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INNOVATIVE TEACHING COURSES IN BACHELOR'S PROGRAM OF MEDICAL REHABILITATION

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ABSTRACT

The aim of our research is to introduce new innovative training courses in the program of physical medicine and rehabilitation, taking into account the results of statistical analysis of survey data among students and undergraduates of the Faculty of Physical Medicine and Rehabilitation of the University of Sports. 230 students, 48 graduates and 6 employers were interviewed. Based on the analysis of the obtained results, we consider it expedient to add the following teaching courses to the program of medicine and rehabilitation: "Modern Technologies in Motion Biomechanics", "Biotechnological Basis of Rehabilitation" and "Psychosocial Rehabilitation". The first one will teach students how to use sensor and video-computer technologies for qualitative and quantitative movement analysis, the second one will furnish the students with recent insights into the biotechnological basis of rehabilitation and the third one will teach students how to work with people having mental disabilities.

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Introduction. The aim of the research is to introduce scientifically substantiated and academically evaluated modern, new training courses in the program of physical medicine and rehabilitation. The relevance of this study stems from the fact that the existing programs in Georgia do not reflect the scientific achievements of Western countries and the innovative learning technologies implemented there. The programs are less reflective of the needs of the modern and future market. Rehabilitation programs are outdated and require compliance with modern world standards.

The following innovative fields have been selected for the research:

1. The use of modern technologies for studying movements biomechanics [2, 5, 7, 8];
2. The use of biotechnological approaches for understanding the underlying principles of rehabilitation [1, 4];
3. Working with mentally affected persons and helping them in different aspects of their lives including work, living, social, and learning environments. One approach that can help people manage symptoms and improve functioning is known as psychosocial rehabilitation (PSR) [3, 6].

Research methods. The research was conducted by a survey method using questionnaire, among the students of the Faculty of Physical Medicine and Rehabilitation of the University of Sports. 230 students, 48 graduates and 6 employers were interviewed. The main question was whether it is acceptable for them to include recently introduced technological and biotechnology courses in European higher education institutions of a similar profile in the programs and so on. The analysis of the survey results was performed using the statistical program SPSS 28 (Trial Version). During the research we took into account the latest data published in the scientific literature.

Results. In this section we discuss the results of the survey.

Questions to the students:

1. How acceptable is it for you to include technology and biotechnology training courses in rehabilitation programs?

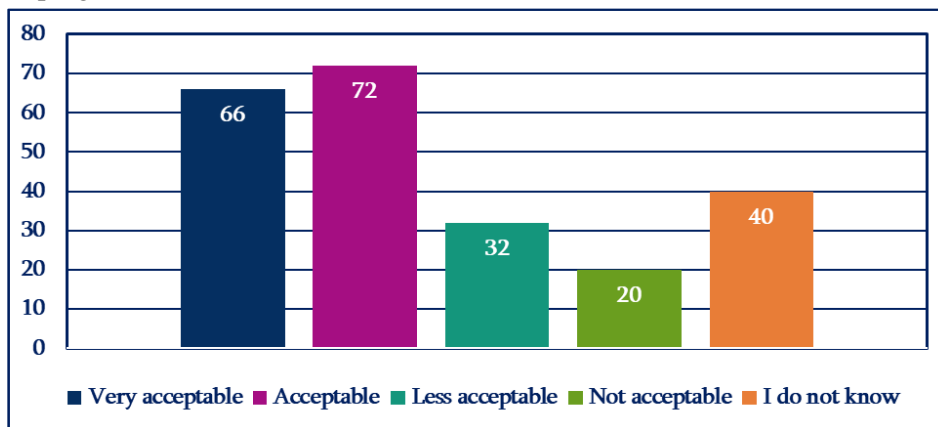


Fig. 1. Students' answers distribution for the first question.

From the statistical data we can see that 138 students accept the inclusion of technological and biotechnological courses, 40 students have not a definite opinion and only 52 do not accept this option (Fig.1).

2. How well are the psychological and social aspects of rehabilitation taught at the university?

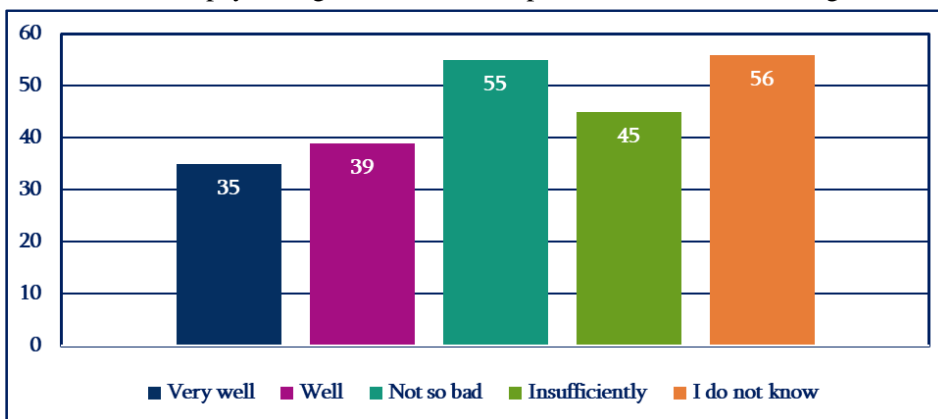


Fig. 2. Students' answers distribution for the second question.

Only 74 students are satisfied with the teaching of psychological and social aspects of rehabilitation, 45 unsatisfied and 56 have not a definite opinion. From these results we can conclude that many students do not understand the real meaning of psychosocial rehabilitation (Fig. 2).

Questions to the undergraduates:

1. Is your preparation in the fields of technology and biotechnology sufficient for practical work?

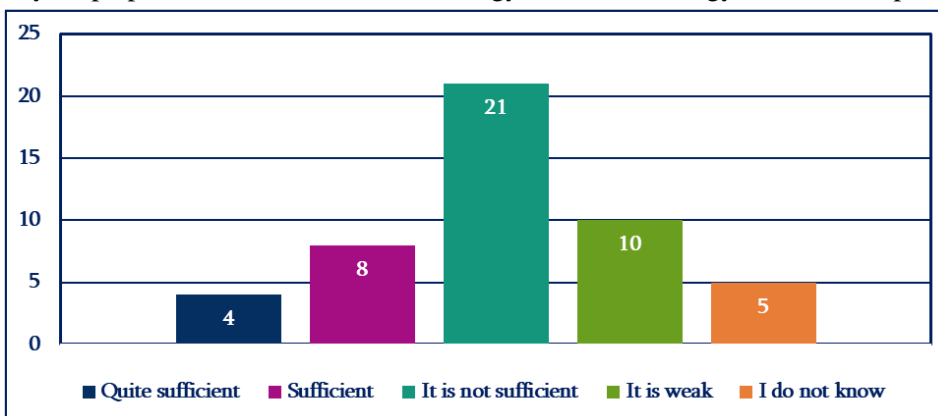


Fig. 3. Undergraduates' answers distribution for the first question.

Here the answers look symmetrical achieving the maximum in the centre – 21 undergraduates assume that their preparation in the fields of technology and biotechnology is not enough for practical work (Fig. 3).

2. Is your knowledge of the psychological and social aspects of rehabilitation sufficient for practical activities?

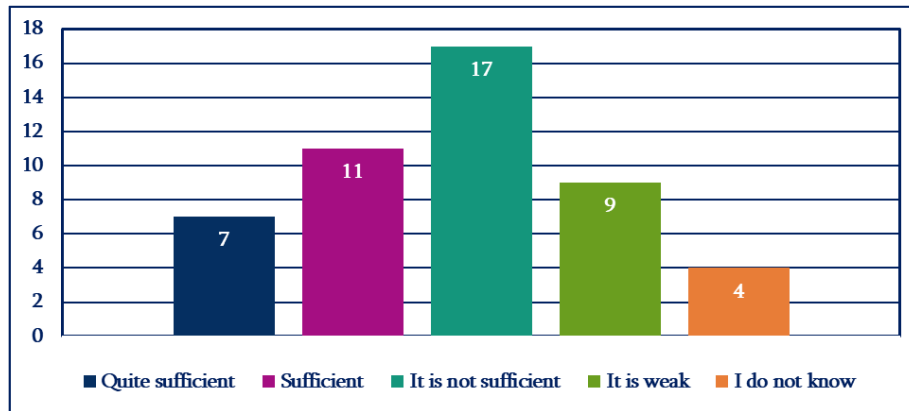


Fig. 4. Undergraduates' answers distribution for the second question.

Here the situation is better than in the previous case – 18 undergraduates assume that they have good understanding of the psychological and social aspects of rehabilitation, but just like in the previous case the maximum number corresponds to the undergraduates which are not satisfied by their level of preparation (Fig.4).

Questions to the employers:

1. How would you rate the training of our graduates in technical and technological fields?

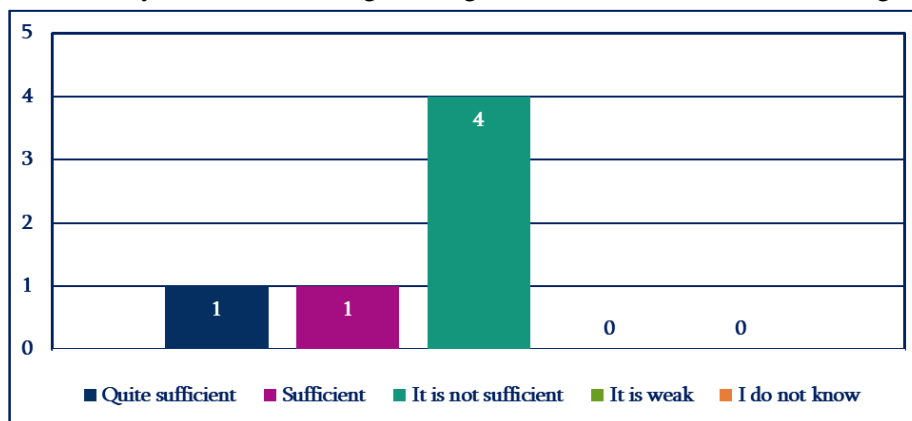


Fig. 5. Employers' answers distribution for the first question.

4 from 6 employers are not satisfied by technical and technological skills of our undergraduates (Fig.5).

2. How would you rate the training of our graduates in the field of biotechnology?

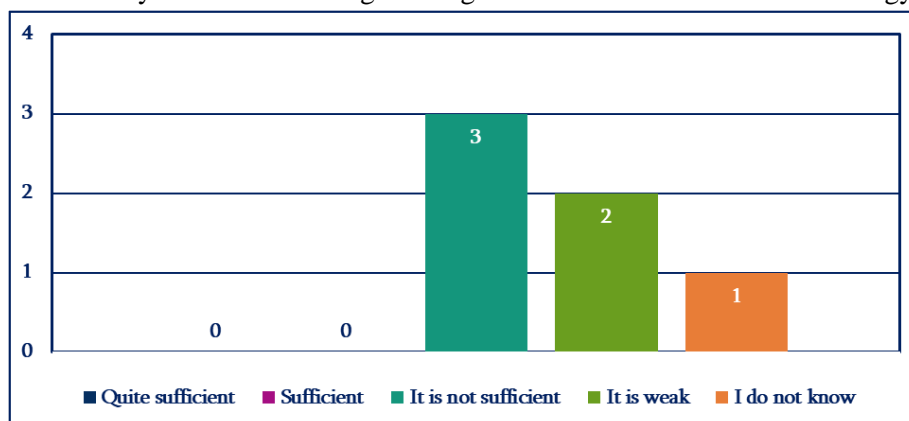


Fig. 6. Employers' answers distribution for the second question.

Here the situation is worst, 5 from 6 employers are not satisfied by the preparation of our undergraduates in the field of biotechnology (Fig. 6).

3. How well do our university graduates understand the psychological and social aspects of rehabilitation?

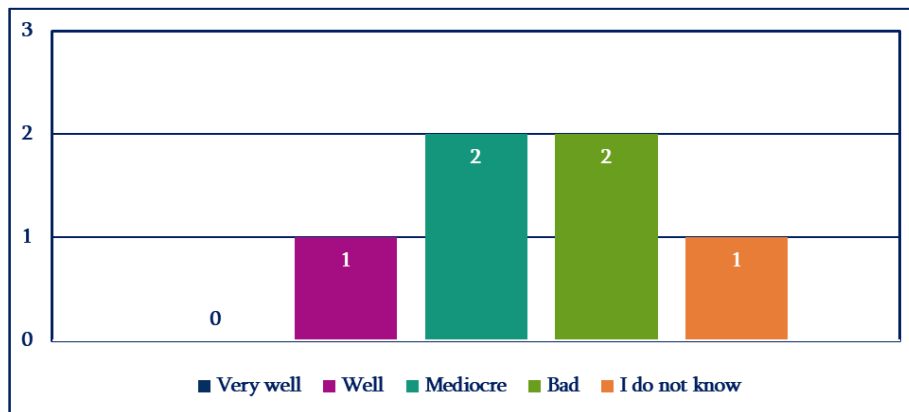


Fig. 7. Employers' answers distribution for the third question.

Here only one employer is satisfied by the competency of our undergraduates in the psychological and social aspects of rehabilitation. 4 employers are not. And only one has not a definite answer (Fig. 7).

4. At what level of education is it more appropriate to conduct these courses – at the Bachelor's degree level or at the Master's degree level?

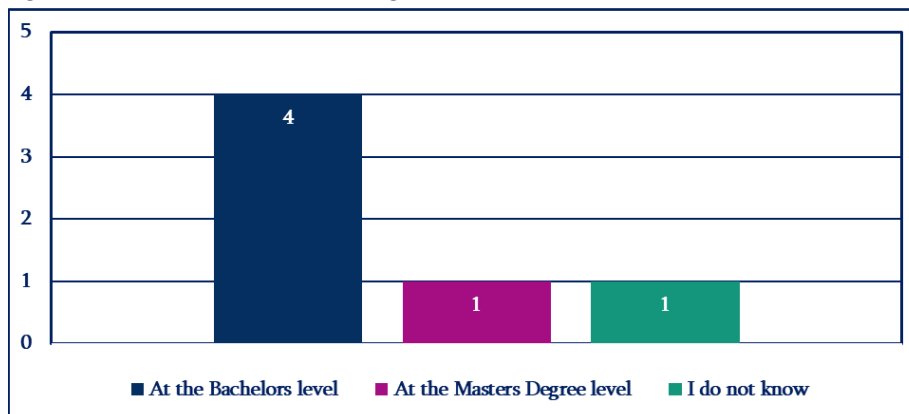


Fig. 8. Employers' answers distribution for the fourth question.

4 Employers assume that the courses mentioned above should be conducted at the bachelor's degree level and only 1 selected the Master's degree level. This means that the selected fields have wide practical applications in rehabilitation and cannot be ignored or underestimated (Fig. 8).

We see that undergraduates have more objective responses than students. They have a significantly less number of indefinite answers. Their responses are based on the practical experience and are in line with the expectations and needs of employers.

Discussion. Based on the analysis of the survey, it became known that students have an increased interest in new methods of rehabilitation. Of particular interest are issues of application of new innovative technologies, computer and biotechnologies are often mentioned, there is some interest in considering the social and psychological factors in rehabilitation.

Regarding computer technologies, students are interested in the complex use of wearable equipment, sensors and video-computer analysis tools in conjunction with other equipment used in rehabilitation (bicycle ergometers, treadmills, dynamometers, etc.) [2, 5, 7, 8].

The aim of this training course is to teach and introduce the student to:

- Basic principles of studying human movements;
- Methods for determining anthropometric parameters of the human body;
- Conduct motion analysis using video-computer analysis;
- Biomechanical modelling of movements;

- Basic principles of motion analysis;
- Basic methods and technologies of biomechanical measurements;
- Basic principles of maintaining body balance.

Biotechnology focuses on regenerative medicine, cell therapy, the use of new medications, and new methods of rehabilitating brain trauma [1, 4]. The themes treated will include a description at a molecular level, citing for example the proteins involved in some of the most relevant processes involved in order to let the participants of the training course to understand the relationships between the biomolecular events and the consequent macroscopic effects on rehabilitation.

In regard to these issues, the problem of human resources was identified, which was solved by inviting highly qualified Italian professors in this field.

PSR is a treatment approach designed to help improve the lives of people with disabilities. The goal of psychosocial rehabilitation is to teach emotional, cognitive, and social skills that help those diagnosed with mental illness live and work in their communities as independently as possible [3, 6].

Conclusions. Based on the analysis of the obtained results, we consider it expedient to add the following teaching courses to the program of medicine and rehabilitation:

"Modern Technologies in Motion Biomechanics" – will teach students how to use sensor and video-computer technologies for qualitative and quantitative movement analysis;

"Biotechnological Basis of Rehabilitation" – aim of this training course is furnishing the students with recent insights into the biotechnological basis of rehabilitation.

"Psychosocial Rehabilitation" – will teach students how to work with people having mental disabilities.

The main expected learning outcome of the present training courses consists in participant's ownership of the main concepts that form the technological, biotechnological and psychosocial basis of rehabilitation.

An interactive teaching methodology will be adopted in order to involve participants in the learning process. Dynamic activities will ensure a productive and collaborative learning environment.

We suppose that introduction of new training courses in the program of rehabilitation will help enhance the self-confidence, team working skills and future employability of our students.

REFERENCES

1. Abarrategi, A., Lanceros-Mendez, S. (2021). Cells and Materials for Disease. Modelling and Regenerative Medicine. MDPI.
2. Dabnichki, P., and Baca, A. (2008). Computers in Sport, University of London.
3. Dell Orto, A.E., and Power, P.W. (2007). The Psychological & Social Impact of Illness and Disability. (5th ed.). New York, NY: Springer Publishing Company.
4. Jendelova, P. (2018). Therapeutic Strategies to Spinal Cord Injury. MDPI.
5. Kadhim, K.T. (2020). An overview of patient's health status monitoring system based on internet of things (IoT), Wireless Personal Communications, vol. 114, pp. 1–28.
6. King, R., Lloyd, C., Meehan, T., Deane, F.P., and Kavanagh, D.J. (2012). Manual of psychosocial rehabilitation. Blackwell Publishing.
7. McGinnis, P. M. (2013). Biomechanics of Sport and Exercise. State University of New York.
8. Parulava, G., and Egoyan, A. (2021). Innovative Methods and New Teaching Courses in Bachelor Degree Program in Rehabilitation. Abstracts of the I International Conference on Education, Technology and Innovation, European University – Kutaisi University, Tbilisi, Georgia, 78-79.