

**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)  | Life Sciences |
| Field of research (title and code) | Biology       |
| Topic of research                  | Physiology    |
| Institution                        | LSU           |

**Potential supervisor**

| Pedagogical and scientific degree | Name, surname   | Academic position |
|-----------------------------------|-----------------|-------------------|
| Prof. Dr.                         | Tomas Venckūnas | Prof.             |

**Short reasoning of proposed dissertation topic**

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| <b>Title</b>   |
| Factors underlying changes in fitness during adulthood   |
| <p><b>Short research description (including aims and objectives) (maximum 1500 characters).</b><br/>           Overweight and poor physical fitness are among the leading underlying factors of deteriorating life quality in the industrialized societies. In the current study we aim to pin some of the crucial yet so far poorly recognized genetic and environmental factors contributing to improvement, maintenance or decline in physical fitness during early adulthood. With this follow-up study of healthy men recruited during 2009-2011 at LSU we hope to be able to dissect why some maintain while others improve or lose their fitness and lean body composition over the years. We also expect to detect some new candidate genes for further investigation, which finally could make into the risk profile for non-communicable diseases and help future generations to properly adjust lifestyle accordingly and to enjoy healthier adulthood and senescence.</p>  |
| <p><b>Relevance of the problem, its novelty at national and international level (maximum 1500 characters).</b><br/>           One of the major concerns of modern life is retaining physical fitness into adulthood and later years. Even if during childhood and adolescence inadequate physical fitness could not be a major burden and does not contribute much to health issues during adolescence, the lack of activity during early adulthood might predispose many individuals into a fast deterioration of their physical condition. It is not clear so far how deeply the engagement in sports during early years counteracts the decline in fitness over adulthood or helps delay the development of reduced physical health and fitness. Even though, compared to sedentary age-matched peers, findings in master athletes reveal the decline in fitness happens in absolute terms at an even faster rate during ageing despite continuous sports participation (Tanak et al., 1998; Pearson et al., 2002; Bagley et al. 2019: PMID: 30742335;), the result may still be a later crossing of the disability threshold (illustrated in Degens 2019, 2024; also see Videman et al. 1995: PMID: 7604346.).</p> |