

## The student academic performance in Anatomy is related to Circadian Typology?

Cristiana Pesenti<sup>1</sup>, Letizia Galasso<sup>1</sup>, Antonino Mulè<sup>1</sup>, Eleonora Bruno<sup>1,2</sup>, Andrea Caumo<sup>1</sup>, Eliana Roveda<sup>1</sup>, Angela Montaruli<sup>1</sup>

<sup>1</sup>Department of Biomedical Sciences for Health, University of Milan, Milan, Italy

<sup>2</sup>Department of Preventive and Predictive Medicine, Fondazione IRCCS, Istituto Nazionale Tumori, Milan, Italy

In human species, circadian rhythmic expression differs among individuals and may be classified with the concept of Circadian Typology (CT), which consists of three chronotypes: i) Morning-type (M-types), subjects that go to bed early and wake up early and achieve their peak of mental and physical performance in the early part of the day; ii) Evening-type (E-types), subjects that go to bed and wake up late, and perform at their best toward the end of the day, during evening hours; iii) Neither-type (N-types), subjects that show intermediate characteristics between the previous samples.

Circadian preferences may change during the life span and can influence academic and sport performance and job activities [1].

We collected data considering 427 students, 294 males and 133 females (age 18-25 years), attending the School of Sport Science, University of Milan. All participants compiled the Morningness-Eveningness Questionnaire (MEQ) for the assessment of chronotype; subsequently they have been evaluated taking into consideration their anatomy test marks. The chronotype distribution of the students was: 44 M-types, 280 N-types and 103 E-types. For M-types, the result in Anatomy exam was significantly higher compared to Evening-types ( $p < .01$ ). Even the comparison between M-types and N-types showed a significant difference ( $p < .01$ ). Instead, the performance for E- and N-types was similar.

The present results provide a clear indication of a better academic performance for M-types students compared to E-types referring to Anatomy exam. In this way, the Italian academic organization seems to be less favorable for E-types.

### Reference

[1] Enright and Refinetti (2017) Chronotype, class times, and academic achievement of university students. *Chronobiol Int* 34 (4): 445-450.

### Keywords

Chronotype, MEQ, academic performance, anatomy test marks, university students