

### **Frailty and mortality: Sex differences and socioeconomic influences in Swedish twins**

Malin Ericsson, Nancy L Pedersen, Ralf Kuja-Halkola, Miriam Mosing, and Juulia Jylhävä  
Karolinska Institutet; Stefan Fors, Karolinska Institutet & Stockholm University; Anna Dahl Aslan,  
University of Jönköping

Frailty is a construct that captures the general health condition of an individual and is strongly associated with mortality. The prevalence of frailty is not equally distributed within the aging population, and socioeconomic factors, sex, and genetic influences are suggested to be important in the development of frailty. We used data from the Screening Across the Lifespan Twin study (SALT) which included Swedish twins born 1886–1958 linked to the Cause of Death Register. The final sample ( $n = 43,636$ ) was restricted to participants with available data to create the Frailty Index (FI). Linear regression was used to estimate the effect of social class on frailty. Cox regression was applied to investigate social class influences on mortality risk by level of frailty. All models were stratified by sex. Co-twin control methods were used to evaluate familial and genetic confounding. We found a clear negative association between social class and frailty which was stronger for women than for men. In the co-twin control analyses, the effect remained similar for men, but for women, the within-pair effect was strongly attenuated. Mortality followed a socioeconomic gradient which was larger with a higher degree of frailty. In co-twin control analyses, using monozygotic pairs this association was not evident. Our results indicate that the relationship between social class and frailty may be attributed to familial confounding for women, but not for men. However, the social gradient in mortality risk, which was higher in more severe levels of frailty, reflected familial confounding for both men and women.