УДК 61:615.1 (043.2)
ББК 5

CHRONOTYPES: ARE YOU AN EARLY BIRD OR NIGHT OWL? (ХРОНОТИПЫ: ЖАВОРОНОК ИЛИ СОВА?)

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Ключевые слов: хронобиология, биологический ритм, респонденты.

Резюме: *В статье представлено исследование биологических хронотипов. У людей выделяют 3 вида хронотипа: жаворонки, голуби и совы. Проведено исследование гипотезы, что биологические ритмы человека зависят от времени рождения. В результате исследования гипотеза не подтвердилась.*

Resume: *The study of biological chronotypes is presented in the paper. There are 3 chronotypes among people – early birds, day pigeons and night owls. The dependence of biological rhythms on the time of birth has been studied. It has been found that chronobiological type does not depend on time of birth.*

Topicality. Each person experiences a rise in mental and physical activity at some definite period of time. It depends on individual biological rhythms. The study of specificities of biorhythms is a great value in organization of rational regime of work and rest. Of all sciences that are related to the study of human health chronobiology is thought to be one of the extraordinary and surprising sciences. Chronobiology is a science studying the function of body clock, as well as its effects on the physiological and pathological processes inside the human body.

The purpose of the research was to check the hypothesis that biological rhythms in human organism depend on the time of birth.

Research objective: 1. To study the time of birth of respondents by the questionnaire; 2. To compare their time of the birth with their results of the psychological test composed by J.A. Horne and O. Ostberg.

Materials and methods. I studied the dependence of biological rhythms on the time of birth by questionnaire among 70 people. The group of respondents comprised various social groups and their age ranges from 18 to 30 years. In my study I used psychological test composed by J.A. Horne and O. Ostberg[1].

Results and discussions. During the study the hypothesis has not been completely confirmed. Actual biological rhythm of 44,3 % subjects corresponded to the birthday biorhythm.

The knowledge of biological rhythms goes back to ancient times. Hippocrates' and Avicenna’s treaties have been found to pay much attention to healthy life style which was based on the alternation of active and rest phases. In folk medicine it has been long noticed that moon's and sun's phases may influence on the human health. Speaking about modern chronobiology, the first serious scientific research has been conducted in the first half of the 20th century. Such Russian scientists as academicians I.P. Pavlov, V.V.Vernadsky and A.L.Chizhevsky made a great contribution in the development and recognition of this problem [2]. They proved that there is a close relationship between solar activity and the

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events taking place on the Earth – the number of deaths, suicides and epileptic attacks. Beside the study of interrelation between the biorhythms and health of the man modern chronobiology deals with the development of the methods for restoration and harmonization of disturbed biorhythms. At present this approach is considered to be one of most promising and perspective sciences in preventive medicine as it allows to affect the causes of the many pathological conditions at their earliest stage.

Up-to-date study of chronotypes began in Europe in 1970 [2]. At first many scientists were skeptical of this study but gradually the information about it has spread all over the scientific community and nowadays when the study of chronotypes has been confirmed by numerous scientific researches we may firmly state that night owls, early birds and day pigeons do exist.

The most essential characteristic which underlies the chronotype has been found to be called the level of working capacity. It allows us to divide all people into 3 main types: morning type (early birds), daytime type (day pigeons) and evening type (night owls). The rise of mental and physical activity is observed at some definite period of time.

Earle birds are those people who wake up early in the morning. They get up easily and do not feel tired or sleepy. Such people go to bed early too.

Night owls lead a night way of life. They prefer to stay in bed for a long period of time. During the first half of the day such people feel sleepy. They become more active by the midday. They go to bed very late.

The third type is characteristic for pigeons – people of daytime type. They are also called arrhythmic people. Day pigeons get up later than people of the morning type, work hard throughout the day long and go to bed at 11 p.m.

According to statistical data there are 40% of night owls, 25% of early birds and the rest 35% are day pigeons. However, only 3% of all people can be called pure night owls, early birds and day pigeons. It has been noticed that there are more subjects of pure types among females compared to males. Most of people belong to so-called mixed types.

Several papers studying hormonal effect on the human biorhythm have been published. It has been revealed that wakefulness hormone cortisol and sleeping hormone melatonin are released into blood of different chronotypes at a different period of time. So among representatives of the morning chronotype cortisol passes into blood at about 5 o`clock in the morning and causes early wakefulness. Melatonin was found to be produced long before the midnight, that`s why morning people go to the bed early.

Some other scientists came to the conclusion that biological rhythms in human organism start working at the moment of his birth. This biorhythm appears to change very rarely. According to their opinion those people who were born from 4 to 11 a.m. are early birds and those who were born from 4 to 12 p.m. are night owls. The rest of people are day pigeons.

I got interested in this hypothesis and I made up my mind to check it by questionnaire among 70 people. The group of respondents comprised various social groups and their age ranges from 18 to 30 years. In my study I used psychological test composed by J.A. Horne and O. Ostberg. It includes such questions such as:

1. Is it difficult for you to wake up in the morning?

a) Yes, always

b) Sometimes

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c) Rarely
d) Very rarely

2. What time do you prefer to go to bed?
a) After 01:00 at night
b) 23:00-01:00
c) 22:00-23:00
d) Before 22:00

3. The type of breakfast you prefer during first hour after waking up:
a) Substantial breakfast
b) Not very substantial
c) Can limit the breakfast by only having one egg
d) Cup of tea or coffee is sufficient

4. What time do you possibly have conflicts at home and your workplace?
a) During the 1st part of the day
b) During the 2nd part of the day
5. You can easily refuse from:
a) Morning cup of tea or coffee
b) Evening cup of tea or coffee

6. The ability to count 1 minute correctly without any clock:
a) I count less than one minute
b) I count more than one minute

7. Do you easily change your eating habits during trips and vacations?
a) Very easily
b) Without problems
c) With great difficulty
d) I never change my habits

8. You will have an important event next morning. In this case how much earlier do you go to bed?
a) Earlier than 2 hours
b) Earlier than 1-2 hours
c) Less than an hour
d) I will go to bed at usual time

After receiving the answers to the questions, I divided all the respondents into three chronotypes. Afterwards, I compared their time of the birth with their results of the questionnaire.

Results: The hypothesis that chronological type depends on time of birth has not been completely confirmed. Actual biological rhythm of 44,3 % subjects corresponded to the birthday biorhythm.

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Conclusion. It is necessary to know and follow some definite rules of rational day organization of work and rest regime. It can help people to keep their health and make intellectual activity more efficient.

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