и событиями из жизни региона, культурными достижениями (литература, живопись, музыка и т. д.), особенностями природы края, менталитета народа, населяющего этот край.

Региональная направленность образования позволила использовать информационную насыщенность образовательного пространства, но при этом не решена проблема эмоционально-образного погружения в ценности культуры, не отработаны методические аспекты воспитания молодёжи на этнокультурном материале.

Основная часть. Принципиально важным для характеристики социально-культурной ситуации каждого региона является открытое признание и проявление многообразия этнокультурных ориентации, обусловленных наличием различных этнических групп. Их отличия по демографическим, социальным, экономическим и собственно культурным параметрам выдвигают перед регионом необходимость не только обеспечения надёжной системы межкультурной коммуникации, но и создания равных возможностей для их культурного выбора и культурного самоопределения.