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## *Clinical Key for Electrical Stimulation in Physiotherapy and Rehabilitation*

KA220-VET Cooperation partnerships in vocational education and training

Project No: 2021-1-TR01-KA220-VET-000032970



**Dear Reader,**

The second transnational meeting of “Clinical Key for Electrical Stimulation in Physiotherapy and Rehabilitation (CK4Stim)” was held on 25<sup>th</sup>-26<sup>th</sup> of October 2022 in Craiova, Romania. CK4Stim is a 30 months KA220-VET - Cooperation partnerships in vocational education and training project supported by Turkish National Agency, on electrical stimulation approach of physiotherapy and rehabilitation science.

The project is being carried under coordination of Pamukkale University (PAU) with the partnership of Hatay Mustafa Kemal University (HMKU - Türkiye), Başkent University (BU - Türkiye), Süleyman Demirel University (SDU - Türkiye), University of Craiova (UCV - Romania), Šiauliai State University of Applied Sciences (ŠVK - Lithuania), and Tartu Health Care College (THCC - Estonia).

**A gathering between PAU rector Prof. Dr. Ahmet Kutluhan and UCV vice rector Prof. Eng. PhD. Dan SELISTEANU**

One day before the meeting, PAU rector Prof. Dr. Ahmet Kutluhan and UCV vice rector Prof. Eng. PhD. Dan SELISTEANU with project members had a short gathering at UCV. After the bilateral meeting between Ahmet KUTLUHAN and vice rector Prof. Eng. PhD. Dan SELISTEANU, all partners were admitted to the meeting room. While emphasizing international interaction, it was expressed that the results of the project are eagerly awaited and the wish to be together in new projects. After the visit, a trip to UCV was made. An appointment was made for the laboratory visit at 10:30 the next day.



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### **The Abstract of Work Package 1**

The project has 3 outcomes and 6 work packages. Project outcome 1 aims the analysis the specific training needs of potential users, and to focus the course on the most important needs of their professional development. The 1st work package of the project carried out under the leadership of PAU was under the responsibility of SDU and UCV. 1 meeting was held at Pamukkale University as part of the 1st work package. Until the meeting held on 8-9 June 2022, all the objectives, concept and responsibilities of the project were shared by all stakeholders. A questionnaire was prepared and applied to physiotherapists. By this questionnaire, the most preferred current, and parameters (frequency, duration, etc.) are determined. Also, the physiotherapist's working year and the experienced area will be compared to the preferred ES approaches. The results will be transferred to the knowledge that will be used in configuring the course materials. The expected impact was to acquire the basics to create a more inclusive and gap-bridging course program for a physiotherapist who prefers to use ES approaches. This report will guide the preparation of project outcome 2 and project outcome 3. The questionnaire prepared by SDU and UCV until the first meeting was finalized in consultation with all partners at the meeting. After the meeting, the questionnaire, which was finalized by SDU and UCV, was sent to Turkish, Romanian, Lithuanian and Estonian partners to be translated into mother tongues. The questionnaire, translated into mother tongues, was filled by 95 physiotherapists from Turkey, 30 from Romania, 31 from Lithuania and 47 from Estonia. Seventy-two of the physiotherapists are working in government institutes, 101 of them are working in private institutes and 30 of them are working in academic areas. The survey results were entered into the SPSS package program by Mehmet DURAY from SDU, Evy ILIE from UCV, Vaida ALEKNAVICIUTE from ŠVK and Kirkke RESIBERG from THCC. Analyzes were made in collaboration with SDU and UCV. The results of the prepared report, both national and international, were presented at the second transnational meeting of "Clinical Key for Electrical Stimulation in Physiotherapy and Rehabilitation (CK4Stim)" on 25th-26th of October 2022 in Craiova, Romania.





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### **Determination of Knowledge, Skills, Attitudes and Management of Physiotherapists on Electrical Stimulation**

PAU, HMKU, SDU, BU, UCV, ŠVK, and THCC had been worked to acquire a proper assessment for the use of electrical stimulation, taking in consideration regional differences in professional training and transference of knowledge from the universities around Europe. The questionnaire includes 19 items to question the level of knowledge, skill, management, and attitude dimensions in ES approaches for assessment and treatment programs in physiotherapy and rehabilitation. The survey is anonymous, no personally identifiable information was collected. The partners shared the questionnaire with physiotherapists in their countries via Google Forms and e-mail. All partners took responsibility for working with their National Physiotherapist Associations.

It was found that the knowledge, skill, management, and attitude levels of physiotherapists from 4 different countries in electrotherapy applications vary. Physiotherapists whom participated in this survey, had a “moderate” level of knowledge analysis in the case of using electrical stimulation for healthy muscle, denervated muscle, ES in upper motor neuron lesions, detection of nerve degeneration and muscle contraction, 50 % of physiotherapists registered with “moderate” level of skill in applying electrical stimulation and only 29.6% of them had knowledge of the application. Also, most of them concluded that they have somewhat or moderate skill levels in ES. Physiotherapists prefer different currents to generate an action potential, achieve muscle contraction, treat denervated muscle, and spasticity, nerve lesions, sports traumatology, pediatrics, urinary problems, and muscle strengthening.

According to the level of knowledge analysis, the answers were consistently chosen for a “moderate” level in the case of using electrical stimulation for healthy muscle, denervated muscle and muscle contraction. The most preferred currents in healthy muscle stimulation were NMES, EMS and FES for 4 countries. About 50%





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of the physiotherapists stated that they did not have enough level of knowledge about denervated muscle stimulation. When we tested their preferences for denervated muscle contraction, we saw that the maximum number of physiotherapists who had knowledge of the correct application could be 29.6%. The obvious differences in preference among the physiotherapists revealed the necessity of developing a standard application protocol. However, it was stated that a low percentage of the physiotherapists had knowledge at the level of "moderate" (27.1), "good" (6.4%) and "very good" (1.5%) in applications for nerve degenerations. 60.4% of the physiotherapists did not prefer correct currents to support recovery after nerve lesion. To treat denervated muscles, physiotherapists preferred NMES (40.4%) the most, while they preferred lower levels of galvanic current (34%), EMS (28.1%) and others. It was found that physiotherapists used different diadynamic current modality for local muscle exercise.

As reported, level of skill in applying electrical stimulation seems moderate, about 50 % of physiotherapists answered with "moderate" (%35), "good" (14.8) and "very good" (%2.5) rating. However, the fact that 10.8% of the physiotherapists did not have knowledge about the application of FES, 17.7% of the physiotherapists did not have awareness about the application skills and 35.0% had limited skills showed that the skill level was an aspect that should be improved. The skill level of approximately 73% the physiotherapists in faradic current and medium frequency currents (question 10-11) was below the "moderate" level. The fact that only 32.5% of the physiotherapists gave the correct answer to the application position (tenth question) of the labile technique and 41.3% to the diadynamic flow application question (the eleventh question) revealed how high the error rate in the application was.

The most problematic rated level of knowledge about the use of electrical stimulation was registered in sports traumatology (10.3%), and pediatric rehabilitation (19.7%), where "do not know" ratings were chosen. Also, a couple of answers regarding the preference about the type of electrical stimulation in pediatrics were blank, fact that showed their lack of experience regarding the management of this department. Only 6.4% of respondents rated their level of knowledge in sports traumatology "good" and 1.5% for "very good", and 3.9%







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for “good” and 2.5% for “very good” in case of pediatric rehabilitation, which related a very low level of management.

When the level of attitude on electrical stimulation of physiotherapists in 4 countries was examined, it was observed that the distribution among preferred currents was very wide. This situation makes standardization in practice difficult. However, the fact that approximately 25% (19.7%-often and 5.4%-always) physiotherapists made a habit of changing the current type in parallel with recovery suggested that electrical stimulation was used effectively and purposefully in a limited patient population. Even the active and passive practice preferences of physiotherapists can vary according to the disease, experience, learning process and choices.

The results of questionnaire showed that CK4Stim Project will be beneficial in terms of standardizing electrotherapy practices and creating a common language. As the level of knowledge, skills, management and attitude of physiotherapists’ increases, their confidence in the electrical stimulation approaches will increase and the tendency to use ES approaches in physiotherapy and rehabilitation programs and evidence-based studies including standardized ES approaches in the literature will increase day by day.

The target group of the CK4Stim project is all project stakeholders including the project team members, university teachers and students, clinical physiotherapists and mentors, high school students and teachers, public and private institutions, associations, individuals and general society. The objectives of the CK4Stim are classified depend on target groups of the project as follows:

### *For Academicians and University Students (BSc and especially MSc and PhD)*

- To create an innovative curriculum, open education resources (OERs), clinical application photos, a lecture guidebook.
- To encourage the application of ES approaches’ courses and outputs.
- To guide them to prioritize ES approach in their academic career planning.





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- To increase the scientific competencies with modules and guidebook.

### For Clinical Physiotherapist and Mentors

- To create a clinical needs report, a value chain extending from theoretical knowledge to clinical application.
- Life-long learning to increase vocational and job skills.
- To raise vocational awareness that standardized ES approach application is an issue that needs urgent action
- To obtain awareness about ES approaches

### For Project Partner

- To increase digital skills for education and training
- Developing new projects

### **Project Results:**

- An innovative curriculum
- Open education resources
- A lecture guidebook

### **CK4Stim Activities**

**Transnational Meetings:** 4 transnational meetings will be held respectively in Lithuania, Estonia, Türkiye (Ankara and Hatay).

**Information meetings:** Physiotherapists from the public and private sector, and academic will be invited.





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**International conference:** CK4Stim has an international conference which will be held by SDU in Isparta/TÜRKİYE. This event will be organized to present all the outcomes of the project.

**Social and vocational awareness activities:** 6 awareness activities will be carried out as multiplier events. Additionally, 1 short term student activity will be done in Estonia (THCC).

### **Project Partners:**

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You can follow and access the project outputs and news via our website:

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