



**Subjective well-being in old age and its
association with biochemical and genetic biomarkers
and with physical activity**

av

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Akademisk avhandling

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Abstract

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The aim of this thesis was to study subjective well-being (SWB) in a group of active retired seniors and the impact of physical activity (PA) and somatic health and on SWB in old age. Biomarkers were used as proxy for somatic health. Two cohorts of seniors were studied: the Active seniors (AS) which consisted of seniors engaged in social activities, and the DGM cohort, subjects referred to the hospital's memory unit for suspected cognitive problems. Mean age was 74 years in both cohorts.

To assess SWB we used the psychological general wellbeing Index (PGWB Index). The AS cohort had a high SWB, barely 6% fell into the lowest SWB category. The DGM subjects had worse SWB than the AS. 17% belonged to the lowest category. None of the tested biomarkers of somatic health were independently related to SWB except biomarkers for renal function. After adjusting for age and sex only cystatin C remained related to SWB in AS women.

To study PA we modified a well-established instrument to assess PA, the International Physical Activity Questionnaire (IPAQ), to be more suited to persons over 65. The new instrument was validated. The outcome from the questionnaire is classified as Low, Moderate, or High PA. The participants in the AS cohort were highly active, 32% of the participants achieved moderate PA and 53% high PA according to IPAQ-E.

A common polymorphism in the *COMT* gene (rs 4680), a determinant of the rate of elimination of dopamine and noradrenaline, had a large influence on SWB in male carriers of the *COMT* 158Met allele, these had better SWB than those carrying the ancestral allele, *COMT* 158Val/Val. There was also a strong interaction between *COMT* genotype, PA, and SWB in the men.

In this study we found that somatic health assessed by commonly used biomarkers seems to play a minor role as a determinant of SWB with one exception. Cystatin C, a marker for renal function, showed a relationship to SWB in AS. PA shows a stronger relation to SWB than tested biomarkers and in active retired men *COMT* genotype also has a major influence on SWB.

Keywords: Subjective well-being, Physical activity, Biomarker, Cystatin C, *COMT*, Cognition, Old age,

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