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Sleep hygiene and psycho-emotional load for office employees

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Abstract. The development of technology and changes in the world have dramatically increased the psycho-emotional risk exposure for office employees. At the work with computer and digital devices in the offices, employees are exposed to several risk factors of the work environment and one of the most frequent complaints is psycho-emotional load caused by various issues. There is no denying that sleep is one of the basic human needs, and sleep quality is important for maintaining and preserving good health and wellbeing. Sleep hygiene includes a set of various measures, such as the regularity of waking up and going to bed, that can affect and improve the quality of sleep. Sleep quality is closely related to mental health, as poor mental health can negatively affect sleep quality and vice versa. Reduced psycho-emotional load is associated with better sleep hygiene and also good sleep hygiene is associated with reduced psycho-emotional load. Health promotion measures and a work environment that supports sleep health could reduce psycho-emotional load experienced by employees, increase work ability, productivity and reduce the risk of accidents at the workplace. The aim of this study was to investigate psycho-emotional load and sleep hygiene importance for office employees.

Key words: office employees, psycho-emotional load, stress, sleep hygiene, work ability.

INTRODUCTION

Nowadays the rapidly growing number of computer users and the advances in information and communication technology have made the stationary and portable computer an essential element of work in all branches of activity, including office work and even in those areas where its use was not even possible before. Worldwide, millions of office employees work with computers and can be found in every industry, such as the financial sector and various manufacturing industries. Despite the development of technology, the daily workload of office employees continues to increase and long-term computer use has a negative impact on health. Employees complain more often about sleep-related health problems, which also negatively affect their health and quality of life in general (Ilmarinen & Tuomi, 2004; Lee & Koo, 2015; Soria-Oliver et al., 2021).

When working with a computer, employees are exposed to several risk factors of the work environment, such as psycho-emotional and physical risk factors of the work environment that cause health disorders. Psycho-emotional load due to various reasons is mentioned as a frequent complaint from employees. These reasons for psycho-emotional load can be, for example, from the organization of working hours, increased responsibility

at work, work equipment, work requirements, workload and pace of work, relations with other employees (Leclerc et al., 2022). Conducted research shows that office employees face psycho-emotional load at work, which can result in various health disorders, such as stress, depression or signs of depression. Work-related stress has been shown to affect employees' job satisfaction and productivity, their mental and physical health (Tennant, 2001; Padma et al., 2015). Various psycho-emotional health problems such as depression, anxiety and stress are often associated with poor sleep quality as well as poor sleep hygiene. Sleep hygiene includes a set of different measures, such as the regularity of waking and going to bed, improving the conditions of the sleeping place, as well as physical activities before going to bed, that are factors that can affect and improve the quality of sleep (American Sleep Association, 2017; Rezaei et al., 2018).

There is no denying that sleep is one of the basic human needs, and quality sleep is important for maintaining and preserving good health and well-being. Today, low-quality sleep is associated with stress, aggression, tension, as well as feelings and manifestations of anxiety in everyday life. Manifestations of sleep disorders can be different, because lack of sleep, poor quality can cause both physical consequences and can affect a person's mental health. The physical effects of a lack of sleep on the human body can manifest themselves, for example, in drowsiness, fatigue or hypertension, but the effects on mental health could be various cognitive disorders, such as the deterioration of performance, concentration and motivation, which can also lead to an increased likelihood of accidents (World Health Organization, 2004). Research has shown that following the basic principles of sleep hygiene can significantly improve sleep quality and help treat health disorders such as chronic insomnia, stress and anxiety (Roja et al., 2014).

Sleep quality is closely related to mental health, as poor mental health can negatively affect sleep quality and vice versa. Reduced psycho-emotional load is associated with better sleep hygiene and vice versa - good sleep hygiene is associated with reduced psycho-emotional load. Health promotion measures and a work environment that supports sleep health could reduce the psycho-emotional load experienced by employees, increase work ability, productivity and reduce the risk of accidents at the workplace (International Labour Office, 2012; University of California, 2016).

The aim of this study was to investigate psycho-emotional load and the importance of sleep hygiene in office employees.

MATERIALS AND METHODS

Office employees from 18 different Latvian companies were selected as the target audience for the study. An anonymous questionnaire was used in the study, which consisted of four parts: General questions (gender, age, position); Questions for determining the sleep hygiene index; Questions about psycho-emotional load; Questions for determining the working ability index.

In order to be able to analyze the sleep hygiene of office employees, the sleep hygiene index calculation method was used. In order to calculate the sleep hygiene index, respondents were required to answer 13 questions, which can be answered in five different ways: ‘never’, ‘rarely’, ‘sometimes’, ‘often’, ‘always’, which are respectively scored as 0, 1, 2, 3, 4 points (Appendix 1). The score of the sleep hygiene index indicates what kind of sleep hygiene a person has. The number of points to be obtained ranges

from 0 to 52 points, the higher the number of points, the worse the sleep hygiene. If the number of points obtained is up to 12 points, sleep hygiene is recognized as good. If the number of points is between 13 and 26, then sleep hygiene is rated as average, while if the number of points obtained is between 26 and 39, then sleep hygiene is rated as poor. Sleep hygiene is very poor if the score is above 40 (Mastin et al., 2006).

The psycho-emotional load of office employees was assessed using the method of psycho-emotional load control questions. For qualitative assessment, control questions related to psychosocial factors of the work environment and their impact on employees were used. The respondents had to answer the questions with one of the answer options: 'yes', 'partially', 'no'. The questionnaire of control questions includes six blocks of questions: 1. Work environment (5 questions); 2. Requirements at the workplace (8 questions); 3. Work organization (23 questions); 4. Feeling of security at work (7 questions); 5. Opportunities for creativity at work (4 questions); 6. Social climate at work (12 questions). In total, 59 questions were asked to the respondents (Appendix 2) (Kaļķis, 2008).

Work ability index is a method that uses control questions that help to assess working ability. To assess the work ability index, respondents must answer nine questions, the answers to which are evaluated with points (Appendix 3) (Kaļķis, 2008). Work ability is characterized by the number of points ranging from 1 to 53 points, and their categories are as follows: I poor work ability (7–27 points), II medium work ability (28–36 points), III high work ability (37–43 points), IV very high work ability (44–53 points) (Appendix 4) (Kaļķis, 2008).

Data analysis was performed using the SPSS (Statistical Package of the Social Science) 22.0 computer program. Descriptive statistical methods, frequency calculation were used to analyze the data. Relationships between sleep hygiene, psycho-emotional load and working abilities were determined using Spearman's correlation coefficient r. Associations were considered statistically significant if the p value was less than 0.05. Correlations and associations were examined for the sleep hygiene index, work ability index, and questions on psycho-emotional load. Microsoft Excel Office 365 computer program was used to analyze data, create figures and tables.

RESULTS AND DISCUSSION

In total, 116 respondents participated in the study, of which 75.9% were women (n = 88) and 24.1% were men (n = 28) in the age group from 18 to 64 and over. Most respondents were in the age group from 26 to 35 years old (37.1%, n = 43) (Table 1).

To analyze the sleep hygiene of office employees, the sleep hygiene index calculation method was used (Mastin et al., 2006). When obtaining the sleep hygiene index, sleep hygiene can be divided into categories: poor, average and good sleep hygiene. Summarizing the

Table 1. The number and percentage of respondents in gender and age groups

Gender	Number of respondents	Percentage of respondents
Women	88	75.9%
Men	28	24.1%
In total	116	100%
Age	**Number of respondents**	**Percentage of respondents**
18–25	26	22.4%
26–35	43	37.1%
36–50	35	30.2%
51–65	8	6.9%
> 65	4	3.4%
In total	116	100%

results, the sleep hygiene index for office employees ranges from 3 to 37. The average sleep hygiene index for office employees is 19.35 (*SD* = 6.24), characterizing the sleep hygiene of office employees as average.

Analyzing the sleep hygiene of office employees, it can be concluded that most office employees have average sleep hygiene (75%, *n* = 87). None of the office employees were observed to have poor sleep hygiene, which is in contrast to a study conducted in Ethiopia, where poor sleep hygiene was found in 48.1% of respondents (Molla & Wondie, 2021). On the other hand, 15.5% (*n* = 18) of 116 office employees have good sleep hygiene, which is similar to a study conducted in Iran in 2015, where good sleep hygiene was observed in 6.9% of respondents (Khazale et al., 2015) (Fig. 1).

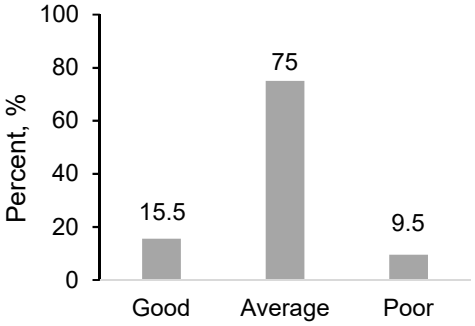

Figure 1. Sleep hygiene of office employees.

In order to analyze the psycho-emotional load of office employees, the psycho-emotional load control question method was used. In total, 59 questions were asked to the respondents. The respondents had to answer the questions with one of the answer options: 'yes', 'partially', 'no' (Kaļķis, 2008). Analyzing the data, it was found that 67.24% of 116 office employees believe that their work is characterized by psycho-emotional load, and 37.07% describe their work as emotionally demanding (Figs 2, 3). Thus, it can be concluded that employees feel psycho-emotional load in their work environment, which coincides with the 2014 European Union Eurobarometer study on psychosocial risks in workplaces, where it was found that 25% of employees are exposed to psycho-emotional risk factors and also feel stress most of the day (European Agency for Safety and Health at Work, 2014; Pastare et al., 2020).

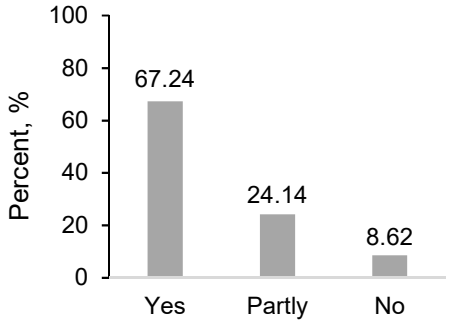

Figure 2. Answers of office employees about psycho-emotional load at work.

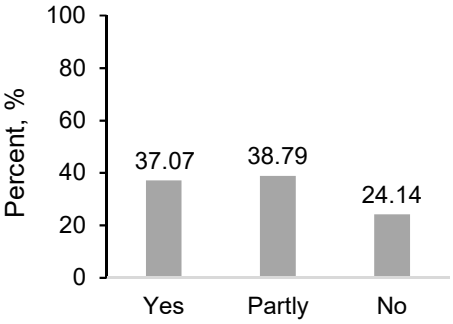

Figure 3. Answers of office employees about whether the job can be described as emotionally demanding.

Very similar results were also obtained in another study conducted in Latvia in 2014, on work ability and stress among Latvian office employees. In the study, 60.2% of office employees admitted that they Feel psycho-emotional load at work (Sprudza et al., 2014).

Office employees were asked whether they feel overloaded by the amount of work. Almost half or 48.28% of the respondents answered that they partly feel overloaded directly from the volume of work, 36.21% noted that they feel overloaded from the volume of work, and 15.52% of respondents do not feel overloaded from the volume of work (Fig. 4).

More than half or 53.45% of 116 office employees noted that they partially lack motivation, 37.93% noted that they do not lack motivation, but only 8.62% of respondents noted that they lack motivation (Fig. 5).

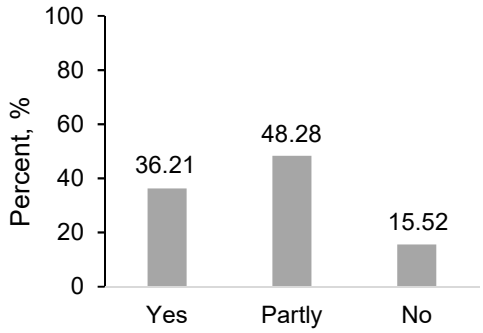

Figure 4. Answers of office employees on whether they feel overloaded by the amount of work.

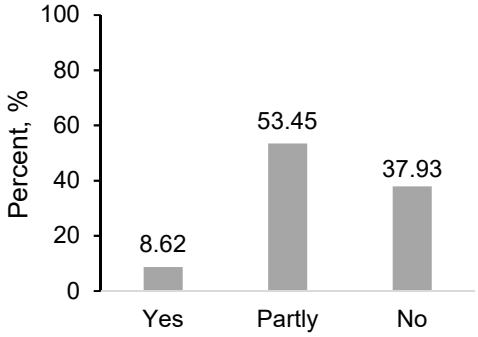

Figure 5. Answers from office employees about whether employees lack motivation.

Summing up the work ability scores, the results show that office employees have an average work ability of 41.39 (SD = 5.1), which shows that office employees have high work ability on average. Summarizing the results, it can be concluded that the lowest score is 25 (poor work ability), and the highest score is 51 (very high work ability). Analyzing the work ability index by category, 1.7% of office employees have poor work ability, 12.9% have average work ability, 44.8% have high work ability and 40.5% have very high work ability. The distribution of work ability for office employees can be seen in the picture (Fig. 6). The obtained results are contrary to another study conducted in Latvia, where no office employees were observed to have very high work ability, while most (64.6%) office employees were observed to have average work ability (Sprudza et al., 2014).

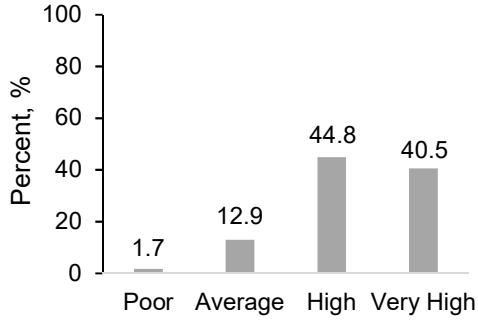

Figure 6. Work ability of office employees.

The results show that there is a statistically significant and moderately close correlation between the sleep hygiene index and whether the work is characterized by psycho-emotional load (r_s = 0.34, p < 0.01). Thus, the more work is characterized by psycho-emotional load, the worse the sleep hygiene, or the higher the sleep hygiene index. There is a statistically significant, moderately close correlation between the sleep

hygiene index and whether the work is characterized as emotionally depressing, i.e. the more the work is characterized as emotionally depressing, the worse the sleep hygiene of office employees ($r_s = 0.38$, $p < 0.01$).

There is also a statistically significant but weak correlation with the indicator of whether employees feel overloaded by the amount of work, indicating that the more overloaded by the amount of work, the worse the sleep hygiene, or the higher the score of the sleep hygiene index ($r_s = 0.197$, $p < 0.05$). On the other hand, no statistically significant correlation was observed between the sleep hygiene index and whether rest breaks are regulated at work, as well as whether employees lack motivation ($p > 0.05$). Statistically significant correlations can be viewed in the table (Table 2). Considering the fact that sleep quality is closely related to sleep hygiene, the obtained results are in accordance with the study conducted in Iran, where the results were obtained that poor sleep quality is related to psycho-emotional load, as well as poor sleep hygiene (Rezeael et al., 2018). The obtained results are in line with a study conducted in Turkey in 2015, where a close relationship between a low sleep hygiene index and depression, as well as poor sleep quality, was observed (Ozdemir et al., 2015). A study was conducted in India in 2019, where results were obtained that an increase in stress levels is statistically significantly associated with a decrease in sleep quality, and the study also concluded that stress negatively affects sleep hygiene (Ramamoorthy et al., 2019). Similarly, another study conducted in India found a statistically significant association of increased stress levels with poor sleep quality (Sharma & Srivastava, 2018). Additionally, in a study conducted in Saudi Arabia in 2017, it was found that poor sleep quality has a statistically significant relationship with stress (Almojali et al., 2017).

Table 2. Sleep hygiene and psycho-emotional load for office employees

Parameter	Test statistic	Work is characterized by psycho-emotional load	The work can be characterized as emotionally demanding	Feeling overloaded by the amount of work
Sleep hygiene index	r_s	0.34	0.37	0.197
	p	$p < 0.01$	$p < 0.01$	$p < 0.05$

Analyzing sleep hygiene with work ability, a statistically significant relationship was obtained, as well as a weak and negative correlation ($r_s = -0.218$, $p < 0.05$). The result was that the lower the sleep hygiene index score, the higher the work ability index score. So the better the sleep hygiene, the better the work ability (Table 3). The obtained results are in line with several studies, for example, in another study conducted in Latvia, results were obtained that work abilities are closely related to various stress-causing factors, such as relationships with colleagues and opportunities to influence work processes (Sprudza et al., 2014). A study conducted in Bosnia and Herzegovina confirmed that workplace stress can significantly affect employee work ability and productivity (Ismail et al., 2015). The results are similar to a study conducted in the United States, which found that those with higher sleep disturbance scores were more likely to be absent from work and had lower productivity at work (Hui & Grandner, 2015).Similarly, in a study conducted in Iran in

Table 3. Sleep hygiene index and work ability index for office employees

Parameter	Test statistic	Work ability index
Sleep hygiene index	r_s	-0.22
	p	$p < 0.05$

2013, the results were obtained and it was concluded that there is a relationship between sleep disorders and work abilities, because the obtained results indicated that employeeswith sleep disorders have significantly lower work abilities than those without sleep disorders (Labbafinejad et al., 2014).

Analyzing the psycho-emotional load in relation to the work ability of office employees, the results shows that the work ability index has a statistically significant, weak, negative correlation with the indicator, whether the work is characterized by psycho-emotional load, indicating that if the work is characterized by psycho-emotional load, the work ability index is lower (r_s = - 0.25, $p < 0.05$). In addition, a statistically reliable, weak and negative correlation can be observed for the work ability index with the indicator of whether the work can be characterized as emotionally oppressive (r_s = -0.27, $p < 0.05$) (Table 4).

Table 4. Work ability index and psycho-emotional load for office employees

Parameter	Test statistic	Work is characterized by psycho-emotional load	The work can be characterized as emotionally demanding	Feeling overloaded by the amount of work	Lack of motivation
Work ability index	r_s	-0.25	-0.27	-0.33	-0.37
	p	$p < 0.05$	$p < 0.05$	$p < 0.01$	$p < 0.05$

An average close, negative correlation was observed for the work ability index and the indicator that office employees feel overloaded by the amount of work (r_s = -0.33, $p < 0.01$). Analyzing the results, it was found that there is a statistically reliable, moderately close and negative correlation between the work ability index and the lack of employee motivation, so if there is a lack of motivation, there is a lower work ability (r_s = -0.37, $p < 0.05$) (Table 4). There was no statistically reliable relationship and correlation between the work ability index and the indicator of whether rest breaks are regulated at the work ($p > 0.05$). The statistically significant correlations are summarized in Table 3. It should be noted that the results are consistent with a study conducted in Iran, where a work-related stress was reflected to work ability in 60 employees (Khavanin et al., 2018).

Studies conducted in several countries confirm that education helps to improve sleep hygiene and thus sleep quality (Chen et al., 2010; O'Donnell & Driller, 2017; Sharma & Srivastava, 2018; Redeker et al., 2019). People have better sleep quality when they are informed and educated about sleep hygiene recommendations and basic principles, so further research investigating sleep hygiene and sleep hygiene in relation to psycho-emotional load is needed in order to design educational programs and health promotion activities for employees and their families.

CONCLUSIONS

The average sleep hygiene index for office employees is 19.35 (SD = 6.24), describing the sleep hygiene of office employees as average. More than half or 67.24% (n = 78) of the office employees involved in the study believe that their work is characterized by psycho-emotional load which mainly is associated with very high work performance standards, large amount of work and overtime. The work ability index

shows that the studied office employees have a high level of work ability. The statistical compilation of the data confirmed that the more psycho-emotional load characteristic of work, the worse the sleep hygiene of office employees and also lower their work ability. On the other hand, the better the sleep hygiene of studied office employees, the greater the work ability.

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APPENDIX 1.

Sleep hygiene index questionnaire (Mastin et al., 2006)

1. I take a nap that lasts at least 2 hours or more.
2. I go to bed at a different time every day.
3. I get up at a different time every day.
4. I do excercise about an hour before I go to bed.
5. I stay in bed longer than I should two or three times a week.
6. I use alcohol, tobacco, or caffeine within 4 hours of going to bed or after going to bed.
7. Before going to bed, I do things that keep me awake and make me feel alert (for example: play video games, clean the house, use the Internet, etc.).
8. I go to bed feeling stressed, angry, sad or nervous.
9. I use my bed for things other than sleeping or having sex (for example, watching TV, reading a book, eating, etc.).
10. I sleep in an uncomfortable bed (for example, an uncomfortable mattress or pillow, not enough blankets, etc.).
11. I sleep in a bedroom where it is uncomfortable to sleep (for example, too noisy, too bright, too hot or cold, etc.).
12. Before going to bed, I do work that is important and requires high responsibility (for example, planning time, studying, paying bills, etc.).
13. When I'm in bed, I think, plan, worry a lot.

APPENDIX 2.

Psycho-emotional load control questions (Kaļķis, 2008)

Questions about the working environment:

1. Is the work equipment satisfactory, ergonomic?
2. Does the workplace arrangement meet the needs of work performance?
3. Does the work environment have inherent physical risk factors (eg noise, vibration, poor lighting)?
4. Are intoxicating substances available at work?
5. Are there enough materials to complete the work?

Questions about workplace requirements:

1. Is the work physically demanding?
2. Is there a balance between physical and psycho-emotional work?
3. Is the work characterized by psycho-emotional load?
4. Can the work be described as emotionally demanding?
5. Is the nature of the work repetitive?
6. Is the nature of the work with many small, cyclical activities?
7. Are the performance standards very high?
8. Do employees work in isolation from others?

Questions about work organization:

1. Are there regulated rest breaks at work?
2. Is there a lack of equipment for the job?
3. Are employees notified of new work assignments in a timely manner?
4. Is there a noticeable lack of information about the performance of work tasks?
5. Is there such an abundance of information that employees have difficulty remembering everything they are asked?
6. Do employees clearly know their role and tasks in the workplace?
7. Are employees able to complete the work using their preferred methods?
8. Is the work fast-paced?
9. Do the tasks assigned to employees tend to be contradictory?
10. Are the job specifics unclear, incomprehensible?
11. Is the nature of the work unpredictable and is it difficult to plan the work?
12. Are employees often dissatisfied, annoyed?
13. Do employees have the possibility to plan the performance of their work tasks themselves, as well as to make decisions?
14. Is the work done in shifts?
15. Do the employees also work at night?
16. Do employees work overtime?
17. Are working hours clearly defined?
18. Do employees feel overwhelmed by the amount of work?
19. Do employees work with certain deadlines?

20. Is the workload very large?
21. Are jobs often rushed?
22. Can employees themselves influence their work tasks?
23. Is there employee training at work?

Questions about feeling safe at work:

1. Is there a fear of losing your job, being fired?
2. Is there feedback on employee performance at work?
3. Is there a lack of information about workplace safety in the work environment?
4. Do employees lack motivation?
5. Is there an opportunity for continuous development and learning in the work environment?
6. Are employees unclear about their division of labor?
7. Are the qualifications of the employees appropriate for their work?

Questions about the possibilities of creativity at work:

1. Are certain work control mechanisms prevailing in the work environment?
2. Do employees have the possibility to participate in company management processes?
3. Is it possible for employees to implement new ideas, activities?
4. Are specific work methods imposed on employees, preventing them from doing the job differently?

Questions about the social climate at work:

1. Is there discrimination in the work environment?
2. Are employees negative towards management?
3. Are there unresolved issues between employees and management at work?
4. Are there conflicts between employees in the work environment?
5. Are employees able to report conflicts and problems in the work environment to management?
6. Is there support from colleagues or management in the work environment?
7. Is there competition among employees?
8. Can employee collaboration be described as weak?
9. Is there a bad social climate in the work environment?
10. Is there no recognition at work for the work done?
11. Are employees being bullied at work?
12. Is it possible for employees to face violence from society (e.g. threats, attacks) in their daily work?

APPENDIX 3

Work ability index questionnaire (Kaļķis, 2008)

Items	Rating scale
1. What is your subjective assessment of existing work ability compared to the best?	1 = very poor 2–4 = moderate 5–7 = good 8–9 = very good 10 = excellent
2. What are your subjective work abilities, referring to the physical workload (lifting and moving, forced postures, arm muscle tension, etc.)?	1 = very poor 2 = poor 3 = moderate 4 = good 5 = very good
3. What are your subjective work abilities, referring to mental work abilities (memory, logical thinking, creative abilities, stress at work, etc.)?	1 = very poor 2 = poor 3 = moderate 4 = good 5 = very good
4. What is the number of diagnosed diseases that you have had in the last 5 years (for example, flu, angina, radiculitis, osteochondrosis in the neck or lumbosacral region, etc.)?	1 = 5 or more diseases 2 = 4 diseases 3 = 3 diseases 4 = 2 diseases 5 = 1 disease 6 = no disease
5. What is your subjective assessment of inability to work due to illness?	1 = complete inability 2 = Inability is frequent (at least once a week) 3 = inability is at least once a month 4 = inability is rare (3–6 times a year) 5 = inability is very rare (2–3 times a year) 6 = no disabilities
6. What has been your absence from work due to illness in recent years?	1 = 100 or more days 2 = 25–99 days 3 = 10–24 days 4 = 1–9 days 5 = 0 days
7. What is your personal forecast for your working abilities at least 2 years ahead?	1 = I can work, but with effort 4 = not sure 7 = absolutely sure that I will be able to work
8. How does your workload plan correspond to individual abilities?	1 = very poor 2 = poor 3 = moderate 4 = very good
9. What would be your subjective psycho-emotional evaluation of the work team (mutual relations, relations with the employer, social isolation, etc.)?	1 = very poor 2 = poor 3 = moderate 4 = very good

Appendix 4

Ranking table of the total work ability index (Kaļķis, 2008)

Work ability index	Rating scale
I – poor work ability	7–27 points
II – medium work ability	28–36 points
III – high work ability	37–43 points
IV – very high work ability	22–53 points