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Vrije Universiteit Brussel



PhD in Gerontological Sciences  
2017-2018

INVITATION to the Public defence of

## Hung CAO DINH

To obtain the academic degree of '**DOCTOR IN GERONTOLOGICAL SCIENCES**'

## Immunosenescence, pre-frailty and impact of exercise in older persons.

**Tuesday 11 September 2018**

Auditorium **Piet Brouwer**, 17:00

Faculty of Medicine and Pharmacy, Laarbeeklaan 103, 1090 Brussel

How to reach the campus Jette:

<http://www.vub.ac.be/english/infoabout/campuses>

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## Summary of the dissertation

Ageing process may result in a progressive decline in the immune response, known as immunosenescence (IS) which increases the susceptibility of elderly persons to infection, autoimmune disease, and cancer. With advancing age, naive T-cells are gradually being replaced by senescent phenotypes. Frailty is a geriatric syndrome characterized by a state of increased vulnerability at higher age. IS as been implicate in Cytomegalovirus (CMV) infection can exacerbate T-cell senescence and promote IS. However, little is known regarding the effects of CMV in mediating frailty. Physical exercise is being considered as a safe countermeasure against IS in the older persons. One hundred older women (> 65 years) were randomized to 2-3 times/weekly training for 6 weeks at either intensive strength (IST: 3x10 repetitions at 80% 1RM, n=31), strength endurance (SET: 2x30 repetitions at 40% 1RM, n=33), or flexibility (control, n=36) training. 6 weeks of SET decreased significantly the percentage and absolute blood count of senescence-prone T-cells in older women. When taking CMV into consideration, SET significantly decreased senescence-prone T-cells along with a concomitant increase in the naive T-cells in CMV-seropositives but not CMV-seronegatives. In 173 persons aged 80 to 99 years, pre-frailty does not require the CMV infection as a necessary factor for its development in the very old. In conclusion, strength endurance training has an anti-IS effect following 6 weeks of training in older women. In addition, CMV-serostatus plays a significant role in the immune adaptation in response to physical exercise. The presence of pre-frailty was independent from CMV infection in the very old. Exercise should be encouraged, particularly for the older adults with compromised immune system.

## Curriculum Vitae

Hung Cao Dinh was born in Ho Chi Minh city, Vietnam, on the 5<sup>th</sup> of June 1982. He finished secondary school in 2000 and studied medicine at the Training Center for Health Care Managers Ho Chi Minh City, Vietnam. After graduation in 2006, he went to the University of Medicine and Pharmacy in Ho Chi Minh city for his study as Geriatric Internist. He got the Certificate of Internal Medicine with specialization in geriatrics in 2009. From 2010, he started working as a lecturer at the University of Medicine Pham Ngoc Thach Ho Chi Minh city, Vietnam. During that time, he participated in the Geriatric Association of Ho Chi Minh city, Vietnam and became a member of executive committee of the geriatric association in Ho Chi Minh City. In January 2013, he obtained a scholarship from the People's Committee of Hochiminh City, Vietnam to pursuit his PhD study in Belgium. In September 2013, he came to Brussels and enrolled as a PhD student at the Vrije Universiteit Brussel. He worked at the Frailty in Ageing Research Group under supervision of prof. Dr. Rose Njemini and prof. Dr. Ivan Bautmans. His research activities focused on investigating the effect of exercise on immunosenescence in older persons enrolled in the SPRINT project. He also contributed to the BUTTERFLY study where he explored the relationship between pre-frailty and cellular markers of immunosenescence. He became a scientific member of Belgian Ageing Muscle Society from 14th December 2018. He published his work in **Calcified tissue international** and in **The journals of Gerontology**.