

Reasoning of dissertation topic and competency of potential supervisor for admission onto joint LSU and TU doctoral studies in 2019

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|------------------------------------|----------------------------|
| Area of research (title and code) | Biomedical Sciences |
| Field of research (title and code) | Biology (01B) |
| Topic of research | |
| Institution | LSU |

Potential supervisor

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|-----------------------------------|-----------------|-------------------|
| Pedagogical and scientific degree | Name, surname | Academic position |
| Assoc. Professor, M.D. | Vilma Dudonienė | Assoc. Professor |

Short reasoning of proposed dissertation topic

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| Title |
| Effects of water therapy and swimming on cognitive functions (memory, attention, and executive functions) and on dual-task performance in elderly |
| Physical exercise has been reported to be the most effective method to improve cognitive function and brain health (Sato et al., 2014). Numerous studies have examined cardiovascular and musculoskeletal responses to aquatic physical therapy exercise, compared with land-based exercises with a focus on oxygen consumption, heart rate, pain, gait stride length and functional gain comparisons (Denning et al., 2012). It has been shown that healthy younger adults tend to make fewer listening errors while immersed chest-deep in thermoneutral water than on land; these same participants also tend to display less postural sway under dual-task conditions, compared with balancing alone, but had more postural sway in water than on land. This trend seems to be consistent when these tasks are performed by an older adult who displays mild cognitive impairment (Schaefer et al., 2016), but there is little research on the effect of water-based exercise on the cognitive functions and tasks performance in elderly. |

Vilma Dudonienė