

# Chronotype, bed timing and total sleep time in seniors.

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## Abstract

Many older adults (seniors) experience problems with getting enough sleep. Because of the link between sleep and circadian rhythms, changes in bedtime lead to changes in the amount of sleep obtained. Although primarily determined genetically, chronotype changes with advancing age towards a more morning-type (M-type) orientation. In a 2006 study, we have found a linear relationship, by which the earlier a senior's bedtime, the more sleep she/he will obtain. The aim of this study was to see whether this relationship differs for M-type seniors, as compared to seniors outside the M-type category. Retired seniors (n = 954, 535 M, 410F, 65 years+, mean age 74.4 years) taking part in a telephone interview were divided into M-types and Other types (O-types) using the Composite Scale of Morningness (CSM). The relationship between bedtime and Total Sleep Time (TST), and between rise-time and TST, was tested using linear regression separately for M-types and O-types. For each participant, habitual bedtime, rise-time and total Sleep Time (TST) [after removing time spent in unwanted wakefulness] were obtained using a telephone version of the Sleep Timing Questionnaire (STQ). Both chronotype groups showed a significant linear relationship between bedtime and TST ( $p < 0.001$ ); with earlier bedtimes leading to more TST (M-type 5.6 min; O-type 4.4 min per 10 min change [slope difference  $p = 0.05$ ]); and an opposite relationship between rise-time and TST with earlier rise-times leading to less TST (M-type 6.7 min; O-type 4.2 min per 10 min change [slope difference  $p = 0.001$ ]). M-types retired to bed 56 min earlier ( $p < 0.001$ ), awoke 93 min earlier ( $p < 0.001$ ) and obtained 23 min less TST ( $p < 0.001$ ) than O-types. In conclusion, both chronotypes showed TST to be related in a linear way to bedtime and rise-time; the overall shorter TST in M-types was due to them rising 93 min earlier, but only retiring to bed 56 min earlier than O-types; as well as having a steeper rise-time versus TST relationship.

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