UNIVERSITY OF PRESOV

FACULTY OF SPORTS

Department of education

DISSERTATION THEMES TOPICS FOR DOCTORAL STUDIES AT THE FACULTY OF SPORTS PU IN PREŠOV IN THE ACADEMIC YEAR 2026/2027

FIELD OF STUDY: SPORT SCIENCES

STUDY PROGRAMME: SPORTS EDUCOLOGY

Supervisor: prof. PaedDr. Jaromír Sedláček, PhD.

E-mail contact: jaromir.sedlacek@unipo.sk

Topic 1: ***Effectiveness of the development of selected movement abilities in the conditions of school physical and sports education***

Annotation: The aim of the thesis will be to validate an experimental programme aimed at the development of selected motor skills in primary and secondary school pupils. The prerequisite is the inclusion of exercises, means and methods that will respect the age, gender and other characteristics of the probands. The intention will be to reveal not only specific effective exercises, but also their volume and intensity in microcycles and mesocycles of training.

Topic 2: ***Attitudes to the performance of physical activities as a determinant of the effectiveness of movement abilities development***

Annotation: The aim of this thesis will be to investigate the influence of attitudes on the performance of movement activities and consequently on the development of movement abilities. The task of the thesis will be to find out the level of probands' attitudes by questionnaire method and then to investigate the determination of the effectiveness of the experimental program on the development of movement abilities on selected groups of pupils, students or adult individuals.

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Supervisor: prof. PaedDr. Elena Bendíková, PhD. (external supervisor)

Department of Physical Education and Sport, The Faculty of Education,

The Catholic University in Ruzomberok

E-mail contact: elena.bendikova@ku.sk

Topic: ***Active school in terms of supporting health-oriented fitness of pupils with a focus on their postural health***

Annotation: The aim of the research reflects the current situation of a sedentary and hypokinetic lifestyle among the school population and focuses on improving pupils' health-oriented fitness, with particular emphasis on postural health, through the implementation of movement programmes and health-oriented exercises within the framework of an active school. The research is grounded in standardized methods and procedures. The addressed issue is expected to contribute new knowledge and enrich the field of sports educology.

Supervisor: doc. PaedDr. Tomáš Perič, Ph.D., Assoc. Prof.

E-mail contact: tomas.peric@unipo.sk

Topic 1: ***Cognitive processes as a determinant of sports performance in combat sports***

Annotation: The aim of the dissertation will be to determine the importance of cognitive processes for sports performance in combat sports. Selected cognitive processes will be used for own research - primarily complex reaction time, tracking multiple objects, anticipation of movement, choice of solutions. The experiment would follow a group of probands at the beginning of training in the chosen combat sport, and after three years their performance in the given combat sport would be evaluated. During these three years, the group would complete a standardized training program and the level of their cognitive processes would be continuously assessed. Testing in virtual reality will be used to obtain data on the level of cognitive processes, which, thanks to its fully digital environment, allows cognitive processes to be indicated in an environment close to a real match. In order to obtain data on sports performance, motor tests and an expert assessment of the conduct of a sports fight from a tactical point of view will be used.

Topic 2: ***The use of training in virtual reality for the development of cognitive processes in combat sports***

Annotation: The goal is to determine the impact of training intervention on selected aspects of tactical training in combat sports. From the point of view of focus, it would primarily be a complex reaction time, choosing a solution, tracking multiple objects. Three research groups would be involved in the experiment – one experimental and two control. The experimental group would complete a targeted program in virtual reality aimed at developing cognitive abilities. The first control group would undergo the same volume (as the experimental group) of theoretical training aimed at solving situations in the fight itself, the second control group would undergo training aimed at fitness (strength and endurance) development. Motor tests, expert assessment of the conduct of a sports fight from a tactical point of view will be used to collect data.

Topic 3: ***The use of training in virtual reality for the development of specific fitness training in combat sports***

Annotation: The goal is to determine the impact of training intervention on selected aspects of specific fitness training in half-time sports. From the point of view of focus, it would be primarily a specific speed strength and strength endurance training. Three research groups would be involved in the experiment – one experimental and two control. The experimental group would complete a targeted program in virtual reality focused on the development of specific speed-strength and power-endurance abilities. The first control group would undergo the same volume (as the experimental group) of training aimed at the non-specific development of speed skills, the second experimental group would undergo training aimed at the non-specific development of endurance skills. Specific motor tests, tests in virtual reality, evaluating selected motor cognitive processes will be used for data collection.

Supervisor: doc. PaedDr. Pavol Pivovarníček, PhD., Assoc. Prof.

E-mail contact: pavol.pivovarnicek@unipo.sk

Topic 1: ***Chronotype and Time of Day of Exercise as Determinants of the Adaptive Response to an Exercise Programme in the General Population***

Annotation: The aim of the research will be to determine whether the long-term effect (≥ 12 weeks) of a regular physical activity intervention on selected indicators of health-related fitness (cardiorespiratory fitness, muscular strength, muscular endurance, flexibility, and body composition), glycaemic and lipid markers, habitual physical activity, sleep quality, and lifestyle in the general population differs according to circadian preference (chronotype) and the time of day at which exercise is performed. The research design will be based on two parallel intervention groups, with one group undertaking the exercise programme in the morning and the other in the evening. Both groups will include participants with morning, intermediate and evening chronotypes. The intervention groups will not necessarily follow strictly identical exercise programmes; the research may also examine whether differently designed morning and evening programmes, in terms of content, volume, and intensity, produce different long-term adaptive effects across individual chronotypes. The findings may contribute to the individualisation of targeted physical loading in the areas of health promotion, prevention of lifestyle-related diseases, and education for a healthy lifestyle.

Supervisor: Mgr. Peter Bakalár, PhD., university Assoc. Prof.

E-mail contact: peter.bakalar@unipo.sk

Topic: ***An Evolutionary Approach to Outdoor Physical Activity: The Impact of Natural Environments on the Reward System and the Reversal of Evolutionary Mismatch Symptoms in Adults***

Annotation:This doctoral thesis will examine the low effectiveness of current health promotion strategies through the lens of evolutionary biology and the concept of evolutionary mismatch. The fundamental theoretical premise is that the human organism is not evolutionarily adapted to voluntary exercise as a form of prevention, but rather to movement that is either essential for survival or inherently rewarding (MacDonald et al., 2025). In a modern post-industrial

environment where the necessity of movement has been eliminated by technology, the dopamine pathways of the brain's reward system are suppressed, leading to chronic physical inactivity and the development of lifestyle diseases. The thesis will build upon findings showing that intensive intervention aimed at eliminating evolutionary mismatch can lead to a systemic restoration of metabolic health, manifested by a significant increase in cardiorespiratory fitness and the normalization of blood pressure (MacDonald et al., 2024). The primary objective of the research is to verify whether implementing a physical activity program in an outdoor environment (exposure to natural stimuli) can activate evolutionarily developed reward mechanisms more effectively than an indoor environment, thereby increasing intrinsic motivation and long-term adherence to movement. The methodology will include a systematic literature review following the PRISMA protocol and an experimental design with a control group registered in the ClinicalTrials database. The results of this thesis may provide an innovative framework for evolutionary public health, which, instead of "medicalizing" movement, builds upon its natural attractiveness within the context of the ancestral evolutionary environment.

In Prešov 20. 03. 2026

doc. PaedDr. Pavel Ružbarský, PhD., univer. prof.
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