Reasoning of dissertation topic and competency of potential supervisor for admission onto joint LSU and TU doctoral studies in 2021

Area of research (title and code)	Biomedical Sciences, Biology (01B)
Field of research (title and code)	Physiology B470
Topic of research	Exercise physiology
Institution	Lithuanian Sports University/Institute of Sport Science and Innovations

Potential supervisor

Pedagogical and scientific degree	**Name, surname**	**Academic position**
Assoc. prof. PhD	Eugenijus Trinkūnas	Researcher, Assoc. prof.

Short reasoning of proposed dissertation topic

Title

Adaptation to Differential Training Method Applied in Training of Young Athletes *(in Chosen Kind of Sport).*

Short research description (including aims and objectives) (maximum 1500 characters).

The achievements in elite sports highly depend on the quality of training process in young age. In scientific literature can find some contradictions to Classical Learning (CL) theory. The CL effect is based on, and notably characterized by, the phenomena of a diminished acquisition rate (=interference) and an increased learning rate. There has been renewed interest in the detailed structure of what is learned and the boundary conditions that foster motor learning and exercise performance. When the body is pushed up, there exists a threshold above which interaction between its components overtakes the outside interaction. Interrelation mechanisms of body systems and components' interactions are essential in determining how body functions as a whole as a complex dynamic adaptive system. An increased variance of the movements is a feature of Differential Learning methodology (DL). There was showed the greater effectivity of DL but each concreate kind of sport has its own peculiarities why this problem requires new specific scientific studies. The aim of the study is to identify the residual effects in body systems and their interactions while the training is based on the DL methodology.

Relevance of the problem, its novelty at national and international level (maximum 1500 characters).

Because the training process can be described by hysteresis principle, i.e. overdue effect of used training means, the training approach (Performance based training or Task based training) has an essential influence on the sports achievements of athletes. A lot of reviews point out that for the further development of these type of knowledge's is important to identify and follow-up of residual effects of specificity of training occurring while the various training approaches are compared. The obtained results will allow a deeper understanding of these principles and more specific applications of loads in athletes training, conditioning.

Research methods and possibilities for conducting these studies (maximum 1500 characters).

Applied research methods:

- Electrocardiography (*cardiovascular indices*);
- Dynamometry and ergonometry (*muscle performance*);
- Near-infrared spectroscopy (*tissue oxygenation*);
- Upper-Body Intermittent Sprint Performance Test (*anaerobic performance*);
- Lower-Body Intermittent Sprint Performance Test (*anaerobic performance*);
- Documentation and analysis of training workloads.

Please indicate the links between the proposed topic for the doctoral thesis and health promotion / physical therapy / sports study programs. The topic is closely linked to the sports study program.
Is the proposed topic for the doctoral thesis related to currently funded research projects? **NO**
Is the proposed topic for the doctoral thesis related to joint research with a foreign institution? **NO**

Currently I am supervisor of __0___ doctoral students.

Supervisor _____ (signature) Eugenijus Trinkūnas (Name, surname)

Date 30 April 2021