

OPSTI TEST

OPSTI - Organizational Psychosocial Factors Indicator PE Konsult. Ltd. © 2019. All rights reserved.

Work-related psychosocial risks concern aspects of work design, management, and the social and organizational contexts that can cause psychological or physical harm. In recent years, various international organizations have raised awareness regarding psychosocial risks and work-related stress (Zoni and Lucchini, 2012¹). In 1999, the European Parliament urged the European Commission to analyze additional problems that were not covered by existing legislation, such as work-related stress. In that document work-related stress was defined as "a pattern of emotional, cognitive, behavioral and physiological reactions to adverse and noxious aspects of work content, work organization and work environment" (European Commission, 1999²).

The World Health Organization (WHO) Ministerial Conference on Mental Health in 2004³ and 2005⁴ emphasized the importance of mental health. In addition, European social partners have started to take action, by first publishing important relevant documents concerning work-related stress. In the same years, the International series of the Standard ISO 10075⁵, mental work load have been adopted and published as European Standards. Mental stress was defined as: "the total of all assessable influences impinging upon a human being from external sources and affecting it mentally." Mental strain is correspondingly defined as the "immediate effect of mental stress within the individual (not the long-term effect) depending on his/her individual habitual and actual preconditions, including individual coping styles".

From January 1, 2019, an amendment to the Estonian Occupational Health and Safety Act⁶ came into force, obliging the employer to take measures to improve the psychosocial environment of the company in order to prevent health damage caused by psychosocial hazards. This requires mapping and evaluating the psychosocial risk factors present in the company that may affect the individual employee's mental or physical health, including work-related stress.

The Occupational Health and Safety Act (2019) defines Psychosocial hazards as follows:

¹ Zoni, S. and Lucchini, R.G. (2012). European Approaches to Work-Related Stress: A Critical Review on Risk Evaluation. <u>Saf Health Work</u>. 2012 Mar; 3(1): 43–49. <u>https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3430928/</u>

² Guidance on work-related stress. Spice of life or kiss of death, European Commission, 1999.

³ Teichmann, M. (2004). Work and Stress: Estonian perspective. In: WHO European Ministerial Conference on Mental Health, WHO Pre-conference on Mental Health and Working Life, Tallinn <u>http://www.sm.ee/eng/pages/index.html</u>

⁴ Mental health: facing the challenges, building solutions: report from the WHO European Ministerial Conference. World Health Organization, 2005.

⁵ European Committee for Standardization. Ergonomic principles related to mental work load-Part 1: General terms and definitions (EN ISO 10075-1) and Part 2: Design principles. Brussels (Belgium): CEN; 2000.

⁶ Occupational Health and Safety Act (2019). Translation of law is published in *Riigi Teataja* (i.e. *Riigi Teataja* is an official online Website of the Republic of Estonia that includes English translations of Estonian legislation), English translation of Occupational Health and Safety Act was published in 24.01.2019; become into force in 01.01.2019. <u>https://www.riigiteataja.ee/en/eli/520032019007/consolide</u>



a) "Psychosocial hazards are work involving a risk of an accident or violence, unequal treatment, bullying and harassment at work, work not corresponding to the abilities of an employee, working alone for an extended period of time and monotonous work and other factors related to management, organization of work and working environment that may affect the mental or physical health of an employee, including cause work stress."

Moreover, the law imposes several obligations on the employer:

b) "In order to prevent damage to health arising from a psychosocial hazard, the employer shall take measures, including adapt the organization of work and workplace to suit the employee, optimise the employee's workload, enable breaks to be included in the working time for the employee during the working day or shift and improve the enterprise's psychosocial working environment".

These developments highlight that one of the major contributions of the change in the law could be better management of psychosocial risks, as well as clearly focused occupational stress interventions in work organizations.

Broadly, occupational stress interventions could be divided into two groups, namely, individual-level and organizational-level interventions. However, both forms of intervention require the process to begin with mapping and assessment of psychosocial risk factors at employee level and organizational level, respectively.

According to the sixth EWCS, in 2015, 27% of workers in Europe said they experience work-related stress for all or most of their working time. This is almost the same as rates for 2010 (26%) in the EU28. In Estonia, there is a tendency for increase the general levels of work-related stress - 26% (2001) and 32% (2005) of workers experienced work-related stress. The work-related stress level is decreased in Estonia and it remained to be stable (around 15-18%) in 2010 and 2015⁷. Indeed, our recent work-stress studies point to a quite similar range of work-related stress, remaining about 16.7% (2019⁸).

However, the economic impact of work-related stress, linked in particular to sickness, absenteeism, mistakes made and low productivity at work, is estimated at between 2.5% and 10% of GDP (Dollard, 2003⁹; Cooper, 2011). At the same time, there is exceptionally little stress management in Estonian organizations - we are in the penultimate position among European countries, ahead of Greece alone¹⁰.

⁷ Eurofound (2016), Developments in working life in Europe 2015: EurWORK annual review, Publications Office of the European Union, Luxembourg.

⁸ PE Konsult, psühhosotsiaalsete ohutegurite uuringud 2019 (N=1203) & Palgainfo Agentuur, 'Töötajate tööturu- ja palgauuring kevadsuvel 2019' (N=8027).

⁹ Dollard, M. F., Winefield, A. H., & Winefield, H. R. (2003). *Occupational stress in the service professions*. London: Taylor & Francis.

¹⁰ The scope of management of psychosocial risks in EU, ESENER, European Risk Observatory Luxembourg: Publications Office of the European Union, 2012.





The results of long-term studies with *Occupational Stress Indicator* (OSI-2) in Estonia (PE Konsult, 2005-2017^{11,12,13,14}) indicate that the main psychosocial risk factors that can cause work-related stress are poor relationships at work, too fast work tempo and a work-life imbalance toward to work.

(PE Konsult, 2005-2017)				
	Prosecutors	Engineers	Managers	Officials
PSYCHOSOCIAL FACTORS				
Work tempo	25,2	23,9	23,8	22,8
Relationships	33	34,2	34	34,9
Work/life conflict	19	20,7	21,3	19
Managerial roles	13,6	14,2	14,2	13,5
Responsibility	16	16,1	15,9	15,5
Hassles	14	13,7	13,7	13,1
Recognition	15	16,1	15,6	16,5
Psychological micro-climate	15	15,5	15,2	15,5

Psychosocial factors at work

* A higher number indicates a higher stressor

However, high levels of work-related stress in an organization can also be interpreted as poor management, since the management competence is to deal

¹³ Teichmann, M. (2009). Psühhosotsiaalsed ohutegurid töökeskkonnas. Eesti Töötervishoid 1/2009, lk. 40-43.

¹¹ Teichmann, M.; Spector, P. E.; Cooper, C. L.; Sparks, K. (2006). *Managerial Stress in Estonia*. International Journal of Psychology, 39(5-6), 308-309.

¹² Spector, P. E., Cooper, C. L., Sanchez, J. I., O'Driscoll, M., Sparks, K., Bernin, P., Büssing, A., Dewe, P., Hart, P., Lu, L., Miller, K., Renault de Moraes, L., Ostrognay, G. M., Pagon, M., Pitariu, H., Poelmans, S., Radhakrishnan, P., Russinova, V., Salamatov, V., Salgado, J, Shima, S., Siu, O. L., Stora, J. B., Teichmann, M., Theorell, T., Vlerick, P., Westman, M., Widerszal-Bazyl, M., Wong, P., & Yu, S. (2001). *Do national levels of individualism and internal locus of control relate to well-being: An ecological level international study*, Journal of Organizational Behavior, 22, 815-832.

¹⁴ Teichmann, M. (2003). Workstress among Estonian Office Workers (longitudinal research 1997 and 2002). In: Abstracts of International HRM Research Conference: People Friendly Management; Inimkeskne juhtimine: 1-st International Human Resource Management Research Conference in Estonia, Tallinn, 6.11.2003. (Ed) Alas, R., Tallinn: EBS Print, 167-181.



with the content of work, work organization and also the working environment (including harmful psychosocial factors).

THEORETICAL BACKGROUND OF AN OPSTI TEST

The very initial version of the OPSTI test was developed in 2009¹⁵. The OPSTI test is based on several occupational stress theories:

First, stressors and strain approach to work-related stress. The stressors and strain approach is based on a relatively simplistic theory that views stress as occurring when work characteristics contribute to poor psychological or physical health (Beehr, 1995¹⁶). According to this approach, stressors refer to the work-related characteristics, events or situations that give rise to stress, and strain refers to an employee's physiological or psychological response to stress (Hurrell et al., 1998¹⁷). The stressor and strain approach is at the core of most recent studies into occupational stress.



The second stress theory is about job demands and control of the employee (Karasek et al., 1998¹⁸). According to this theory, in order to predict the consequences, it is necessary to study the job demands of the employee, control and coping abilities.

The Karasek model has also been used by Danish researchers in developing the psychosocial questionnaire in Copenhagen (Kristensen et al., 2005¹⁹).

¹⁵ Tallinna Linnavalitsuse ja linnaosade valitsuste töötajate psühhosotsiaalne tervis, Uuringu raport, PE Konsult, 2009.

¹⁶ Beehr, T.A. (1995). Psychological stress in the workplace. London: Routledge.

¹⁷ Hurrell J.J.Jr., Nelson, D.L., & Simmons, B.L. (1998). Measuring job stressors and strains: where we have been, where we are, and where we need to go, Journal of Occupational Health Psychology, 3, 368-389.

¹⁸ Karasek, R., Brisson, C., Kawakami, N., Houtman, I., Bongers, P., & Amick, B. (1998). The job content questionnaire (JCQ): an instrument for internationally comparative assessments of psychological job characteristics. *Journal of Occupational Health Psychology*, *3*, 4, 322-355.

¹⁹ Kristensen et al. (2005). The Copenhagen Burnout Inventory: A new tool for the assessment of burnout. Work & Stress, 19(3): 192-207.

Karasek's mudel



In developing the COPSOQ, particular attention has been paid to employee and work process requirements. A distinction is made between quantitative requirements, psychological requirements, emotional requirements and sensory requirements. In the first version of COPSOQ-I there were a total 165 questions; in the third version of COPSOQ-III there are about 190 questions. COPSOQ has been translated into Estonian and a pilot study has been carried out to adapt the questionnaire in 2009. A homogeneous group of workers (N = 245; nurses) was selected for the pilot study in order to exclude different effects of profession-specific psychosocial factors on the outcome of the study. Statistical data processing of the pilot study results using different statistical methods, including determination of the reliability coefficient (Nunnally et al., 1994^{20}), showed that the COPSOQ works satisfactorily in the case of some factors.

The third approch to occupational stress was developed by CISMS (*Collaborative International Study of Managerial Stress*) consortium (CISMS is an international team of 26 researchers, including Estonia). Accordingly, CISMS developed an instrument called the Occupational Stress Indicator (OSI-2). The Estonian version of the OSI-2 test was adapted in 1996 and OSI-2 is available free of charge (<u>https://www.pekonsult.ee/testid/stress.php</u>).

The CISMS consortium's researcher believes that in addition to the basic nonspecific stressors, which are similar to almost all occupations, in case of different occupations have to pay attention to so-called occupation-specific stressors, and this fact should not be forgotten in research on work-related stress.

²⁰ Nunnally, J. C. & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). New York: McGraw-Hill.





CISMS model for managerial stress

Fourth, one of the most important theoretical innovations of recent years has been the establishment of the Organizational Health Framework (Hart and Cooper, 2001²¹).

The concept of organizational health differs from many of the traditional approaches to occupational stress in two ways. First, it emphases the need to simultaneously focus on employee well-being and an organizational performance. From this point of view, the organizational health perspective recognizes the fact that having satisfied employees is of little value to an organizational health perspective recognizes that employee well-being and organizational health perspective recognizes that employee well-being and organizational performance are both influenced by a combination of individual and organizational characteristics. In fact, a range of different individual and organizational characteristics has been included in the major process theories of occupational stress (e.g., Cooper, 1998²²).



²¹ Hart, P.M. & Cooper, C.L. (2001). Occupational Stress: Toward a More Integrated Framework. In: N. Anderson, D.S. Ones, H.K. Sinangil, & C. Viswesvaran (Eds), Industrial, Work and Organizational Psychology, London, Sage, 92-113.

²² Cooper, C.L. (Ed.). (1998). *Theories of organizational stress*. New York: Oxford.



The individual and organizational factors contribute to employee well-being, which in turn, contributes to organizational performance. Moreover, individual and organizational characteristics also have a direct link to organizational performance. In general, psychosocial risk factors in the work environment include both employee-related and organizational factors. The effect of psychosocial risk factors is considered to be not only the psychological wellbeing/non-wellbeing of the employee, but also the employee's performance (productivity).

DEVELOPMENT OF OPSTI TEST

The commitment to start mapping and evaluating psychosocial risk factors for work-related stress intervention both in individual and organizational level is quite new to Estonian organizations (TTOS entry into force 01.01.2019). The need for a corresponding science-based measuring instrument (test) is high because several tests known in Europe for mapping psychosocial risk factors did not work with sufficient reliability in Estonia. This leads us to construction of psychosocial factors measuring instrument called the OPSTI test.

The OPSTI test follows two classic science-based approaches to work-related stress. First, the stressor and strain approach to occupational stress (Cooper & Williams, 1996²³; Cox, 1978²⁴; Hurrell, Nelson & Simmons, 1998²⁵; Spector jt., 2002²⁶; Teichmann ja Ilvest, 2007²⁷), and secondly, Job-Demand-Control model (Karasek jt, 1998²⁸; Karasek & Theorell, 1990²⁹). In addition, OPSTI test follows Estonian Occupational Health and Safety Act (2019).

²³ Cooper, C.L., & Williams, S. (1996). Occupational Stress Indicator Version 2,0. Windsor, England: NFER-Nelson.

²⁴ Cox, T. (1978). Stress. London: Macmillan.

²⁵ Hurrell J.J.Jr., Nelson, D.L., & Simmons, B.L. (1998). Measuring job stressors and strains: where we have been, where we are, and where we need to go, Journal of Occupational Health Psychology, 3, 368-389.

²⁶ Spector, P. E., Cooper, C., Sanchez, J. I.; O'Driscoll, M.; Sparks, K.; Bernin, P.; Bussing, A.; Dewe, P.; Hart, P.; Lu, L.; Miller, K.; Renault de Moraes, L.; Ostrognay, G.; M., Pagon, M.; Pitariu, H.; Poelmans, S.; Radhakrishnan, P.; Russinova, V.; Salamatov, V.; Salgado, J.; Shima, S.; Siu, O. L.; Stora, J.; Teichmann, M.; Theorell, T.; Vlerick, P.; Westman, M.; Widerszal-Bazyl, M.; Wong, P., & Yu, S. (2002). Locus of Control and Well-Being at Work: How Generalizable Are Western Findings? Academy of Management Journal, 45(2),453 – 466.

²⁷ Teichmann, M., & Ilvest, J. Jr., (2007). Engineers' Occupational Stress Prevention System: E-psycho-diagnostics and E-learning. In: Iskander, M. (Ed.), Innovations in E-learning, Instruction Technology, Assessment, and Engineering Education, Springer, pp. 249-255.

²⁸ Karasek, R., Brisson, C., Kawakami, N., Houtman, I., Bongers, P., & Amick, B. (1998). The job content questionnaire (JCQ): an instrument for internationally comparative assessments of psychological job characteristics. *Journal of Occupational Health Psychology, 3*, 4, 322-355.

²⁹ Karasek, R., & Theorell, T. (1990). *Healthy Work Stress, Productivity, and the Reconstruction of Working Life.* New York Basic Books.



Based mainly on theoretical views named above, knowledge about organizational health framework. However, many practical psychometric experience gained in developing *Occupational Stress Indicators* (OSI-1 and OSI-2: free access <u>https://www.pekonsult.ee/testid/stress.php</u>) as the occupational stress study instruments, adapting *WHO Quality of Life* instrument (WHOQOL-100 and WHOQOL Brief), and *Work-family Conflict Scale* (free access: <u>https://www.pekonsult.ee/testid/tooelu.php</u>) in Estonia. Also, we suggest that organizational health framework is most promising approach to occupational stress research.

A predecessor to the OPSTI test (over 100 questions), was developed. In 2014, the electronic version of OPSTI test was developed. In 2018, surveys and statistical analysis allowed the number of OPSTI test questions reduce nearly by half. Due to the definition of psychosocial risk factors in TTOS §9, we added four psychosocial risk factors to the OPSTI test, namely: *Long-term work alone and monotonous work* (2 questions), *Work at risk and work-related violence* (2 questions), *Bullying and harassment at work* (2 questions). All together OPSTI test incorporates 60 questions. It takes about 10-15 minutes to complete the OPSTI test electronically.

To increase the reliability of the OPSTI test, we added a "lie-scale" (a block of four questions by pairs).

The updated OPSTI test is available electronically to test taker and he/she gets after few seconds an automatic individual feedback. The OPSTI test can be conducted in seven languages.



The 60 questions of OPSTI test are divided into 30 factors, which are grouped into four indexes.





The anonymity of OPSTI test takers is guaranteed. The data processing follows the Personal Data Protection Act³⁰. A test taker completes OPSTI test in an online environment, but OPSTI test is processed outside the Internet environment. The OPSTI test results automatically go to a secured database that locate outside the Internet environment, where each organization's data forms a separate mini-database. Databases are stored in encrypted form on a RAID-5 security level without any test taker's personal data.

RELIABILITY, VALIDITY & NORMS

OPSTI test internal consistency reliability estimates (Cronbach α or coefficient alpha) are available from 13 study samples in 2019. Internal consistencies for the total score and four indexes are given in the table below.

			-	
Indexes	No of factors	Total sample size	No of samples	Cronbach α
Work-related demands	9	1203	13	0.79
Employee-related demands	6	1203	13	0.81
Coping with stress	7	1203	13	0.80
Organization-related demands	7	1203	13	0.84
OPST test		1203	13	0.86

Tabel. OPSTI test internal consistency reliability (N = 1203).

³⁰ Personal Data Protection Act, *Riigikogu teataja,* <u>https://www.riigiteataja.ee/en/eli/523012019001/consolide</u>



Within-sample correlations range from 0.30 to 0.71; correlations between OPSTI 30 factors range between 0.22 and 0.46. OPSTI test internal correlations between four indexes see in Table below.

	4			4
Indexes	1	2	3	4
1. Work-related demands	Х			
2. Employee-related	0.42	Х		
demands				
3. Coping with stress	0.24	0.59	Х	
4. Organization-related	0.36	0.54	0.48	Х
demands				

Tabel. OPSTI test internal correlations between four indexes (N = 1203).

p<0.05

For construct Estonian norms we use 13 study samples in 2019 with total sample size 1203 employees (in table below).

Tabel. Estonian norms (N = 1203).
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Indexes	OPSTI	No of	Total sample
	score	samples	size
	(Mean±SD)		
Work-related demands	56.30±10.95	13	1203
Employee-related demands	65.05±13.32	13	1203
Coping with stress	65.93±10.39	13	1203
Organization-related demands	69.62±11.86	13	1203

Studies of psychosocial risk factors covered 13 organizations (five of which were public sector organizations) and the total sample size was 1,203 employees, of whom 51% were men; the mean age was 42.7 ± 11.5 years (more detailed age distribution is shown in the figure below).





MAPPING AND ASSESSING OF PSYCHOSOCIAL RISKS

The methodology for mapping and assessing workplace psychosocial risks has been developed following the definition in the Estonian Occupational Health and Safety Act (2019) and the recommendations of the European Agency for Safety and Health at Work:

1) the presence or absence of a psychosocial risk factor in the work environment is measured, i.e. a study is performed by using the OPSTI test. OPSTI test measures the presence of more than 60 mainly common psychosocial risk factors in the work environment, the results are aggregated in 30 factors.

2) the data obtained from the study are analyzed by various statistical methods and the impact of psychosocial risk factor is evaluated, i.e. the effect of psychosocial risk factor obtained in the given work environment is compared with the Estonian norm (Estonian norm: N = 1203, 13 company employees, 5 public sector organizations).

For example: A sample psychosocial risk factor X in Company Y is statistically significantly (p = 0.000) lower than the Estonian norm (N = 1203).



3) Correlation analysis and Student t-test is used for evaluation the significance of each psychosocial risk factor in organization.

For example: The correlation between occupational stress and the psychosocial risk factor X shown below and it is statistically significant (r = 0.28; p < 0.05) i.e. if occupational stress increases also the psychosocial risk factor X will increase, and *vice versa*, when the psychosocial risk factor X is reduced, occupational stress decreases.

4) Estonian Occupational Health and Safety Act (2019) declares at § 9¹ that psychosocial hazards are:

- work involving a risk of an accident or violence
- o unequal treatment
- o bullying and harassment at work
- work not corresponding to the abilities of an employee
- o working alone for an extended period of time
- o monotonous work
- other factors related to management, organization of work and working environment that may affect the mental or physical health of an employee, including cause work stress.



By law, there are two important criteria for assessing the risk from each psychosocial risk factor - the (a) the impact to health, and (b) the impact to work-related stress. The relationship between each psychosocial risk factor and occupational stress and health is assessed separately.

For example: The correlation between stress and health is negative and significant (r = -0.27; p < 0.05) i.e. as stress increases, health deteriorates and *vice versa* - stress reduces as health improves.

For example: FACTOR WORKING ENVIRONMENT

There was no statistically significant correlation between working environment and health. There was a statistically significant negative correlation between stress and working environment (r = -0.26; p < 0.05), i.e. the higher occupational stress is associated with the lower the satisfaction with the working environment, and *vice versa* - the higher satisfaction with the working environment is associated with lower occupational stress level.

5) Psychosocial factors risk assessment is based on the recommendation of the Estonian Labor Inspectorate. In Estonia and elsewhere in Europe, the matrix recommended by the European Agency for Safety and Health at Work (EU-OSHA) has been used for simplicity to determine the level of risk according to (a) probability of occurrence and (b) severity. Both the probability of occurrence and the severity of the consequences are divided into three different levels.

Psychosocial risk assessment matrix

TAGAJÄRG	Väheohtlik Tervisehäireid ei esine	Ohtlik Kerge tervisehäire	Väga ohtlik Tõsine tervisehäire
Väga ebatõenäoline	Vähene risk l	Vastuvõetav risk II	Keskmine risk III
Võrdlemisi ebatõenäoline (võimalik)	Vastuvõetav risk II	Keskmine risk III	Suur risk IV
Tõenäoline	Keskmine risk III	Suur risk IV	Talumatu risk V

6) Based on the risk assessment matrix recommended by the European Agency for Safety and Health at Work (EU-OSHA) and the Estonian Labor Inspectorate, the same matrix can be used to assess the psychosocial risk factors:

(a) probability of occurrence of a risk factor - occurrence of psychosocial risk factor compared to the Estonian average (N = 1203)

(1) VERY UNBELIEVABLE - non-existent or very low (practically equal to the Estonian norm)

(2) UNLIKELY, BUT POSSIBLE - limited, non-significant (statistically insignificant difference from Estonian norm)

(3) LIKELY - significant (statistically significant difference from the Estonian norm)

(b) *severity of the consequences* - relationship between the psychosocial risk factor and health and stress

(1) NOT MUCH HARMFUL - no relation to occupational stress, and no relation to health

(2) HARMFUL - is correlated with either occupational stress or with health



(3) VERY DANGEROUS - is correlated with occupational stress and also is correlated with to health.

STRESS MANAGEMENT AND INTERVENTION

We have developed different tools you need at three levels to deal with stress at work:

- coping with occupational stressors i.e. psychosocial risk factors an electronic OPSTI test for psychosocial risk mapping and evaluation (available in seven languages)
- (2) in addition, to a wealth of science-based literature and professionallevel in-house training, it is also possible to use online digital teaching tool to improve your own occupational stress management (digital teaching tool *Stress at work (CD: 2000; Internet availability: 2007; published: 2009*³¹, ³²) is available <u>https://www.pekonsult.ee/digi/stress.htm</u>)
- (3) already burnout employees need professional counseling (PE Konsult is registered as non-medical occupational health service provider No. 0049).

³¹ Teichmann, M. (2009). Web-based occupational stress prevention system, In: Abstracts of XIV European Congress of Work and Organizational Psychology, May 13 – 16, 2009, Santiago de Compostela, Spain.

³² Teichmann, M.; Ilvest, J. Jr. (2009). Web-based occupational stress prevention system. EAWOPinPractice - European Association of Work and Organizational Psychology in Practice, 3, 24 - 29.