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### **Prof. dr. Aldo Scafoglieri, Promoter**

Experimental Anatomy (EXAN) & Research Group Frailty in Ageing (FRIA)  
Vrije Universiteit Brussel

### **Prof. dr. Bart Jansen, Promoter**

Department of Electronics and Informatics (ETRO)  
Vrije Universiteit Brussel



PhD in Gerontology  
2020-2021

INVITATION to the Public defence of

## **Veerle KNOOP**

To obtain the academic degree of '**DOCTOR OF GERONTOLOGY**'

## **THE ROLE OF MUSCLE FATIGABILITY AND SELF-PERCEIVED FATIGUE IN THE DEVELOPMENT OF FRAILTY IN THE OLDEST OLD**

The defence will take place on **Monday, 30 August 2021 at 5 p.m.**

and will be organised online

via Zoom meeting, accessible through the following link:

[https://gf.vub.ac.be/redirects/PhD\\_defense\\_Veerle\\_Knoop.php](https://gf.vub.ac.be/redirects/PhD_defense_Veerle_Knoop.php)

and in Auditorium Piet Brouwer

Faculty of Medicine and Pharmacy, Laarbeeklaan 103, 1090 Brussel

**ADMITTANCE** to the auditorium will only be granted upon presentation of the personal invitation from the PhD candidate

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## Summary of the dissertation

Identifying early characteristics for frailty and for the decline in intrinsic capacity may help clinicians to understand the complex health needs and priorities of older people as well as trigger tailored actions to promote healthy aging. Frailty and the decline in intrinsic capacity are one of the most prominent barriers to healthy ageing. Fatigue (existing of muscle fatigability and self-perceived fatigue) is a common complaint among older adults and might also be a parameter reflecting the decline in intrinsic capacity, leading to an increased risk for frailty. Therefore, this PhD thesis aimed to investigate the role of self-perceived fatigue and muscle fatigability in the development of frailty in community-dwelling older adults. To this end, we explored the role of fatigue in frailty scales and the association of fatigue with adverse health outcomes in two systematic literature reviews. The four explorative studies in this thesis focused on the combination of muscle fatigability and self-perceived fatigue associated with frailty, intrinsic capacity and inflammation in middle-aged and older adults aged 80 and over. The results showed that inclusion of muscle fatigability and self-perceived fatigue in frailty screening is recommended since it allows clinicians to identify pre-frailty earlier. This thesis indicated that older adults with increased self-perceived fatigue in combination with increased muscle fatigability represent a clinical subgroup expressed by reduced physiological reserve capacity, which comes to expression by the means of frailty. Based on the results described in this doctoral thesis it can be concluded that there is a significant role of muscle fatigability and self-perceived fatigue in the development of frailty in the oldest old which should not be neglected by clinicians.

## Curriculum Vitae

Veerle Knoop was born in Beuningen, The Netherlands, on the 20th of June 1990. In 2011 she obtained her BSc in physiotherapy at the Hogeschool van Arnhem en Nijmegen (HAN). After graduating, she started working in a physiotherapy practice in Beuningen and after that she moved to Cambodia where she worked for 1.5 year as all-round physiotherapist in a physiotherapy clinic in Phnom Penh. In 2014 she moved to Belgium and started the Master Management, Zorg en Beleid in de Gerontologie at the Vrije Universiteit Brussel (VUB) and she graduated in 2016 as gerontologist. During her masters, she started working as a job student in the Brussels Study on the Early Predictors of Frailty (BUTTERFLY) at the VUB. After graduating she continued working at the VUB as a research assistant in two large experimental studies. This work as research assistant sparked her interest in research and she started in June 2017 as a PhD researcher at the FRIA-research group. She stated a PhD project which is titled "The role of muscle fatigability and self-perceived fatigue in the development of frailty in the oldest old" under supervision of Prof. Dr. Ivan Bautmans, Prof. Dr. Aldo Scafoglieri and Prof. Bart Jansen. During her PhD trajectory, Veerle also worked as a teacher in the Master Physiotherapy in geriatrics department at SOMT University of Physiotherapy, where she is responsible for teaching and supervising Master theses. Veerle Knoop is author of six peer reviewed publications, of which one as shared first author. Three manuscripts are already published, two manuscripts are currently submitted, and one is under review.