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Novel trends in physiology towards individualized veterinarian education at the University Of Veterinary And Pharmaceutical Sciences Brno

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Abstract

Physiology is a very dynamic discipline and also physiology education should be flexible and creative. Moreover, specific needs of different faculties and individual requests of students should be taken into account. Customized materials in printed and electronic forms allowing for selecting and puzzling of knowledge seem extremely welcome. The presented project “Creative Approaches in Physiology Classes – Integrated Educatve Programs” aims to tackle the problem and provide novel study materials for veterinary students customized for the Faculty of Veterinary Medicine at UVPS Brno (Czech Republic).

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1. Main text

Physiology represents a dynamic discipline closely connected with medicine. As such it has a privilege of Nobel Prizes being annually awarded for important discoveries. To keep up with recent knowledge, education of physiology requests creative approaches. Moreover, physiology is a very broad

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discipline and therefore, selected chapters are emphasized at different faculties with respect to their specific needs.

![Project Logo](image)

**Fig. 1. Project logo**

University of Veterinary and Pharmaceutical Sciences (UVPS) Brno thanks to its Faculty of Veterinary Medicine is the only university within the Czech Republic providing veterinary education. Physiology is included among pre-clinical disciplines forming a background for further clinical education. Recently, the curriculum at the University has been innovated to respect overall current trends in veterinary education within Europe. The changes stem from current education needs for working opportunities of the graduated veterinarians. Due to increasing stress on clinical disciplines without an overload handicap for students, pre-clinical disciplines have been rescheduled. The students should pass their exams in anatomy already in the close of the first year and there is a semester overlap with histology along with physiology. To fit all these critical disciplines into the hour funds, the shortage in direct education based on student – teacher contact has been proposed. However the amount and content of knowledge must be maintained. To achieve these slightly controversial goals, indirect form of education (particularly self study) must be exploited. To make such approach effective, specific study materials must be provided for students. Specific study materials mean to be customized in several aspects. First, they must fulfill criteria of the university education thus providing the most recent knowledge. Second, they must be adapted for veterinarian students, thus working particularly with clinically important topics. And last but not least, they must be attractive for students to let them feel satisfied during studies. To tackle these aims, a project titled Creative Approaches in Physiology Classes – Integrated Educative Programs supported by the European funds (CZ.1.07/2.2.00/15.0252, Fig. 1) has started two years ago to be completed in 2014. The first step in the project was to get together specialists from different universities and research institutes to create a strong team and share expertise. To cover broader geographical region, the project gathers partners from the city of Brno and Olomouc, holding the oldest universities in Moravia (a historical part of the Czech Republic). The second step was to highlight essential issues for graduated students from the respective universities (including the UVPS) and to outline the customized materials. To
cover both, theoretical and practical education, an important goal of the project is to connect knowledge directly with hands-on experience, which means a direct application of theory into practice. To work in the proposed modular way, several approaches must be applied for material preparation thus creating presentations, text, pictures, figures, video-sequences and particularly their dynamic connections in interactive schemes along with protocols, interactive flowcharts, educative games, test of knowledge, glossaries etc. In the next step, the material must be tested in close cooperation with the students. Therefore, several pilot subprojects have been engaged to find the best way of topics presentation to students to build a solid background of physiology knowledge for their further learning particularly in pathological physiology and clinics. The last step will be the material finalization and its communication not only in printed but also in electronic versions.

In the latest academic year (2012/2013) the interest was focused on integration of theoretical and practical knowledge. The recent concept of physiology is based on the principle day-one skills modified for a week education (there is a maximum 20 students in each study group and more than 200 students to go through the course each week). The project proceeded according to recent syllabus of the discipline approved by the scientific board of the faculty and university. As in the new curriculum, practical program in physiology has been shortened, the project aims was adapted to this fact. In the first semester of the academic year, first creative materials were tested in the pilot project. The major chapters were: cellular physiology and application of modern approaches, such as organ explant cultures, physiology of blood and body fluids with a special focus on erythrocyte, leukocyte and thrombocyte complexes. First, the materials were prepared in a draft form and offered to students for self-study prior the practical course. The aim is to catch up the missing hour from shortened schedule by perfect preparation of students by studying of

Fig. 2. Physiology I - cover
methods and experimental design ahead the course. To see the level of understanding, two types of tests were applied. Test of knowledge was for the teacher to check the degree of preparation and ability to connect knowledge from the lectures with the practical course. The questionnaire was a chance for students to express their opinion about the prepared material and suggestions for modulation. In the second step of the pilot projects, the tests were evaluated, materials modified accordingly, consulted with other experts and issued in the final form. The first book, Physiology I – practical courses by E. Matalova et al. (2013) (Fig. 2), was issued under ISBN 978-80-263-0351-0 in February 2013 and was thus ready for the first year students following the new curriculum starting physiology in the second semester of the year 2012/2013. Along with the paper form, electronic version of the textbook was open free on the website together with accompanying material such as quizzes, games, and other forms of interactive e-learning. To prepare the second part of the book in time, the pilot part of the project was running simultaneously in the second year classes. Here, the attention was paid to physiology of systems, particularly cardiovascular, respiratory, digestive, excretion, inner secretion (endocrine), motoric and nervous. The second textbook, Physiology II – practical courses is due to be printed in September 2013 to be distributed by the start of the new academic year (and second semester of physiology according to the new curriculum). By the end of the project, two complex textbooks for veterinary students focused on theoretical background of physiology are expected to fit with the practical protocols and the website (http://kreativnifyziologie.upol.cz, Fig. 3) containing plenty of diverse study materials to be selected based on the preference and needs of the students.

Fig. 3. Project website
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