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# MASTERARBEIT / MASTER'S THESIS

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„The effects of resistance training and Vitamin D on DNA  
damage and age markers in elderly people“

verfasst von / submitted by  
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## Introduction

As we age, we observe a substantial loss of muscle tissue, accumulation of fat tissue and a decrease in physical activity, leading to a negative feedback loop for the onset of non-communicable diseases, increase in DALYs and ultimately to premature death. Numerous comparisons between former athletes and the general population were able to show, that athletic individuals live a longer life, thus allowing for the assumption that physical activity can influence the process of aging positively (1,2).

Senescence and ageing display a loss of function of different cell types and the accumulation of damage, which could be physiologically, physically and/or psychologically caused by smoking, alcohol or other lifestyle factors (3).

There are multiple preventive measures to slow these processes down and keep functions that are required to live autonomously.

In 2015, 1.2 million citizens died prematurely in the EU and in 2016 790.000 people died prematurely based on unhealthy lifestyle factors, such as tobacco smoking or physical inactivity (4,5).

In this thesis, the outcomes of the “NutriAging vitamin D” project at the University of Vienna and the Comenius University in Bratislava will be presented. The results of the cytokinesis-block micronucleus cytome assay (CBMN-assay) will be discussed more detailed. The main goal of the study was to investigate the effect of different dosing routines of vitamin D supplementation on wellbeing, strength performance and DNA damage markers in healthy adults aged 65 to 85 years (6).

Furthermore, this thesis includes a chapter for novice teams that are learning the CBMN-assay and are seeking information to increase proficiency in this method and reduce potential pitfalls.

Die Arbeit wurde im Rahmen der Nutriaging Studie durchgeführt, welche als EU-Projekt von INTERREG SK-AT gefördert wurde.