A 10 YEAR SPAN REGULAR SPORT ACTIVITY PREVENTS RHYTHMS' DESYNCHRONIZATION OF ORAL TEMPERATURE AND BOTH HAND GRIP STRENGTH IN NIGHT WORKERS

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Introduction and objectives. Is the regular practice of sport (1h / 4 times a week / 10 year span) able to prevent and/or avoid desynchronizations (respective rhythms' period [τ] differing from 24h) of car industry night workers (5 night shifts per week, from 22:30h to 05:30h; nights off: Friday and Saturday).
Methods. Subjects: 16 Caucasian males volunteered for the study. Two groups of 8 were formed with a sport activity present in the "sportsmen" and absent in the "sedentary" group. There was no group - related difference regarding age, weight, height, chronotype, seniority in night work (≅ a 10 year span), no tobacco smoking, no intake of drug, no or very limited intake of alcohol. None of the subjects suffered from intolerance to shift work. However, BMI was larger and VO2 max smaller in sedentary group than in sportsmen. **Data gathering and recording**: Sleep log and actigraphy recording (Δt=1min) were used to document continuous sleep wake rhythm during a 5 day span. Under standardized conditions over a 9 day span, oral temperature was self recorded, and right and left hand grip strength were self assessed (hand dynamometer). Six test times took place at fixed clock hours, namely: 22:30h – 01:00h – 03:00h – 05:30h, ≅14:00h +/- 1h (1 h post sleep awakening) as well as ≅ 17:00h +/- 1h. **Statistical analysis**: *t*-test, ANOVA, correlation, have been used, in addition to Cosinor and several methods for spectral analyses.
Results. τ of the activity rest rhythm was ≅ 24h with no statistically significant group difference. A 12h ultradian component was also validated in sedentary night workers. No group difference was validated in the wrist movement rhythm with regard to both the 24h mean [M] and the amplitude [A]. τ of the oral temperature rhythm was 24.59h +/-0.93 (SD) in the sportsmen group and smaller (17.14 +/-3.13 (SD)) in the sedentary group. Changes in τ are correlated with change in rhythm amplitude [A]: The greater the τ the larger the A. τ of the grip strength rhythm was shorter on the left (non dominant) hand with regard to the right one in 5 / 8 sportsmen and in 6 / 8 sedentary night workers. In sportsmen the grip strength τ of both hands does not differ from 24h (Right hand τ = 24.01h +/- 2.32 (SD) – Left hand τ = 23.65 +/- 0.97 (SD)) while in sedentary night workers both hands grip strength τ was shorter than 24h, as well as shorter for the left with regard to the right hand (Right hand τ = 20.36h +/- 2.32 (SD) – Left hand τ = 18.03h+/- 2.31 (SD)).
Conclusion. It is likely that, in night workers, a rather long sustained sport activity prevents the desynchronization of the oral temperature rhythm as well as those of dominant and non dominant hand grip strength with reference to a rather similar group of sedentary night workers operating in the same industry.
Keywords. Rhythms' desynchronization. Shift work. Sport. Oral Temperature. Grip Strength.