

2002). In the context of optimising performance capacity, this area is only beginning to be addressed by scholars in the field of music. However, research in this field has not adequately addressed the detrimental effects of chronic low-grade sleep deprivation on musical learning and performance.

Materials and Methods: The empirical testing of musical skills has long been problematic. This is due to elements of subjectivity that are present to varying degrees throughout the assessment process. This paper relies upon a combination of established best practices and novel techniques to introduce and develop a new battery of tests designed to quantitatively measure musical ability in three key areas: rhythmic stability, sight-reading, and memorisation. Freshly conceived testing protocols and materials designed to minimise subjectivity in scoring have been incorporated, as have measures to reduce confounding factors. This new battery of tests includes elements drawn from assessment tools as old as the Watkins-Farnum Performance Scale, which was published in 1954, to modern technology such as Korg's BEATLAB Rhythm Trainer, the first iteration of which was produced in 2016. In the case of musical memorisation, recent research developed in non-musical disciplines has been re-purposed and adapted for application in musical research. This new collection of tests and protocols better aligns with the goal of empirically measuring important musical skill sets. It does this whilst minimising the need for expensive and cumbersome equipment. Sleep stages and other parameters of sleep will be tracked with the recently validated Somnofy system (Toften, 2020).

Results: Validation trials are currently underway with promising preliminary results.

Conclusions: Filling the current gap in knowledge within the fields of sleep research and music and the quantification of the role sleep has on musical skill acquisition has the potential to contribute to the way sleep researchers understand the impact sleep has on human performance, and revolutionise the way music students approach their learning, music educators optimise their teaching, and professional performers execute their concerts.

Acknowledgments:

Toften, S., Pallesen, S., Hrozanova, M., Moen, F., & Gronli, J. (2020). Validation of sleep stage classification using non-contact radar technology and machine learning. *Sleep Learning*, 75, 54–61

Walker, M.P., Brakefield, T., Morgan, A., Hobson, J.A., & Stickgold, R. (2002). Practice with sleep makes perfect: sleep-dependent motor skill learning. *Neuron*, 35(1), 205–211.

SLEEP DISORDERS AND AWARENESS OF CARDIOVASCULAR PREVENTIVE MEASURES IN GENERAL POPULATION AGED 25–64 YEARS IN RUSSIA/SIBERIA: WHO INTERNATIONAL PROGRAM MONICA-PSYCHOSOCIAL

V. Gafarova¹, E. Gromova¹, D. Panov¹, I. Gagulin¹, A. Tripelhorn¹, A. Gafarova¹. ¹Institute of Internal and Preventive Medicine, Branch of Institute of Cytology and Genetics RAS, Collaborative laboratory of Cardiovascular Diseases Epidemiology, Novosibirsk, Russian Federation

Objective: to establish associations of awareness and attitude towards cardiovascular diseases (CVDs) prevention in people with sleep disorders in an open population of Novosibirsk aged 25–64 years.

Materials and Methods: We carried out screening surveys of representative samples of the 25–64 years old population: in 2013–2016 – V screening (427 men, mean age – 34±0.4 years, response rate – 71%; 548 women, mean age – 35±0.4 years, response rate – 72%); in 2015–2018 – VI screening (275 men, mean age – 49±0.4 years, response rate – 72%; 390 women, mean age – 45±0.4 years, response rate – 75%) using the protocol of the WHO international program «MONICA-psychosocial». Jenkins sleep evaluation questionnaire was used to evaluate sleep disorders.

Results: Participants with sleep disorders believed that they were «not entirely healthy» (men – 65.5%, $\chi^2 = 57.825$, $df=8$, $p<0.001$ and women – 69.6%, $\chi^2 = 96.883$, $df=4$, $p<0.001$); had health related complaints (men – 78.2%, $\chi^2 = 24.179$, $df=2$, $p<0.001$ and women – 85.2%, $\chi^2 = 55.144$, $df=2$, $p<0.001$), and clearly did not care enough about their health (men – 32.7%, $\chi^2 = 29.31$, $df=4$, $p<0.001$ and women – 34.1%, $\chi^2 = 28.116$, $df=4$, $p<0.001$). Men with sleep disorders more often assumed that they were

more likely to get a serious illness within the next 5–10 years ($\chi^2 = 12.976$, $df=4$, $p<0.01$). Participants with sleep disorders were confident that modern medicine can prevent (men – 10.9%, $\chi^2 = 19.079$, $df=2$, $p<0.001$ and women – 13.3%, $\chi^2 = 21.944$, $df=2$, $p<0.01$) and successfully treat (men – 3.6%, $\chi^2 = 24.142$, $df=8$, $p<0.01$ and women – 3.7%, $\chi^2 = 15.538$, $df=8$, $p<0.05$) only some heart diseases. Men and women with sleep disorders are more likely to seek medical attention in case of severe pain or discomfort in the heart area, but do not seek medical advice if this pain or unpleasant sensation is mild (men – 63.6%, $\chi^2 = 14.867$, $df=6$, $p<0.05$ and women – 60%, $\chi^2 = 17.872$, $df=6$, $p<0.01$). Among the participants with sleep disorders men more often believe that the doctor «knows more than me» (36.4%), and women (48.1%) chose an answer: «I will not necessarily agree with the opinion of the doctor after a general examination, until a thorough evaluation has been carried out by specialists» ($\chi^2 = 5.917$, $df=2$, $p<0.05$). Women with sleep disorders were more likely to continue to work if they did not feel very well (54.1%, $\chi^2 = 12.455$, $df=4$, $p<0.05$) or their body temperature rose (37.8%, $\chi^2 = 12.937$, $df=4$, $p<0.05$).

Conclusions: Persons with sleep disorders generally have a more negative attitude towards their health and are skeptical about the possibilities of modern medicine to prevent and treat CVDs, which is reflected in their attitude to work and preventive check-ups.

SLEEP DISORDERS IN ADULTS WITH TUBEROUS SCLEROSIS COMPLEX: A QUESTIONNAIRE-BASED STUDY

R. Moavero¹, A. Voci¹, A. Romigi², F. Bisulli³, C. Luisi⁴, F. Vigeveno⁵, L. Mazzone¹, M. Valeriani⁵, P. Curatolo¹, O. Bruni⁶. ¹Tor Vergata University of Rome, Rome, Italy; ²Neuromed IRCCS, Pozzilli (IS), Italy; ³Bologna University, Bologna, Italy; ⁴University of Padova, Padova, Italy; ⁵Bambino Gesù Children's Hospital, Roma, Italy; ⁶La Sapienza University of Rome, Rome, Italy

Introduction: Tuberous Sclerosis Complex (TSC) is a rare systemic disease with an almost constant neurological involvement, and in which epilepsy and TSC-associated neuropsychiatric manifestations (TAND) represent the major burden. Also sleep disorders (SD) are highly prevalent, yet still largely under-recognized and under-treated. The objective of this study was to assess the prevalence of SD in adult patients with TSC, and to evaluate the relationship between sleep, epilepsy and TAND.

Materials and Methods: we administered Pittsburgh Sleep Quality (PSQI) and Insomnia Severity Index (ISI) to adult patients referring to different Italian centers. We also collected information on epilepsy and TAND.

Results: We analyzed 114 questionnaires (mean age 31.7 years). An epilepsy diagnosis was reported by 82.3%, with persistent seizures in 67.7% of them. At least one TAND was reported by 73.4% of participants. An existing SD diagnosis was reported by 24 subjects (21.2%).

PSQI and ISI revealed a positive score, respectively, in 52 (46.0%) and 30 patients (26.5%).

PSQI was positive in 26.7% seizure free patients versus 61.9% patients with active epilepsy ($p=0.003$), and the association remained significant ($p=0.01$) even applying a multivariate logistic model considering age, antiseizure medications (ASM), TAND and nocturnal epileptic seizures. ISI positive scores have been detected in 1/30 (3.3%) seizure free patients and in 26/63 (41.3%) of those with persistence of seizures ($p=0.0004$). This association was also confirmed by a univariate logistic regression analysis, estimating that active seizures increased the risk of having a positive ISI score ($p=0.004$, $OR=3.01$). After adding in a multivariate logistic model the independent variables listed above, the association remained significant ($p=0.007$, $OR=2.98$).

PSQI was positive in 43/83 patients (51.8%) with the presence of TAND and in 9/30 of patients (30%) without ($p=0.06$). A univariate logistic regression analysis estimated that a comorbid neuropsychiatric condition increased the risk of having a positive PSQI score ($p=0.04$, $OR=0.92$). However, after adding in a multivariate logistic model the independent variable of active epilepsy, TAND ceased to be a significant risk factor for positive PSQI ($p=0.12$, $OR=0.75$). As for ISI, it resulted positive in 27/83 patients (32.5%) with TAND and in 3/30 (10%) of those without ($p=0.03$). This association was also confirmed by a univariate logistic regression analysis, which estimated that TAND increased the risk of having a positive ISI score ($p=0.02$, $OR=1.47$). After adding in a multivariate logistic model the