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UCP3 POLYMORPHISMS, HAND GRIP PERFORMANCE AND SURVIVAL AT OLD AGE

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Uncoupling proteins, hand grip, longevity

An efficient uncoupling process is generally considered to have a protective effect on the aging muscle by slowing down its age-related decay. Genetic polymorphisms in the Uncoupling Protein 3 (*UCP3)* gene, whose product is mainly expressed in skeletal muscle, were suggested to be associated with hand grip performances in elderly populations. In our work, we aimed to add further support to this evidence by analyzing the correlation between four SNPs in the *UCP3* gene and relative haplotypes, in two large cohorts of middle aged and oldest old Danes (N=1616). We found that the variability at two SNPs significantly influenced hand grip performance in both cohorts. Consistently, SNP combinations including significant alleles in single-locus analysis resulted in different haplotypic associations with hand grip performance. Finally, taking advantage of large cohort and period survival data of the oldest cohort, we tested the association of each SNP with survival at 10 years from the baseline visit. Interestingly, we found that alleles associated with hand grip scores showed differential survival patterns, with people carrying the allele negatively influencing hand grip phenotype showing also higher mortality in our oldest cohort. On the whole, our work supports the role of *UCP3* gene in functional status and survival at old age.