

**Reasoning of dissertation topic and competency of potential supervisor for admission into LSU biology doctoral studies with a participation of Tartu university 2023**

<b>Area of research (title and code)</b>	
<b>Field of research (title and code)</b>	
<b>Topic of research</b>	<b>Physiotherapy</b>
<b>Institution</b>	<b>LSU</b>

**Potential supervisor**

<b>Pedagogical and scientific degree</b>	<b>Name, surname</b>	<b>Academic position</b>
Assoc. Prof. dr.	Vilma Dudoniene	Director of physiotherapy study programme

**Short reasoning of proposed dissertation topic**

<b>Title</b>
<b>EFFECT OF WATER BASED EXERCISE ON QUALITY OF LIFE AND FUNCTIONAL STATUS IN ELDERLY</b>
<p><b>Short research description (including aims and objectives) (maximum 1500 characters).</b></p> <p>Different physiotherapy techniques (Bimanual therapy, Constraint induced movement therapy, Motor Relearning Program, task specific therapy, non-task exploration therapy) are applied to improve quality of life (QoL) and functioning in ageing persons. Aquatic therapy has been used to treat different diseases from the antique era.</p> <p>The aquatic environment has unique properties, such as buoyancy, turbulence, hydrostatic pressure and resistance that can be used to gain a range of exercise benefits. Buoyancy reduces body weight and helps people who have difficulties moving on land. Turbulent water can provide an environment for static and dynamic balance training with minimal risk of injury. Resistance is important for strength training in water. Aquatic therapy is applied widely in various therapeutic fields.</p> <p><b>Aim</b> of the thesis: to analyze the effects of water-based exercise on quality of life and functional status in elderly.</p> <p>The objectives:</p> <ol style="list-style-type: none"> <li>1. To measure QoL and functional status of study participants before (pre) applying land-based and water-based interventions.</li> <li>2. To measure QoL and functional status of study participants after (post) applying land-based and water-based interventions.</li> <li>3. To determine effectiveness (Cohen <i>d</i>) of applied interventions.</li> </ol>
<p><b>Relevance of the problem, its novelty at national and international level (maximum 1500 characters).</b></p> <p>Despite the widespread use of aqua therapy in rehabilitation, it is still unclear how effective it is in an ageing population.</p> <p>Question 1 – Can motor learning in the pool be beneficial for the tasks (up and go, functional reach, gait parameters, balance, muscle strength, functional independence) performed on land?</p> <p>Question 2 – Can water provide an enriched environment and speed up the recovery after traumas or prevent risk of falling?</p> <p>Question 3 – Is motor learning in the pool beneficial only for the pool tasks?</p> <p>Question 4 – Can aqua-aerobics (40-66% of HRR according to Karvonen) improve executive functions?</p> <p>There is not enough research at national level analyzing impact of water interventions on QoL and functioning in elderly. International studies are controversial, even they propose water-based interventions.</p>

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

Methods. Elderly people will be divided into two groups: Aqua therapy and Land therapy. Functional status at baseline and after different interventions (least 8 weeks of duration) will be evaluated using: Up and go test; Mini mental test; functional reach test; static and dynamic balance, muscle strength; cognitive functions, and functional independence tests. Procedures: Aqua therapy will combine elements of Aqua jogging, Halliwick, Watsu, Ai chi and Bad Ragaz Ring methods. Land therapy will be based on functional training and exercises performed on land. Expected outcomes: Aqua therapy is effective in improving QoL in ageing people. There are possibilities to conduct this research in Kasiadorys public Health center swimming pool or in sanatoriums having swimming pool.

**Is the proposed topic for the doctoral thesis related to currently funded research projects? Please indicate the links between the proposed topic for the doctoral thesis and funded research projects**

- No.

**Is the proposed topic for the doctoral thesis related to joint research with a foreign institution? Please indicate the links between the proposed topic for the doctoral thesis and research with a foreign institution**

Consultant Johan Lambeck - Association International Aquatic Therapy Faculty (IATF)

Waller, B., Ogonowska-Słodownik, A., Vitor, M., Rodionova, K., Lambeck, J., Heinonen, A., & Daly, D. (2016). The effect of aquatic exercise on physical functioning in the older adult: a systematic review with meta-analysis. *Age and ageing*, 45(5), 593-601.

Currently I am supervisor of \_\_\_1\_\_\_ doctoral students.

Supervisor

  
(signature)

Vilma Dudonienė

\_\_\_\_\_  
(Name, surname)

Date 2023 05 02

I agree to act in the function as consultant

Johan Lambeck

