

## CP-MH09 Health and fitness III - Sleep and mixed

### INFLUENCE OF BEHAVIORAL RESTRICTIONS DUE TO CORONAVIRUS DISEASE ON SLEEP PATTERNS AND MENTAL HEALTH IN JAPANESE UNIVERSITY STUDENTS

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#### INTRODUCTION:

On March 11, 2020, the World Health Organization declared coronavirus disease (COVID-19) a global pandemic. This infectious disease is not only a severe public health issue, but it also significantly impacts health, educational, and social aspects. It can be easily inferred that COVID-19 has a great influence on the physical activity, sleep habits, and mental health of university students. Thus, we examined the influence of behavioral restrictions due to COVID-19 on sleep patterns and mental health in first-year university students.

#### METHODS:

Four hundred and twenty-two first-year university students (253 males and 169 females; age,  $18.7 \pm 1.0$  y) participated in our questionnaire study. Under the behavioral restrictions condition due to COVID-19, 193 students (127 males and 66 females) responded to the questionnaire online from home. They did not visit the university during this period. The data acquired the year before the COVID-19 pandemic (2018 and 2019) were used as the control data (126 male and 103 female). The questionnaire consisted of the following four sections: 1) demographic and lifestyle variables, 2) the Pittsburgh Sleep Quality Index (PSQI) [1], 3) the Japanese version of the Epworth Sleepiness Scale (JESS) [2], and 4) the Patient Health Questionnaire-9 (PHQ-9) [3].

#### RESULTS:

Under the behavioral restrictions condition, the PHQ-9, JESS, and PSQI scores were significantly higher than those under the normal condition. Furthermore, these results were similar for both male and female students. The results of this study indicated that university students had better mental health and sleep patterns under behavioral restrictions due to COVID-19.

#### CONCLUSION:

Our results, unlike the results of many previous studies, show that mental health and sleep patterns are improved under behavioral restrictions due to COVID-19 in Japanese university students. It can be inferred that physical activity at night, part-time work, and long commuting times under the normal environment have an effect on these results.

#### REFERENCES:

- 1) Doi et al., *Psychiatry Res*, 2000
- 2) Takegami et al., *Sleep Med*, 2009
- 3) Muramatsu et al., *Gen Hosp Psychiatry*, 2018

### THE ACTIV-PROJECT: SELF-RATED EXERCISE INTENSITY OF 86,514 FEMALE AND MALE RUNNERS AGED 18-64 YRS

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#### INTRODUCTION:

Training induces adaptations and improvements of health and physical performance. It counteracts negative changes caused by lifestyle and certain impairments in consequence of biological ageing (1). Changes restricting performance often begin as early as young adulthood (2). Training parameters like volume and intensity are key indicators for the adaptive outcome. The survey of regularly trained runners examines health factors, training habits, and analyses associations to subjective ratings of training intensity (3).

#### METHODS:

The nationwide survey ([www.dshs-koeln.de/activ](http://www.dshs-koeln.de/activ)) gathers data from runners registering for running events organized in the GRR e.V. Survey data are obtained by a scaled questionnaire covering i. a. health and anthropometric parameters, life-style indications, and normative data of training. Subjects quantified how often they push themselves to physical limits while training ("exercise intensity") by using a 10-point-Likert-scale ranging from one ("almost never") to ten ("almost always"). A subsample of 86,514 cases from more than 190,000 complete datasets was extracted. Selection criterions were: (1) age from 18 to 64 years, (2) experience of regular running training of at least two years, and (3) a minimal weekly training volume of 10 km.

#### RESULTS:

Data of 56,247 male (m) and 30,267 female (f) runners (age:  $42.6 \pm 10.7$  vs.  $39.1 \pm 10.8$  years; training volume  $34.6 \pm 17.9$  vs.  $29.1 \pm 15.0$  km/week; years of running training:  $9.2 \pm 8.9$  vs.  $7.2 \pm 7.0$ ) were analyzed. Two-way ANOVA exposes linearly sinking exercise intensity between age groups from 18 to 64 years from  $6.8 \pm 12.7$  to  $4.9 \pm 16.8$  units ( $F(46, 86,232) = 81$ ;  $p < 0.001$ ) and also a minor sex-related difference:  $5.75 \pm 1.9$  (m) vs.  $5.55 \pm 1.9$  (f) ( $F(1, 86,232) = 400$ ;  $p < 0.001$ ). Regression analyses of intensity confirmed age (standardized beta:  $-0.20$ ;  $p < 0.001$ ) as main independent predictor followed by sex and marathon experience (each beta:  $-0.08$ ,  $p < 0.001$ ) as weaker factors. No effective association exists with health resp. medical risk factors (beta:  $-0.02$ ;  $p < 0.001$ ).

#### CONCLUSION:

The interpretation of these results and all drawn conclusions are subject to the well-known constraints of cross-sectional approaches concerning causality. However, the clear association between self-rated exercise intensity and age suggests that ability and readiness to realize high loads and to tolerate strain in runners consistently sink with age and the process begins early in life. Age- or biologic-related intrinsic factors may slowly attenuate the affinity, initial drive and motivation for high intensity activities. Therefore, the specific application of high-intensity loads (e.g. HIIT, cross-fit®) is recommended to maintain willingness to achieve and for the prevention of premature loss of physical performance.

#### References

1. Leyk et al. (2010) *Dtsch Arztebl Int* 107(46) 809-816
2. Leyk et al. (2012) *Dtsch Arztebl Int* 109(44) 737-745
3. Rütther et al. (2020) *Book of Abstracts ICSPP 2020*, 146