

Reasoning of dissertation topic and competency of potential supervisor for admission into LSU biology doctoral studies with a participation of Tartu university 2024

Area of research (title and code)	
Field of research (title and code)	
Topic of research	Biomedicine
Institution	Lithuanian Sport University

Potential supervisor

Pedagogical and scientific degree	Name, surname	Academic position
PhD	Aija Klavina	professor

Short reasoning of proposed dissertation topic

Title
The effect of aerobic exercise on physical health and quality of life of breast cancer survivors.
Short research description (including aims and objectives) (maximum 1500 characters).
<p>The primary aim of this study is to gain deeper understanding into molecular mechanisms behind the effect of different physical activity modalities on health risks factors related to recurrence of the breast cancer (BC).</p> <p>The specific objectives of the project are:</p> <ol style="list-style-type: none"> (1) To examine the physical capacity and quality of life in BC survivors (3-12 months after completion of the treatment) (2) identify the most effective and feasible modality of acute aerobic exercise in breast cancer (BC) survivors based on exercise-conditioned serum (ECS) induced anticarcinogenic effects (ACE) on BC cell behaviour in vitro. 3 different randomly assigned acute aerobic exercise modalities (REMs) of relatively short duration and negative control with wash-out periods of one week between each REM will be used to evaluate the impact of "exercise factors" on BC cell behaviour in vitro (3) To investigate the association between the daily physical activity level and quality of life. <p>NOTE: the aim and objectives might be modified for the doctoral dissertation according to the availability of research technology and research staff.</p>
Relevance of the problem, its novelty at national and international level (maximum 1500 characters).
<p>Although BC diseases constitute a major factor in mortality, there is still a restricted understanding of the fundamental mechanisms that drive recurrence of the BC. While the evidence on the effect of physical activity after diagnosis and treatment is associated with reduced risk of BC recurrence and/or improved survival, the association between different factors and parameters contributing beneficial effects are poorly understood. In particular, identifying characteristics of different strategies regarding the use of physical activity intervention after cancer treatment, can help identify the most beneficial PA modes for breast cancer survivors in long term. We aim to identify associations between measures of physical health (e.g., the physical activity modes, physical performance tests), quality of life and immune markers / secreted proteins in plasma in BC survivors, in order to assess the efficacy of exercise in prevention of BC recurrence and to elucidate the biomarkers describing this phenomenon. Understanding mechanisms underlying the development of recurrent BC, when these changes might still be reversed by interventions incorporating physical activity, is important for BC survivors, decrease in disease risks, increase survival rate, and improving the quality of life.</p>

