



3. Mednarodni znanstveni simpozij |
3. International scientific symposium

**Sledenje življenjskemu slogu za zdravje, moč
in dolgo življenje - aktivno za delovni uspeh
in preventivo zbolevanja |**

**Active Lifestyle Tracking to Increase Health,
Strength and Longevity - Boosting Work
Productivity and Reducing Sick Leave**

Zbornik prispevkov z recenzijo |
Proceedings





Zbornik prispevkov z recenzijo | Proceedings

Sledenje življenjskemu slogu za zdravje, moč in dolgo življenje - aktivno za delovni uspeh in preventivo zbolevanja |

Active Lifestyle Tracking to Increase Health, Strength and Longevity - Boosting Work Productivity and Reducing Sick Leave

3. Mednarodni znanstveni simpozij | 3. International scientific symposium

Glavni uredniki | Editors-in-chief

Alojz Ihan
Alenka Ribič
Mojca Vrečar

Izdal | Published by

RC IKTS Žalec
Aškerčeva ulica 4A
3310 Žalec

Žalec, 2015

Zanj | Publishing Executive

Janez Uplaznik

Lektoriranje angleških besedil | English language editing

Tjaša Šket

ISBN 978-961-93833-0-8 (pdf)

Dostopno na | Web access: <http://www.24alife.com/news/live-stream-of-the-3rd-international-symposium-hls-healthy-lifestyle-symposium->

©2015 RC IKTS Žalec

CIP - Kataložni zapis o publikaciji
Narodna in univerzitetna knjižnica, Ljubljana

616-057(082)(0.034.2)

616-084(082)(0.034.2)

SLEDENJE življenjskemu slogu za zdravje, moč in dolgo življenje - aktivno za delovni uspeh in preventivo zbolevanja [Elektronski vir] : 3. mednarodni znanstveni simpozij : zbornik prispevkov z recenzijo = Active lifestyle tracking to increase health, strength and longevity - boosting work productivity and reducing sick leave : 3. international scientific symposium : proceedings / glavni uredniki Alojz Ihan, Alenka Ribič, Mojca Vrečar. - El. knjiga. - Žalec : RC IKTS, 2015

Način dostopa (URL): <http://www.24alife.com/news/live-stream-of-the-3rd-international-symposium-hls-healthy-lifestyle-symposium->

ISBN 978-961-93833-0-8 (pdf)

1. Vzp. stv. nasl. 2. Ihan, Alojz
279245056



3. Mednarodni znanstveni simpozij | 3. International scientific symposium

Sledenje življenjskemu slogu za zdravje, moč in dolgo življenje - aktivno za delovni uspeh in preventivo zbolevanja |

Active Lifestyle Tracking to Increase Health, Strength and Longevity - Boosting Work Productivity and Reducing Sick Leave

Prizorišče | Venue

Domus Medica, Ljubljana

Datum | Dates

9. in 10. aprilj 2015 | 9 and 10 April 2015

Organizatorji | Organizers

Medical Chamber of Slovenia (ZZS), RC IKTS Žalec

Organizacijski odbor simpozija | Members of the organization committee

Prof. Alojz Ihan, M.D., Ph.D.,

Mojca Vrečar, M.B.A.,

Alenka Ribič, B.Sc.

Znanstveno recenzentski odbor | Board of Scientific Reviewers:

Prof. Alojz Ihan, M.D., Ph.D.,

Prof. Vojko Strojnik, B. Sc.,

Prof. Matej Tušak, B. Sc., Ph.D.,

Paul Jiménez, Ph.D.,

Janez Uplaznik;

Juraj Sprung, M.D.



Vsebina zbornika | Proceedings Contents

Nahtigal	INTRODUCTION OF PREVENTIVE HEALTH MEASURES REGARDING THE FORMATION OF MUSCULOSKELETAL DISORDERS OCCURRING IN THE WORKPLACES OF SANDING AND POLISHING
Scales	EXERCISE IS PREVENTIVE MEDICINE: ADDING YEARS TO LIFE AND LIFE TO YEARS
Dernovšček H.	FIT FOR WORK AT THE UNIVERSITY MEDICAL CENTER LJUBLJANA
Tusak	PSYCHOLOGICAL ASPECTS OF ABSENTEEISM AND POSSIBLE INTERVENTIONS
Jiménez	THE ROLE OF LEADERSHIP FOR ENGAGEMENT AT THE WORKPLACE
Ihan	OCCUPATIONAL STRESS IN HEALTH CARE WORKERS: RISK FACTORS FOR INCREASED MORBIDITY
Riley	MAYO CLINIC'S APPROACH TO EMPLOYEE HEALTH AND WELLNESS: THE DAN ABRAHAM HEALTHY LIVING CENTER
Wieneke	EXPANDING THE REACH OF MAYO CLINIC HEALTHY LIVING STAFF THROUGH WORKSITE WELLNESS
Strojnik	PHYSICAL ACTIVITY OF EMPLOYEES

Symposium

**Active Lifestyle Tracking
to Increase Health,
Strength and Longevity -
Boosting Work Productivity
and Reducing Sick Leave**



Domus Medica
Ljubljana, Slovenia, 9.4.-10.4.2015



DEVELOPMENT CENTER
IKTS
ŽALEC



8:30 - 9:00 **Registration**

9:00 - 9:30 **Welcome speeches**

9:30 - 11:10 **1st Session: Reasons for Active Prevention of Ill Health in Employees |**
Chairs: M. Dodič Fikfak, S. Fakin

Metoda Dodič Fikfak, UKC Ljubljana;

Sick Leave and Presenteeism During Economic Crisis in Slovenia,
Case Presentation

Samo Fakin, Health Insurance Institute of Slovenia;

Financial Effects on Sick-Leave Prevention

Karmen Nahtigal, Novem Car Interior Design;

Introduction of Preventive Measures for the Formation of Bone and
Muscle Disorders in Workplaces of Manual Sanding and Polishing

Maria Wonisch, Steiermärkische Sparkasse;

2013 Best Workplace Health Practices for Employees with Chronic
Illnesses awarded by the European Network for Workplace Health Promotion

Q&A

11:10 - 11:30 **Coffee Break**

11:30 - 13:10 **2nd Session: Aging workers |** Chairs: A. Janež, R. Scales

Boštjan Salobir, UKC Ljubljana;

Health Aspect of Elderly Employees; Preventing Prefrailty and Frailty

Andrej Janež, UKC Ljubljana;

Diabetic Workers: Possible Interventions at the Workplace

**Robert Scales: Director of Cardiac Rehabilitation & Wellness,
Mayo Clinic-Arizona, Scottsdale, AZ;**

Exercise is Preventive Medicine: Adding Years to Life and Life to Years

Q&A

13:10 - 14:00 **Lunch Break**

14:00 - 15:40 **3rd Session: Leadership and Human Resource Management |**
Chairs: M. Tušak, P. Jimenéz

Nataša Dernovšček Hafner, UKC Ljubljana;

Fit for Work at the University Medical Center Ljubljana

Matej Tušak, Faculty of Sports, UL;

Psychological view on absenteeism and possible interventions

Paul Jimenéz, UNI Graz;

The Role of Leadership in Engagement at the Workplace

Stane Baša, RC IKTS;

Employee Wellbeing Program: Do Modern Times Require an Automated Solution?
Presenting 24alife Corporate

Q&A

15:40 - 17:00 **Healthy Happy Hour**

8:30 - 9:00 Registration

9:00 - 10:55 4th Session: Tracking Health for Health Professionals |
Chairs: A. Ihan, S. Kopecky

Alojz Ihan, UL MF;

Presentation of the Pilot Study Results of the Medical Chamber of Slovenia

Zlatko Fras, UKC Ljubljana;

Biological and Psychological markers

Beth Riley, The Dan Abraham Healthy Living Center;

Mayo Clinic Approach to Employee Health and Wellness

Stephen Kopecky, Mayo Clinic Rochester MN;

The Four Pillars of Cardiovascular Disease Prevention

Q&A

10:55 - 11:10 Coffee Break

11:10 - 12:50 5th Session: Diabetic workers | Chairs: I. Štötl, J. Miles

Iztok Štötl, UKC Ljubljana;

Health Aspects of Diabetic Employees

John Miles, Mayo Clinic Rochester MN;

Treating Type 2 Diabetes with Cardiovascular Outcomes in Mind

Karmen Resnik, RC IKTS;

Diabetes Management: Do Modern Times Require a Novel Approach?
See What's New 24alife Personal – Diabetes.

Q&A

12:50 - 13:00 Break

13:00 - 14:40 6th Session: Tracking Life Style | Chairs: V. Strojnik, J. Sprung

Kaisa Wieneke, The Dan Abraham Healthy Living Center;

Expanding the Reach of Mayo Clinic Healthy Living Staff
through Worksite Wellness

Juraj Sprung, Mayo Clinic;

Anesthesia and Mild Cognitive Impairment

Vojko Strojnik, Faculty of Sports, UL;

Physical Activity of employees

Stane Baša, RC IKTS;

24alife Platform: Tracking Lifestyle for Changes or
Tracking Changes for Lifestyle?

Q&A

14:40 Lunch

Scientific Committee: Prof. Alojz Ihan, M.D., Ph.D.; Prof. Vojko Strojnik, B.Sc., Ph.D.; Prof. Matej Tušak B.Sc., Ph.D.; Paul Jimenez, Ph.D.; Janez Uplaznik; Juraj Sprung, M.D.

CME/CPD Credit Points: 10 Credits

CPD Occupational Health and Safety: 12 Credits

Registration: <http://domusmedica.si/dogodki/>

Registration Fee: Participation is free.

Lecturers: S. Baša (RC IKTS), N. Dernovšček Hafner (UKC Ljubljana, Slovenia), S. Fakin (Health Insurance Institute of Slovenia), M. Dodič Fikfak, (UKC Ljubljana, Slovenia), Z. Fras, (UKC Ljubljana, Slovenia), A. Ihan (Medical Faculty UL, Slovenia), A. Janež (UKC Ljubljana, Slovenia), P. Jimenez (University Graz, Austria), S. Kopecky (Mayo Clinic), J. Miles (Mayo, ZDA), K. Nahtigal, (Novem Car Interior Design), K. Resnik (RC IKTS), B. Riley (Mayo Clinic Dan Abraham Healthy Living Center), B. Salobir (UKC Ljubljana), R. Scales (Cardiac Rehabilitation & Wellness, Mayo Clinic), J. Sprung (Mayo, ZDA), V. Strojnik (Faculty of Sport UL, Slovenia), I. Štötl (UKC Ljubljana), M. Tušak (Faculty of Sport UL, Slovenia), M. Wonisch (Steiermärkische Sparkasse), K. Wieneke (Mayo Clinic Dan Abraham Healthy Living Center),

Organizing Committee: Alojz Ihan, Mojca Vrečar (e-mail: mojca.vrecar@zzs-mcs.si), Alenka Ribič

Organizers: Medical Chamber of Slovenia (ZZS), RC IKTS Žalec.

INTRODUCTION OF PREVENTIVE HEALTH MEASURES REGARDING THE FORMATION OF MUSCULOSKELETAL DISORDERS OCCURRING IN THE WORKPLACES OF SANDING AND POLISHING

Karmen Nahtigal

Novem car interior design d.o.o., Ložnica 53 a. 3310 Žalec, Slovenia

Keywords: Occupational Health Promotion, ergonomics, kaizen workshops, guided active breaks, exercises for a healthy back

Introduction

The company novem car interior design d.o.o. (hereinafter novem d.o.o.) started to introduce Occupational Health Promotion activities (abbr. OHP) in 2010. Individual activities were aimed at informing and raising awareness of and among the employees about a healthy life-style. We encouraged the operation of various sections, i.e. professional groups of employees, which had already been established in the company: the hiking group, the cycling group and the football group. We have organised several family picnics with hiking activities in the mountains and hills.

We have published a variety of topics in the field of health promotion in our internal newspaper *novem* and designed a health promotion logo in novem necessary for a unified framework of communication inside the company.

In cooperation with some external performers we also prepared lectures titled 'A Healthy Me', 'Musculoskeletal Disorders' and 'A Healthy Life-Style'. In 2013 we established a special team aimed at health promotion.

In 2014, two colleagues attended a training course with the programme 'Fit for work' which was intended for OHP consultants and took place at the University Medical Centre Ljubljana. An integral Health Promotion Programme was prepared in novem d.o.o. within this training course. The preparation of the OHP programme was based on the information and data obtained from the National Institute for Public Health (abbr. IVZ RS). Based on those data we analysed health of all employees in novem d.o.o. for the period 2008-2012.

Among other things, the analysis revealed that:

- musculoskeletal disorders are the most frequent cause of sick leave in the company;
- the company loses 19,8 workdays per employee in a year on average due to sick leave;
- our average proportion of sick leave has been 5.4% in the last five years, and this proportion is 0.3% higher than in other companies of the same industry.

The findings from the analysis summarised from internal reports made by the Occupational Health Service of the company are the following:

- the majority of injuries occur in the polishing phase (18.07%) and in the phase of sanding wood/varnish (17.2%);
- the most frequent areas of injuries are injuries to fingers, hands/arms and to other body parts.

On the basis of the data above the company has set a priority task for the business year 2014/15 to eliminate ergonomic irregularities in the field of manual sanding and polishing, since these workplaces are not designed in accordance with the principles of ergonomics.

The workers doing polishing and sanding are exposed to continuous vibrations, and perform continuous and repetitive movements. They feel a lot of tension and pressure in the area of the neck and shoulders, and are exposed to continuous force or pressure on parts of the body. They perform their work in a standing position and use their strength at the same time. The consequences of such work result in musculoskeletal disorders.

The final total risk assessment of these workplaces has been declared as 'threshold' in the Safety Statement and Risk Assessment of workplaces. For this reason, these workplaces are subjected to increased risk of accidents and occupational diseases or disorders.

A resolution was adopted by the management team to integrate the OHP contents into its strategic corporate goals for the period 2014-2017. These goals represent a fundamental overview of the priority areas of work within the period of these three years, and are liable for all the management levels of the company. At the same time, these goals represent tools with which the OHP contents shall be spread around the company in the form of annual objectives across the entire organisational structure of the company.

Presentation of the OHP programme and the work methods

In the envisaged Health Promotion Programme within the company, novem d.o.o. has targeted, in its subproject of ergonomic measures, at introducing preventive measures regarding the formation of musculoskeletal disorders in the workplaces of sanding and polishing.

As a pilot work area the product AUDI A7/C7 was selected, the door panel line VO/HI, the workplace manual sanding. The existing method of optimising production processes, the so-called kaizen [1] workshops [2], has adequately been upgraded and supplemented with the contents of ergonomic measures.

The fundamental principle of kaizen workshops is active involvement of all employees in any changes, taking benefit of their knowledge and experiences, and encouragement of team and group work. Beside a kaizen coach (a workshop moderator) several other employees are included in the selected workshop; a worker working in the field of manual sanding, a shift manager, an authorised representative for work safety, a consultant for occupational health promotion. A permanent member of such workshops is an authorised medical practitioner specialised in occupational health, sports and traffic medicine working for the Health Centre Žalec (Slov. abbr. ZD Žalec). A provisional member of such workshops is a physiotherapist also working for ZD Žalec.

Two kaizen workshops were carried out in 2014 in Novem d.o.o. The first one took place in April and June for employees doing the work of sanding, and the second one took place in July and August for the employees working in the polishing phase.

The work principle of kaizen workshops is divided into three modules which are carried out in weekly cycles.

Week 1:

The first day was determined only for training and informing the employees. The purpose herein was to acquaint the employees with the contents and to prepare them for the contents that followed in the practical part of the workshop. The following contents were introduced at this stage of the workshop:

- health promotion and presentation of Health Promotion Programme in novem d.o.o. - the content was presented by the two health promotion consultants;
- management of experiencing overload; the content was presented by the authorised medical practitioner;
- prevention of occupational injuries; the content was presented by the authorised representative for work safety;
- ergonomics or ergonomic problems; the content was presented by the kaizen coach.

[1]. Kaizen: from Japanese, kai - a change; zen - to the better; summarised from Toyota's Production System

[1, 2] Kaizen workshop: is a targeted workshop with an interdisciplinary group of members, guided by a kaizen coach (moderator) with focus on improvements of a work process.

The second, the third and the fourth day were focused on monitoring the workplace and identifying eventual ergonomic problems, which was followed by an analysis of the actual situation, finding possible solutions, preparation of new concepts of the workplace, its workflow and a new action plan of the workplace. At the stage of an interim presentation, the members of the kaizen workshop presented their results of the first week to the management team and to other employees working in this particular field. The newly established concepts were finally approved there.

Week 2:

After the formation of all anticipated technical and organisational measures, the work started to be performed according to the newly established workplace. The first three days were designed for monitoring the work process, checking the improvements introduced, and eventual corrective measures were introduced. In this phase the medical representative, the medical practitioner in the field of occupational health, sports and traffic medicine, and the authorised representative of work safety took a more intensive role in the workshop. They worked with production workers and the shift manager by implementing the established concepts of new methods and work techniques in practice.

All necessary written documentation was prepared, i.e. the instructions of work safety were updated and supplemented by the instructions for healthy work. Also some photographic material was prepared for recommended exercises during an active break. An analysis of the actual situation was made after the technical and organisational measures had been introduced. The fourth day was intended for data collection and preparation for the final presentation. This presentation included all the comparable information and data regarding the situation of the workplace - before and after the improvements introduced in the workplace. This presentation was again presented by the members of both kaizen workshops to the management team and other employees in this particular field of work.

Week 3-5:

After the completion of both kaizen workshops the monitoring process of indicators, eventual deviations and introduction of adequate measures took place. Each change normally takes quite some time for employees to get used to it. For this reason, this time was dedicated above all to stabilising and adapting to changes in the workplace.

Week 9:

The verification of the outcomes of both workshops was carried out.

The outcomes of the pilot workshop for the workplace of manual sanding

Each kaizen workshop has some predefined objectives. In the case of the pilot kaizen workshop for the workplace of manual sanding the predefined objectives were the following: to improve the Safety Statement and Risk Assessment, to improve the work methods and techniques, to reduce the factor of risk assessment of the work, and to introduce ergonomic measures. The summary of the objectives and outcomes are shown in the table below:

Table1: Kaizen workshop indicators for the workplace manual sanding

INDICATORS	situation BEFORE the workshop	OBJECTIVES of the workshop	situation AFTER the workshop
Total risk assessment (from the Safety Statement and Risk Assessment)	marginal	acceptable	acceptable
Risk assessment for work methods and techniques (from the Safety Statement and Risk Assessment)	[3]	[2]	[2]
Risk assessment factor of the work (based on the ergonomic analysis)	[50] very high	-15%	[25] medium
Number of ergonomic measures	/	[14]	[21]

The activities were oriented to humanising the workplace. The main objective was to create a workplace which would suit the workers and enable them to do their job within the so-called comfort zone and in a neutral position. On the basis of collected proposals and concepts, and by means of internal technical services of the company, a new concept of work table and tools was created.

Most ergonomic problems were eliminated with the introduction of the sanding template with adjustable height, used for manual sanding. The previous template with fixed height was a huge problem for workers who are short and particularly tall.

Increasing the spacing of the sanding template was originally intended to prevent impacts and abrasions of workers. The result of this change was also a changed method of removing or sucking dust which is formed during the work process and spreads around the workplace depositing also on the surface of the work table.

The concept of dust removal/suction from the work table surface was changed by installing pipes for sucking dust under the work table. The result was much less dust deposited on the surface of the work table, and the work equipment and tools could also be relocated in order to be much closer to the workers to have them within reach.

A smaller relocation done with trolleys and work equipment/tools prevented the workers to rotate and cause harmful turns or rotations of the lower part of the back and to stretch the torso and arms too much.

The key contribution to the success of the workshop was introduction of the new conception – not only a safe, but also a healthy work. For this reason, the instructions for work safety were supplemented by the instructions of maintaining a healthy body during the work.

Under the supervision of the physiotherapist from the Health Centre Žalec the members of the workshop have acquired some techniques of regular and healthy lifting and carrying things. They have learned about the risk factors of individual work processes and activities for the human body. They have learned to perform practical exercises.

Guided active breaks were introduced in the company; at first guided by the physiotherapist, and later guided by three qualified colleagues, the so-called active break moderators who daily or during their work shift perform exercises to prevent overload in the musculoskeletal systems.

The outcomes of the kaizen workshop for the workplace of polishing

The work method of the pilot workshop was again used in the workshop designed for workers doing their work of manual/machine polishing again for the product AUDI A7/C7, the trim panel line VO/HI. The summaries and the outcomes are evident from the following table:

Table 2: Kaizen workshop indicators for the workplace manual/machine polishing

INDICATORS	situation BEFORE the workshop	OBJECTIVES of the workshop	situation AFTER the workshop
Total risk assessment (from the Safety Statement and Risk Assessment)	marginal	acceptable	acceptable
Risk assessment for work methods and techniques (from the Safety Statement and Risk Assessment)	[3]	[2]	[3]
Risk assessment factor of the work (based on the ergonomic analysis)	[27,2] very high	-15%	[20,8] medium
Number of ergonomic measures	/	[10]	[10]

39 various activities were necessary to obtain the objective of the kaizen workshop. 10 of them were ergonomic measures (organisational and technical ones). At this point, we want to highlight the most technically demanding ergonomic solution of a hand polisher adjustable in height, which is the result of cooperation between our internal professional worker and an external business partner. The previous fixed height of the machine polisher (105 cm) has become adjustable on account of chain drive, which provides adjustable height for workers (the minimum height is 100 cm, the maximum height is 125 cm). This has substantially contributed to relieving the human body in the area of the shoulders and the back. The machine adjusts to the worker now and not vice versa.

Just like in the pilot kaizen workshop for the workplace of sanding also in this workshop the Instruction for safety work were supplemented by the instructions for healthy work. The members of the workshop have acquired some techniques of regular and healthy lifting and

carrying things. They have learned about risk factors of their work, individual work processes and activities for their body. They have also learned to perform practical exercises.

Conclusion

Efforts in the field of OHP have for several years been targeted at raising awareness of the employees about prevention of occupational ill-health. Technical and organisational improvements introduced in the field of workplace ergonomics, particularly for the workplaces of manual sanding and hand polishing, and all the acquired experiences represent the groundwork which in time will be upgraded and improved, and new preventive measures regarding musculoskeletal disorders will also be implemented.

These two kaizen workshops were supported by numerous promotional and information campaigns. Their efficiency is reflected in initiatives and suggestions to regularly perform active breaks outside the production line mentioned above, which have appeared after the completion of these two workshops. We have now additional eight qualified active break moderators. Apart from only production processes also administration of the company has joined in the guided active breaks. The number of active break participants is slowly and steadily rising.

The employees of novem d.o.o. understand the importance and the purpose of the corporate long-term objectives which is reflected in increased motivation and behavioural changes of employees.

Based on the received suggestion for additional exercises outside the regular working time, the company has offered and organised for the employees an additional exercise for healthy back, which is currently being performed under the *slogan 'Join us on the way to a healthy and strong back'*. This activity is conducted by an external performer once a week in two different terms –the one in the morning and the second one in the afternoon, so all employees regardless their shift work can attend the activity.

Some facts about the company Novem car interior design d.o.o.

The company novem d.o.o. is part of the German Group novem car interior design GmbH Vorbach. It is a leading global producer of high quality decorative automotive components made of wood, aluminium, plastics and fabrics. The company has an almost 70-year-old tradition, and is headquartered in Vorbach in Germany. The group comprises 10 companies located around the world. Six of them are located in Europe, three in America and one in Asia, in Beijing in China. The total number of all employees in the three continents is around 4,500 on average. The novem Group is one of the biggest global producers operating in its market segment. The subsidiary novem car interior design, d.o.o. Žalec comprises one of the biggest portions in the production structure of the novem Group.

Novem d.o.o. Žalec celebrates its 25-year anniversary of its operations in 2015. The company is an important economic player of the region. Currently, there are nearly 500 employees, and in 2015 this number will be increased due to some new projects acquired.

Novem d.o.o. has also acquired the ISO 14001 certification. It is the system of managing the environment and comprises management of environmental aspects of production and service activities. It comprises meeting the relevant statutory requirements, resource efficiency and prevention of pollution of the environment. The ISO 14001 standard is one of the most important tools in relation to the environment used by organisations and corporation around the globe.

Novem d.o.o. Žalec has also had the quality standard of the automotive industry VDA 6.1 since 1994, and the DIN TS 16949 standard since 2003. Both standards are necessary in the ever more demanding and dynamic automotive industry.

All certificates must be renewed annually. The company strives to maintain good quality; not only due to maintaining and acquiring official standards, but mostly because of operating according to good quality in general. It strives to acquire good quality at all its areas:

Through the process of continuous improvements (CIP) the company encourages the process of innovativeness and creativity; indirectly it also stimulates satisfaction of the employees, since this enables improved workplaces, processes and also products. CIP influences the quality of work and better results of the work.

Within the projects novem - *Friendly to families and Health promotion in novem*, the company is targeting at new corporate objectives, such as raising awareness of employees about a healthy life style in a broader sense, and also about improving relationships among employees, enhancing creative team work, care for families and well-being of all employees, increasing company loyalty and company's reputation internally and externally.

EXERCISE IS PREVENTIVE MEDICINE: ADDING YEARS TO LIFE AND LIFE TO YEARS

R. Scales

Mayo Clinic Division of Cardiovascular Diseases, 13400 East Shea Boulevard, Scottsdale, AZ 85259, USA

Keywords: prevention, cardiac rehabilitation, cardiology-based exercise consultations, motivational interviewing

Abstract: If the Food and Drug Administration approved a medicine that was free, had no side effects, and was likely to make patients feel good and improve their health, would you prescribe it? Would you be surprised if this medicine did not come in a pill bottle or a needle? This 'prescription' is of course a well-designed physical activity and exercise program. It is important that the program is well-designed, because a poorly designed exercise program could result in side effects such as injuries to the body. In this presentation, participants will hear some compelling research to support the medicinal qualities of exercise. A quality improvement process that uses cardiology-based exercise consultations to help physicians deliver preventive medicine will be described. The presentation will also offer suggestions that may assist in the delivery of the message that 'Exercise is Preventive Medicine' by using the techniques of motivational interviewing to empower patients to adopt an active lifestyle when they leave the clinic.

References

- [1] American College of Sports Medicine. ACSM's guidelines for exercise testing and prescription. (9th Ed). Lippincott, Williams and Wilkins, New York, NY, 2014.
- [2] M. F. Bergeron, B. C. Nindl, P. A. Deuster et al. Consortium for health and military performance and American College of Sports Medicine Consensus paper on Extreme Conditioning Program in military personnel. *Current Sports Medicine Reports*, 10 (2011), 6, pp. 383-389.
- [3] Garber, C. E., Blissmer, B., Deschenes, M. R. et al. (2011). Quantity and quality of exercise developing and maintaining cardiorespiratory, musculoskeletal, and neuromotor fitness in apparently healthy adults: Guidance for prescribing exercise. American College of Sports Medicine's Position Stand. *Medicine & Science in Sports & Exercise*, 43 (2011), 7, pp. 1334-1359.
- [4] W. R. Miller, S. Rollnick Motivational Interviewing: Helping people change. (3rd ed). Guilford Press, New York, NY, 2013.
- [5] S. Rollnick, W. R. Miller, C. C. Butler Motivational interviewing in health care: Helping patients change behavior. Guilford Press, New York, NY, 2008.

FIT FOR WORK AT THE UNIVERSITY MEDICAL CENTER LJUBLJANA

N. Dernovšček Hafner¹

¹ University Medical Center Ljubljana, Clinical Institute of Occupational, Traffic and Sports Medicine;
Poljanski nasip 58, 1000 Ljubljana

Keywords: health, workplace health promotion, hospital, employees

Abstracts:

Fit for work programme at the University Medical Centre Ljubljana is a workplace health promotion programme, designed for the employees of the institution. The intention of the programme is to raise awareness of both employees and employers, to educate and train them in a healthy work style and lifestyle. In the paper the concrete action, which have been carried on in the institution, in the field of ergonomic and organization have been described.

Fit for Work at the University Medical Centre Ljubljana (UMCL) is a programme promoting health at work intended for those employed in the institution. It is coordinated by the Clinical Institute of Occupational, Traffic and Sports Medicine and has already been carried out successfully in numerous Slovene companies.

As the greatest Slovene hospital, the UMCL had more than 7,600 employees at the end of last year, thus representing a great challenge for the promotion of health at work.

The implementation of the programme at the UMCL has been going on since 2014 and the project was financially supported by the Health Insurance Institute of Slovenia after winning the tender for co-financing the projects aimed at promoting health at work.

Last year, the UMCL gained a certificate of business excellence as well as international quality management system accreditation. We would also like the institution to reach high standards in the field of taking care of workers' health.

The Ottawa Charter defines health promotion as the process that enables people to increase control over their health and improve it [1]. Health promotion demands integration and cooperation of all employees in an organization.



Figure 1: The Ottawa Charter for Health Promotion

This figure is adapted from the diagram originally published in the Ottawa Charter (World Health Organization, 1986).

The intention of the Fit for Work programme is to raise awareness of both employees and employers, to educate and train them in a healthy work style and lifestyle. The wish is that they adopt and develop a healthy work style and lifestyle, thus influencing the changes in the environment in favour of health.

Before determining concrete activities in an organization connected with workers' health, their feeling, availability and safety at work, it is necessary to analyse the data available for the company. A health analysis is the first phase in the identification of problems of health and safety in a company, the data for the analysis for our institution have been gained at the National Institute of Public Health. We are interested in the data on diseases, injuries and staff turnover in a company. They are established by measurable indicators of negative health for this company, on the basis of which we can conclude what should be done in the company in order to improve the workers' health.

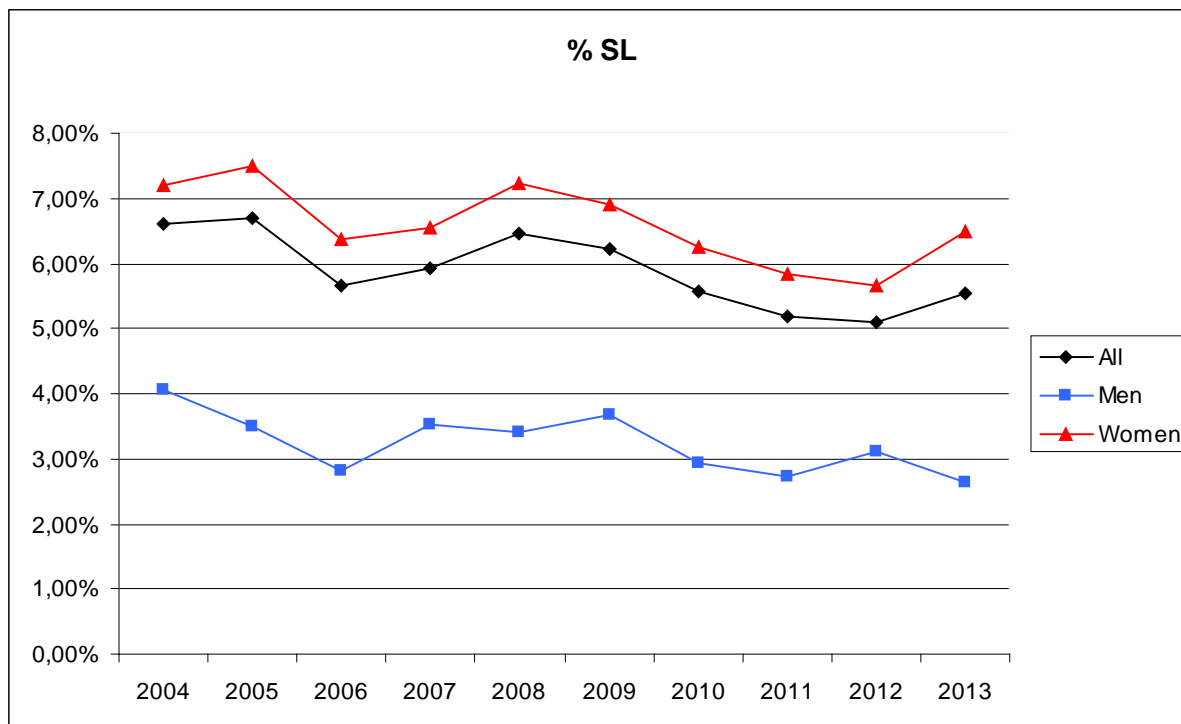


Figure 2: The percentage of sick leave in UMCL in the ten-year period between 2004 and 2013

The percentage of sick leave refers to the percentage of lost calendar days due to a disease per one employee. We can see that the graph is quite dynamic. Compared to the average for health service and the average in Slovenia, the percentage of sick leave up to and including 2010 is higher than the average for health service as well as the average in Slovenia. In 2011, 2012 and 2013, it remains higher than the average in Slovenia and slightly lower than the average for health service.

When assessing the extent of sick leave, it is necessary to pay attention to the average duration of one absence from work due to a disease, which amounted to 14 days in the UMCL in 2013. Apart from that, it is important to determine the reason for absence. The data for the UMCL show that in the ten-year period between 2004 and 2013, sick leave in the institution is the highest in the category of musculoskeletal system and connective tissue disorders. This category of disease represents the main reason for sick leave in women, a predominant employment group in the UMCL. This reason for absence is followed by pregnancy, delivery and postnatal period. The third place is occupied by injuries and poisonings outside work.

Table 1: The total number of injuries suffered by the UMCL employees.

Year	With sick leave	Total number of injuries
2005	211	236
2006	155	206
2007	178	198
2008	194	230
2009	189	223
2010	192	249
2011	*	262
2012	*	244
2013	*	**157

The table shows the total number of injuries suffered by the UMCL employees. The total number for the period 2005–2012 also contains injuries on the way to and back from work. In 2013, the number of injuries seems to have decreased, but unfortunately, only the methodology for recording injuries changed. In 2013, the injuries on the way to and back from work are no longer recorded in compliance with the Pension and Disability Insurance Act. The majority of the injuries were caused by slips, sprains, stumbles, falls and puncture wounds and cuts. The most frequent injuries were injuries to legs, followed by injuries to hands and fingers.

Table 2: The workers with disability in the UMCL

	Year 2013
Category II	72 (15%)
Category III	408 (85%)
Total	480

Data for December 2013 show that out of 7669 employees, the UMCL employed 480 workers with disability categories II and III, which represents 6.26% of all the employed. Of all the workers with disability employed in the UMCL, workability is reduced by 50% or more in more than 90% of them.

The data for half of the year 2014 show that the number of workers with disability increased by 3.4%, i.e., from 480 to 496. In 2013, 15 workers with disability left the UMCL; 12 of them retired due to their disability, 3 were given notice of termination of employment due to the inability caused by their disability.

When selecting measures from the field of ergonomics, we based our selection on the analysis of health of the UMCL employees which showed that:

- in the ten-year period (i.e., between 2004–2013), sick leave in the institution was the most frequent in the category of musculoskeletal system and connective tissue disorders;
- this category of the disease represents the main reason for sick leave in women employed in the UMCL, women being a predominant employment group regarding the sex;
- those employed in nursing obtained the greatest share of sickness benefits in 2013.

It has been also taken into account the fact that many musculoskeletal disorders can be prevented by using ergonomic changes to work processes and working environments that are based on the evaluation of risk factors.

The aim of the programme is to decrease the share of sick leave due to musculoskeletal disorders by 2% in the five-year period between 2015 and 2019.

The main measures are as follows:

1. An internal campaign entitled Fit in the UMCL: within the framework of this campaign, interactive posters with educational contents addressing the topic of ergonomics for all the UMCL employees were prepared. The posters were displayed in all clinics/institutes in since January 2015.
2. Education and experience workshop will be organized for the UMCL employees, the topic being ergonomic measures in the workplace, correct lifting and handling of loads.
3. Organization of day for health devoted to ergonomic measures in the workplace: Fit in the UMCL, which will be organized on 20 May 2015; with workshops on ergonomics, presentation of an active break, stalls with materials and organization of a hike for the employees.

Part of the Fit for Work project is run in a selected model unit which will serve as a model of good practice of carrying out health promotion in a health institution.

Regarding the readiness for participation, awareness of the necessity for performing such a programme and staff potential, the Clinical Department of Nephrology (CDN) has been chosen.

The programme in this department is conducted by an interdisciplinary group for health consisting of the head of the CDN, a coordinator at the CDN, the senior nursing officer of the CDN as well as an advisor for promotion of health at work, a representative of nursing, a representative of administration, a representative of doctors, an occupational doctor and a safety engineer.

Since the data on sick leave (SL) obtained at the National Institute of Public Health (NIPH) refer to the entire UMCL, a Health at Work Questionnaire was distributed at the CDN of the Division of Internal Medicine of the UMCL in order to determine the priority problems in the field of health and safety.

The analysis showed artificially low SL taking annual leave, time off instead of SL, high presenteeism and increase in disability. On a basis of analysis, the field of ergonomics and the field of organization have been determined for the CDN, as priorities. In all phases of the project, the employees were given information during lectures, at internal and team meetings, with the help of materials prepared, intranet, organ, etc.

Concrete actions in the field of ergonomics are as follows: within the framework of the Group for Health at the CDN, visits of the workplaces at the Centre for Kidney Transplantation and in the administrative sector were organized in October 2014, the aim being to identify risk factors (tools and equipment, working environment, handling of loads, etc.) and to prepare risk assessment. The Department bought a transporter for dialysis machines and an elevator for transferring the patients; apart from that, a double-leaf door was fitted with electronic opening.

In March 2015, continuing education and experience workshops for all the employees at the CDN began to be carried out, the topic being ergonomic measures in the workplace. They will be continued in autumn.

In April 2015, ergonomic workshops are being carried out in the hospital ward focusing on a practical presentation of correct lifting and handling of patients as well as on the correct use of available aids for work. The workshops are organized in such a way that the participants watch work directly at patient beds.

In the course of working time, active breaks (stretching, exercises for neck and back) are introduced.

Leasing a sports hall for regular exercising of the employees is planned.

For all the employees in the health administration at the CDN and those nurses who work predominantly with the computer, cups with a message about the correct

ergonomic posture while working with the computer (with the name of each employee) and an ergonomic aid, i.e., a mouse pad with gel wrist support, have been provided. This year, the provision of healthy food in the course of working time is planned which will be affordable and physically accessible during the night within the 12-hour shift.

Supervision is exercised for those employed in nursing, the aim being to unburden the employees in order for them to constructively process stressful situations.

Motivation interviews for disabled workers and proposals of the employees for improvements will be used to the greatest possible extent to prevent diseases and injuries that can lead to disability.

Toward the end of a year, two sets of education courses for the employees in the ward are planned: successful communication in the working environment, communication with demanding patients and their relatives as well as techniques for solving conflicts and the organizational structures of working hours, breaks and rests as one of the main organizational stressors and the organization of shift work.

Conclusion

The positive effects of the health promotion programmes are well known at the level of an individual as well as organization. On the individual level it is proved to have positive effects on maintaining and enhancing health, personal and professional development of the employee and work-life balance. On the organization level, the share of absenteeism, presenteeism and staff turnover is decreased. An organization has more healthy and motivated employees, higher efficiency, productivity and quality of service as well as fewer restrictions and less disability. Therefore the workplace health promotion should become an essential part of any business, a foundation upon which business success and employees' well being both depend [2].

References

- [1] World Health Organization (WHO) (1986). Ottawa Charter for Health Promotion. Paper presented at: First International Conference on health Promotion, November 21, 1986; Ottawa.
- [2] G. M. Massanotti, L. Briziarelli: The Evolution of Workplace Health Promotion in Europe: The Italian Case. *Journal of Preventive Medicine and Hygiene*, Volume 47 (2006), Issue 2, p. 37-41.

PSYCHOLOGICAL ASPECTS OF ABSENTEEISM AND POSSIBLE INTERVENTIONS

Tušak Matej, Kovač Eva, Blatnik Patricia, Žilavec Iztok

1. Psychological risk factors - where to search for the causes of absenteeism

Psychosocial risk factors are the factors that include the characteristics of employees and their working environment in the psycho-socio-demographic variables that could worsen the psychophysical state of workers, mostly by increasing their perception of stress, but could also result in burnout, absenteeism, presenteeism, fluctuation, and troubles with the balance between one's personal and professional life. Numerous studies have been done to show that the increased level of stress at work can lead to serious deterioration of mental and physical health (Bonde, 2008; Ferrie et al. 2006; Hansen et al. 2006; Netterstrom et al. 2008; Niedhammer et al. 1998; Nolfé et al. 2008; Stansfeld, & Candy, 2006; Woo, & Postolache, 2008). Although every workplace has its own specific psychosocial risk factors, Gollac & Bodier (2011) suggests that we can group them into six major dimensions – high demands and work intensity, emotional demands, lack of autonomy, ethical conflicts, poor social relationships, and job and work insecurity. Each dimension has its own effect on the worker's wellbeing, causing an amount of stress, which can lead to serious problems – both mental and physical. The most common outcome of this stress is absenteeism, which clearly indicates that workers are not capable of doing their work.

High demands and work intensity refer to the effort a person has to make to carry out their work in terms of its volume, speed, and nature. For a person's wellbeing it is of the utmost importance that work demands are optimal and suited for their abilities. Excessive demands can leave a person exhausted and unable to cope with cognitive and/or physical requirements. This may cause a considerable amount of stress, thus influencing the worker's ability to function properly, and could lead to a burnout, depression, lack of commitment and motivation; everything that leads directly to absenteeism (Diestel, & Schmidt, 2012; Hakanen, Ahola, & Schaufeli, 2008). This is certainly a cause for concern, since the findings show a definite increase in work intensity in most European countries over the past two decades (Eurofound, 2012). Although the increase appears to have slowed down since 2005, the numbers are still very high and are apparently getting even higher. Stress can also be caused by a shortage of demands, leaving people bored and feeling useless, which can again lead directly absenteeism.

Emotional demands can be described as a dimension of working environment that evokes feelings and emotions. Some working environments are more saturated with emotions than others. Healthcare environment is typically more prone to evoking emotions in the employees. While experiencing strong emotions at work is stressful enough, even more pressure can be experienced when these emotions must be masked and suppressed (Abraham, 1998; Askun, & Unler, 2011; Dormann, & Zijlstra, 2003; Heuven, & Bakker, 2003). A term 'emotional dissonance' is used to describe this very stressful and strenuous phenomena that can exhaust a person to such an extent that burnout is the only possible outcome. A very stressful emotional strain is

also dealing with angry or otherwise unpleasant and demanding clients can also be a very stressful emotional strain. Many strong emotions are hidden in these situations; leading to exhaustion, stress and consequently absenteeism.

A lack of autonomy has proved to be a very frustrating issue to an individual, typically causing a high level of stress. This is especially problematic when job demands are especially strenuous. The combination of high demands and low autonomy is linked to a higher probability for cardiovascular disease (Belkic et al. 2004; Bonde, 2008; Kivimaki et al. 2006) and other common mental disorders (Stansfeld, & Candy, 2006). Strain caused at work is highly stressful as we have mentioned before, but when a person has the ability to decide how, when, and how these demands will be tackled, the amount of stress, in most cases, becomes manageable. But when this autonomy is taken away, the stress is even more intense; if this lasts for a longer period of time, the stress becomes chronic, affecting blood pressure and other cardiovascular functions. People who perform low-skilled jobs are most affected, because their jobs offer only the most basic level of autonomy.

Ethical conflicts at work are another important psychosocial risk factor that could have a considerable effect on the health of the employees. These conflicts emerge when a person does not feel that their work is considered to be useful. If a worker feels useless or is convinced his work has no value, then he can easily start to experience distress, which can be associated with numerous health problems (Dejours, 1998). Luckily, there are not many people with such feelings in the workplace, but there are big differences between sectors (Eurofound, 2012).

One of the biggest psychosocial risk factors is the one concerning poor social relationships. This factor that is most commonly associated with absenteeism and different health problems. If relationships at work are not good, this may very often result in high absenteeism rates. Workers that do not get along with their bosses or co-workers tend to exploit every opportunity to avoid going to work. For them being at work is like being in a hostile environment. This can cause a lot of stress, depression, anxiety, and low spirits. Even when workers do come to work, they tend to be very passive and unproductive under these conditions. There are many possible reasons that can cause such offensive social working climate, but we can mainly attribute it to the lack of social support, poor leadership, and physical and/or verbal violence. The lack of social support is one of the substantial reasons that affect absenteeism (Unden, 1996). Social support from other colleagues and supervisors is very much needed in a working environment. When this support is lacking, one can feel unwanted, undesired, and unimportant. This can lead to social isolation, eventually even to depression and other very serious mental states that prevent workers from being able to perform their working tasks. On the other hand, Unden (1996) explains how a positive kind of social support can establish a sense of belonging and of affinity with the organization and fellow workers, it can actually compensate for other absenteeism causes, like workload or emotional demands. Poor leadership is the next issue that can create a very poor social working climate. A bad leader-worker relationship is often related to unhappiness that can turn into more serious mental conditions, such as melancholy, depression or chronic stress (Elshout, Scherp, & Feltz-Cornelis, 2013; Frooman, Mendelson & Murphy, 2012). The importance of good leadership for the well-being of the workers is again demonstrated by the fact that employees, who evaluate their manager positively, are almost twice as likely to report

being satisfied with their working conditions as those who evaluate their boss negatively (Eurofound, 2012). When we study physical and verbal violence at work, bullying is usually the first thing we can remember. Bullying and violence in the workplace are two very serious issues. Leymann has already (1990) established that verbal and physical violence at work can be connected to mental health problems of the victims, while also presenting an increasing risk of suicide. Gruber & Fineran (2008) have reached similar conclusions. Another component, which influences social relationships at work and consequently absenteeism, is sexual harassment (Faley et al. 1999; Hershcovis, & Barling, 2010; O'Leary-Kelly et al. 2009). Unwanted sexual attention creates an unbearable working environment for the victim; it is mostly felt by women (women are twice as likely to be sexually harassed at work when compared to men).

Job and work insecurity is the last dimension of psychosocial risk factors in the workplace, as proposed by Gollac, & Bodier (2011). When we look at this dimension, we refer to the fear of losing a job and to the effects that this might have on the individual employee. Wichert (2002) reports that losing a job does not present the whole problem, the lack of career prospects can also have serious implications for the health and well-being of the worker, moreover, it can affect other members of the shared household. Economic situation of the entire household of an individual is affected when a person loses his/hers job, such an event has an effect on all the people involved in the situation. As we are still feeling the effects of the recent economic crisis, this factor is one of the greatest causes of stress and mental strain in these times.

All of the mentioned reasons mainly affect job satisfaction, which is reported to be the main reason for absenteeism that could be avoided (Diestel, Wegge, & Schmidt, 2014; Hausknecht, Hiller, & Vance, 2008; Meeusen et al. 2011). If people are dissatisfied with their job, they are more likely to stay at home, even when no serious illness is present. A good working environment is thus crucial for workers to enjoy going to work and to be satisfied with their position.

2. Situation in Slovenia

Authors of Eurofound report (2012) conducted a substantial survey across all EU countries; looking at the results, we can get a global picture of what the situation in Slovenia is when compared to the other 27 countries of EU. The intensity of work, which has been measured with task accomplishment deadlines, puts Slovenia among the top five countries. This means that in Slovenia the intensity of work is very high, while deadlines are very short, thus putting a lot of pressure and stress on workers. When it comes to the possibility of balancing the professional and personal life, Slovenia is in the bottom five countries. Workers in Slovenia have a lot of difficulties when they try to balance their free time activities with their working time. The percentage of people thinking their working conditions have a negative effect on their health and that their work increases the risk for health problems puts Slovenia on the second place of all the countries in EU. When we look at presentism, we find Slovenia on the very first place (59% of people reported at work in the last 12 months, even when they were ill). Workers in Slovenia are not satisfied with their working conditions - only 13.5% of them are satisfied, which means that Slovenia is

in the bottom four countries regarding this issue. There have been many protests in the past few years (when government has raised the age limit for retirement), although Slovenia is still one of the countries with the lowest age limit for retirement, the limit currently being 63 years of age. 26% of population in Slovenia said they could not imagine working at the age of 60. This puts Slovenia firmly in the last place – for comparison, Germany and Scandinavian countries have the limit set at the age of 70. Another interesting issue is whether people believe their work to be important and valuable – Slovenia is in the second place with over 90% of people feeling their work is useful and important. When it comes to payments, Slovenians are reasonably satisfied with the payment they receive for doing their work if compared to the other EU countries. The number of workers subjected to adverse social behavior (bullying, sexual harassment, and other verbal or physical violence) in Slovenia is on the level of the EU average. Slovenia is in the top seven countries when it comes to perception of health or safety at risk, which means a lot of Slovenians believe their health or safety to be endangered at their workplace.

Looking at these results, we can see that the situation in Slovenia is not as satisfactory as we would desire it to be. According to the statistical report of the Research Centre of the Slovenian Academy of Sciences and Arts, the average absenteeism rate in Slovenia in 2012 was 4,1%. We account from 10 to 11 million of yearly lost working days in Slovenia. Mental strain and illness is the fifth most common factor for missing work. If we put these numbers into perspective, we can see that over 500 million Euros per year is spent only for compensation of salaries, not to mention all the lost revenue on the company level. The report by the nonprofit International Foundation of Employee Benefit Plans (Nyce et al. 2012) has showed that for each dollar invested into the healthcare of the workers from one to three dollars are saved due to lower absenteeism, disability and workers' compensation costs, as well as enhanced work performance. So the question is not whether to invest money into measures and actions that would help to reduce absenteeism, but how to ascertain these actions are going to be effective.

3. Measures for the prevention of absenteeism

Absence from work is by no means connected only to the question of ill health and injury; we can easily find the link between absence and the negative influence of psychosocial pressures, which are reflected in psychosomatics as a consequence of intimate, mental and environmental factors. There are essentially two kinds of absences: culpable and innocent/non-culpable. Regardless of whether an employee's absences are culpable or innocent, it is important to have a proactive program in place for addressing and managing absenteeism.

While we are preparing the programme for the prevention of absenteeism, we must always be aware of the fact, that regulation can be achieved only if our measures work on the organisational and individual level. On the organisational level, we must limit many physical and psychosocial risks and restrict the sources producing the already mentioned risks. The organisation can use the programme for health promotion to reduce and control the negative influences of environment and to encourage the employees to be conscious of their health and aware of the psychosocial risks.

Measures and interventions for preventing absenteeism can be realized on the primary, secondary and tertiary level. Primary or preventive measures can be used when the problem is not yet present and we are trying to prevent the problem to arise at all. On the secondary level we face the risks and then try to control them; on the tertiary level we are trying to subdue the consequences of the illness and to deal with the influences of absenteeism on the organisation.

We strongly recommend against the use of repression and punishment when dealing with the management of absenteeism. Other, gentler methods are far more effective in the long run, although they are lengthy and more expensive.

Our approach will be the most effective if we analyse the problem from every perspective; we generally achieve such satisfying results precisely with the programme for health promotion in the workplace. Alterations on the level of the whole organisation will enable our employees to make their own alterations. If the already mentioned alterations and approaches are effectively done, the results should reflect not only a considerable reduction of absenteeism and presentism, but also the increasing loyalty and productiveness of our employees.

4. Workplace Health Promotion Programme

The Luxembourg Declaration on Workplace Health Promotion in the European Union (2007) defines workplace health promotion as a totality of combined efforts of employers, employees and society to improve the health and well-being of people at work. WHP is a modern corporate strategy that aims to prevent ill-health at work and enhance health-promoting potentials and well-being in the workforce, reflecting in lower absenteeism for organizations. Health problems may arise as a result of a discrepancy between the workload and the capacity of the worker. It is of the outmost importance to balance the demands and abilities of employees.

A successful programme of health promotion in the workplace is based upon a very important principle; the needs of all the employees should be taken into consideration and every level of the organisation should be incorporated into the programme – leading personnel, medical experts and workers. A special kind of mixed personnel is usually created for this purpose, whose task is to oversee the execution of the programme of health promotion. Since the programme is intended for the employees, it is necessary that every individual is acquainted with the programme in use, as well as with its main principles.

The situation analysis and the examination of health indicators in the company is the very first step we need to take when we are introducing health promotion. In Slovenia, the initiative for health promotion can be presented by an authorized physician – a specialist for occupational medicine, an expert on health and safety in the workplace, but also by the workers or the company's management (Božič, 2011). The next step of realising the programme is to form a group of employees, who actively enter the programme of health promotion. This action should be followed by a presentation for the company's management, where the results gathered from the situation analysis should be presented. The initiative for the actual use of the programme in the organisation should also be clearly stated. The team for health promotion in the workplace, together with the management of the company, must then create different interventions and provide the plan for executing them.

Interventions include many diverse activities, all of which are leading to the ultimate goal; to reduce the problems we have discovered during the situation analysis. Interventions can be realized as health clubs, workshops, lectures, physical group activities, coaching classes, psychotherapies and other similar activities.

Another situation analysis in the organisation must be done after a year or later; the same indicators of health status with the same instrumentation must be used. Indicators of health status should be financially evaluated. After the final analysis has been finished, we can eliminate activities that have proven to be ineffective or were ill-received among the employees. We can then introduce new and unexplored activities or merely improve the ones already in use (Božič, 2011).

5. Interventions for preventing absenteeism

5.1. Assessment of the situation

The Human Resources Office (2003) exposes employees that do not notify supervisors when they are absent. The majority of the interviewed supervisors do not require their employees to notify them directly of their absence. In most cases, clerical employees receive a notification; usually they are not required to forward this information directly to supervisors. If employees do not directly notify their supervisor of their absence, than employees may feel less accountable, and supervisors are not immediately informed of absences, so they cannot manage it as effectively, but they also have a greater difficulty when tracking absences, which they must do to ensure adequate leave reporting.

If we desire to employ the most useful and effective measures, we must first of all be aware our employees are on sick leave, but we must also ascertain which the most common motives for absenteeism in the organisation are. It will be easier to bring the oriented measures into effect on the basis of the situation analysis. Different researches on the management of absenteeism in organisations indicate that more and more companies (private and public sector) are aware of the absences of their employees from work and lead a detailed review on this topic, which has not been the case only a few years ago.

The faster we recognise and control the factors of absenteeism in the organisation, the fewer absences from work we can expect; even when such absences will occur, the return to the working environment will be much quicker than in the past.

5.2. Management training

Sickness absence manager training has important role in managing absenteeism in organisations. Managers, like everyone else, seek to gain the skills and training to understand how to manage absence in organisation. The EEF Sickness Absence Survey (2013) research has provided us with the results clearly showing that one half of the companies include their managers in the trainings for managing absenteeism. Organisations that provide their employees with the chance of sickness absence manager training have announced 35% decline in sick leave (EEF Sickness Absence Survey, 2013).

By developing competencies for coping with psychosocial risks of the leading personnel we are aiming to fulfil the short-term aims for reducing absenteeism, as failures to appear at work are often connected with many other environmental factors that cannot be controlled by the employee.

An effective education of management encompasses understanding the causes of absence and recognising different technics, through which the management staff can attempt to influence the employed individuals and consequently reduce absenteeism. Management training incorporates many different courses: stress management, promotion of interpersonal relations, suitable division of work, employee motivation, strengthening of loyalty, promotion of a healthy lifestyle among the employed staff (to reduce the risk of psychosomatic illnesses).

5.3. Return to Work Interviews

Return to work interviews desire to discover the reason(s) for the absence, and whether there are any underlying problems causing the absence. Return to work depends on the course of the illness and the 'reintegration barrier'. By the reintegration barrier we mean the totality of the factors which affect the course of the illness and the return to work. Return to work interviews should be used after every absence. In many cases only a 'light touch' discussion will be needed and a brief note to record this has been undertaken. Remember, return to work interviews are not disciplinary sessions. It is important to be supportive and to withhold any judgements in advance.

The main purpose of returning to work interviews is to welcome the employee back, to show interest and stress that he/she is an important member of the company. The focus of the interview should be to check whether the employee is ready to return, and to confirm the reasons for the absence and also discuss any problems that may have caused or contributed to the absence. If some problems are recognized, it is necessary to make a plan how to slow it down it and offer help. Every interview needs to be closed. At the end, interviewer must ensure that the employee has all the information required to start working again.

5.4. Stress Management

Based on examined and reviewed world literature related to stress, Leka, Griffiths and Cox (2003) recognise nine different categories of stress-related risk factors, which originate from following causes: characteristics of the working environment, workload, work tempo and working time, levels of regulation, career development, payment, distinctness of different roles, interpersonal relations, culture of the organisation, personal stressors of the employee. A company can perform different defensive measures on two different levels when dealing with stress management; on the level of the organisation and on the level of an individual. Stress management is generally presented as a part of the programme of workplace health promotion.

Certain measures can be adopted on the systemic level in order to deal with stress reduction and stress management, as well as for providing assistance for employees coping with stress issues. This way the organization attains the desired alterations inside its own structure, effectively changes manners of leadership and

distinctly distributes the prescribed roles among employees, but also actively includes the employed individuals into a decision-making process and promotes teamwork. The applied measures should incite personal development of every individual, offer a chance for personal growth and support further education of employees. The organisation, with regards to the risk assessment, can then ensure the improvement of working conditions and eliminates the factors, which amplify stress and the number of accidents at work. When dealing with stress management the concern for interpersonal relationships and quality communication among employees is also of the key importance, regardless of their status or position within the organisation.

Individual strategies of stress management are strongly connected with the individual; organisations in general do not devote much attention to this type of measures. It is certainly true that the usage of individual strategies depends on the employee's motivation and his or hers personal values, but the company can promote and reward the effort of each individual dealing with stress management; either with short-term acute stress events or with chronic stress. Different workrooms and activities are the most effective preventive measures any organisation can promote; assertiveness training, training of social skills, preparation for stressful events, development of cognitive skills, promotion of regular physical activity, time management, coaching sessions, therapies and so on.

5.5. Use of rewards and penalties

When speaking about the issue of preventing absenteeism we should also mention the so called hard approaches or repression, since they encompass a stricter supervision of those on sick leave, threats of dismissal, salary reduction or even a job reassignment as a form of punishment. These approaches has often delivered evident results, but we do not recommend using them as the first possible solution; such methods usually prove to be ineffective in the long run, while simultaneously diminishing affiliation, motivation and productiveness of employees. Furthermore, they can be seen as a negative influence on the relationship between the employer and employee.

Rewards, penalties and incentives have an important role in absence management and in the creation of the attendance culture. Such devices can vary from unambiguous rewards such as financial gain, but can also be realized as clear penalties such as dismissal or even prosecution for fraud (Gupta, 2013).

It is necessary to reward motivated and loyal individuals, who are known to achieve their goals. However, the chance for being rewarded should not be taken away from the employed on sick leave (as a form of punishment), since such actions only increase the issue of presentism at work, which can also negatively influence the productiveness of an individual employee and represents an additional expense to the company. The main purpose of rewarding is to consolidate the desired behaviour of the employed individual.

6. References

- Abraham, R. (1998). Emotional dissonance in organizations: A conceptualization of consequences, mediators and moderators. *Leadership and Organizational Development Journal*, 19(3), 137–146.
- Askun, D.C., & Unler, E.O. (2011). The effects of emotional dissonance and quality of work life perceptions on absenteeism and turnover intentions among Turkish call center employees. *Procedia – Social and Behavioral Sciences*, 30, 2515–2519.
- Belkic, K.L., Landsbergis, P.A., Schnall, P.L., & Baker, D. (2004). Is job strain a major source of cardiovascular disease risk? *Scandinavian Journal of Work, Environment and Health*, 30(2), 85–128.
- Bonde, J.P. (2008). Psychosocial factors at work and risk of depression: A systematic review of the epidemiological evidence. *Occupational and Environment Medicine*, 65(7), 438–445.
- Božič, J. (2011). Obvladovanje psihosocialnih tveganj na delovnih mestih. Ljubljana: Univerzitetni rehabilitacijski inštitut Republike Slovenije – Soča.
- Dejours, C. (1998). *Souffrance en France: la banalisation de l'injustice sociale*. Paris: Seuil.
- Diestel, S., & Schmidt, K.H. (2012). Lagged mediator effects of self-control demands on psychological strain and absenteeism. *Journal of Occupational and Organizational Psychology*, 85, 556–578.
- Diestel, S., Wegge, J., & Schmidt, H. (2014). The impact of social context on the relationship between individual job satisfaction and absenteeism: The roles of different FOCI of job satisfaction and work-unit absenteeism. *Academy of Management Journal*, 57(2), 353–382.
- Dormann, C., & Zijlstra, F. (2003). Call Centre work: High on technology - high on emotions? *European Journal of Work and Organizational Psychology*, 12, 1–6.
- EEF (2013). EEF Sickness Absence Survey, 2013. EEF.
- Elshout, R., Scherp, E., & van der Feltz-Cornelis, C.M. (2013). Understanding the link between leadership style, employee satisfaction, and absenteeism: A mixed methods design study in a mental health care institution. *Neuropsychiatric Disease and Treatment*, 9, 823–837.
- Eurofound (2012). *Fifth European working conditions survey*. Luxembourg: Publications office of the European Union.
- European Network for Workplace Health Promotion (2007). Luxembourg Declaration on Workplace Health Promotion. Luxembourg: ENWHP.
- Faley, R., Knapp, D., Kustsi, E.G.A., & DuBois, C.Z. (1999). Estimating the organizational costs of sexual harassment: The case of the U.S. Army. *Journal of Business Psychology*, 13, 461–484.
- Ferrie, J.E., Head, J., Shipley, M.J., Vahtera, J., Marmot, M.G., & Kivimaki, M. (2006). Injustice at work and incidence of psychiatric morbidity: The Whitehall II study. *Occupational and Environmental Medicine*, 63(7), 443–450.

- Frooman, J., Mendelson, M.B., & Murphy, J.K. (2012). Transformational and passive avoidant leadership as determinants of absenteeism. *Leadership and Organizational Development Journal*, 33(5), 447–463.
- Gollac, M., & Bodier, M. (2011). *Mesurer les facteurs psychosociaux de risqué au travail pour les maitriser. Colleege d'expertise sur le suivi des risques psychosociaux au travail*. Paris: Ministry of Work, Employment, and Health.
- Gruber, J.E., & Fineran, S. (2008). Comparing the impact of bullying and sexual harassment victimization on the mental and physical health of adolescents. *Sex roles*, 59(1-2), 11–13.
- Gupta, B. (2013). Employees Absenteeism: Barrier for Retail Sector Organization Success. *International Journal of Engineering and Management Research*, 3 (6), 88 – 92.
- Hakanen, J.J., Ahola, K., & Schaufeli, W.B. (2008). The job demands-resources model: A three-year cross-lagged study of burnout, depression, commitment, and work engagement. *Work and Stress*, 22(3), 224–241.
- Hansen, A.M., Hogh, A., Persson, R., Karlson, B., Garde A.H., & Orbaek, P. (2006). Bullying at work, health outcomes, and physiological stress response. *Journal of Psychosomatic Research*, 60(1), 63–72.
- Hausknecht, J.P., Hiller, N.J., & Vance, R.J. (2008). Work-unit absenteeism: Effects of satisfaction, commitment, labor market conditions, and time. *Academy of Management Journal*, 51(6), 1223–1245.
- Hershcovis, M.S., & Barling, J. (2010). Comparing victim attributions and outcomes for workplace aggression and sexual harassment. *Journal of Applied Psychology*, 95(5), 874–888.
- Heuven, E.M., & Bakker, A.B. (2003). Emotional dissonance and burnout among cabin attendants. *European Journal of Work and Organizational Psychology*, 12, 81–100.
- Kivimaki, M., Virtanen, M., Kouvonen, A., Vaananen, A., & Vahtera, J. (2006). Work stress in the etiology of coronary heart disease – a meta-analysis. *Scandinavian Journal of Work, Environment and Health*, 32(6), 431–442.
- Leka, S., Griffiths, A. in Cox, T. (2003). *Work Organisation and Stress – Systematic Problem Approaches for Employers, Managers and Trade Union Representatives*. WHO.
- Leymann, H. (1990). Mobbing and psychological terror at workplaces. *Violence and Victims*, 5(2), 119–126.
- Meeusen, V.C.H., van Dam, K., Brown-Mahoney, C., van Zundert, A.A.J., & Knape, H.T.A. (2011). Work climate related to job satisfaction among Dutch nurse anesthetists. *American Association of Nurse Anesthetists Journal*, 79(1), 63–70.
- Miller, J., Williams, C. (2014). *Absence management 2014: Annual survey report 2014*. CIPD.

- Netterstrom, B., Conrad, N., Bech, P., Fink, P., Olsen, O., Ruquies, R., & Stansfeld, S. (2008). The relation between work-related psychosocial factors and the development of depression. *Epidemiologic Reviews*, *30*, 118–132.
- Niedhammer, I., Goldberg, M., Leclerc, A., Bugel, I., & David, S. (1998). Psychosocial factors at work and subsequent depressive symptoms in the Gazel cohort. *Scandinavian Journal of Work Environment and Health*, *24*(3), 197–205.
- Nolfe, G., Petrella, C., Blasi, F., Zontini, G., & Nolfe G. (2008). Psychopathological dimensions of harassment in the workplace (Mobbing). *International Journal of Mental Health*, *36*(4), 70–88.
- Nyce, S., Grossmeier, J., Anderson, D.R., Terry, P.E., & Kelley, B (2012). Association between changes in health risk status and changes in future health care costs: A multiemployer study. *Journal of Occupational and Environmental Medicine*, *54*(11), 1364–1373.
- Office of Human Resources (2003). Absenteeism Management. Report of the Auditor General.
- O’Leary-Kelly, A.m., Bowes-Sperry, L., Bates, C., & Lean, E.R. (2009). Sexual harassment at work: A decade (plus) of progress. *Journal of Management*, *35*(3), 503–536.
- Stansfeld, S., & Candy, B. (2006). Psychosocial work environment and mental health – a meta-analytic review. *Scandinavian Journal of Work Environment and Health*, *32*(6), 443–462.
- Šprah, L. in Dolenc, B. (2014). Priročnik za obvladovanje psihosocialnih tveganj in absentizma s pomočjo orodja OPSA. Ljubljana: Družbenomedicinski inštitut ZRC SAZU.
- Uden, A.L. (1996). Social support at work and its relationship to absenteeism. *Work and Stress*, *10*(1), 46–61.
- Wichert, I. (2002). Job insecurity and work intensification: The effects on health and well-being. In B. Burchell, D. Ladipo, & F. Wilkinson (eds.), *Job insecurity and work intensification* (pp. 92–111). London: Routledge.
- Woo, J.M., & Postolache, T.T. (2008). The impact of work environment on mood disorders and suicide: Evidence and implications. *International Journal of Disability and Human Development*, *7*(2), 185–200.

THE ROLE OF LEADERSHIP FOR ENGAGEMENT AT THE WORKPLACE

P. Jiménez¹, A. Dunkl^{1,2}

¹ University of Graz, Institute of Psychology, Universitaetsplatz 2, 8010 Graz, AUSTRIA

² EMG d.d. Žalec, Aškerčeva ulica 4A, 3310 Žalec, SLOVENIA

Keywords: conditions; health; health-promoting leadership; occupational health; workplace

Abstract. The concept of health-promoting leadership tries to identify specific components in leadership behavior that are able to support a healthy working environment by changing the conditions at the workplace. The concept of health-promoting leadership bases on the six areas of worklife: (low) workload, control, reward, community, fairness and value-fit; and the additional dimension health awareness. These seven aspects refer to basic conditions that can be established in the working place with the help of leadership. In accordance with the concept of health-promoting leadership, a new questionnaire (health-promoting leadership conditions, HPLC) was developed that focuses on leadership strategies that support healthy working conditions. In this paper, current research about health-promoting leadership and its relation with organizational outcomes are investigated and discussed. The findings show that all seven dimensions of health-promoting leadership are related to engagement at the workplace and the recovery-stress state of employees. Next to these results, a study is presented that focuses on the wishes and needs of leaders to support them in health-promoting leadership behavior and workplace health promotion. The results indicate that leaders demand more seminars/trainings to enhance their leadership skills as well as feedback from their own employees to reflect their current status. Regarding their employees, leaders wish to have feedback about organizational aspects such as job satisfaction or working climate. The individual health status of their employees as well as comparing them to others is less important.

Introduction

In the view of today's economic situation it becomes apparent that leadership is an important variable to raise the organization's performance. Leaders are able to positively influence factors like enhancement of productivity and performance, raising health and well-being of employees as well as reducing sickness absences and turnover [1, 2, 3]. Especially in the last years, leadership as a health relevant factor is getting more and more attention [4].

Usually, the main role of the leader is characterized as the person who sets specific targets and evaluates the results. Apart from that, the concept of health-promoting leadership includes the relationship between leaders, employees and the working environment. A health-promoting leader establishes basic conditions which allow maintaining and/or recovering health and efficiency of leaders and employees.

The concept of health-promoting leadership

Health-promoting leadership and working conditions

Health-promoting leadership is a combination of different leadership behaviors with the aim to gradually design a healthy workplace for employees. Another aspect is the frame in which leadership is embedded. Leadership is embedded in the working environment which is created by the conditions at the workplace. By identifying specific conditions at the workplace that positively influence the working environment of employees; leaders are able to create a health-promoting workplace.

The concept of health-promoting leadership bases on the six areas of worklife [5, 6]. The six areas of worklife describe working areas where mismatches between working person and their workplace can occur. Individual and organizational mismatches in these six areas can lead to negative outcomes such as a higher risk of getting burnout [6]. Leaders who recognize and reduce these mismatches between employee and organization are able to

create a workplace that enhances health [7]. In the following paragraphs, the six areas of worklife and how leaders can positively influence mismatches in these areas are discussed briefly.

Workload. High workload can lead to negative health-related consequences, especially if the employees are unable to recover from their work demands [8, 9]. Therefore, one major aspect of health-promoting leadership is to keep the workload at an adequate level either by giving enough resources (e.g. working time) to manage increased workload or raising opportunities to recover.

Control. There are many possibilities of giving control at the workplace (autonomy, being involved in decision-making etc.) [10]. Enhancing control possibilities at the workplace is shown to have a positive effect on employee health [11].

Reward. Insufficient reward (either intrinsic or extrinsic) can increase the risk of burnout [12]. Leaders can give many forms of non-financial rewards such as existential recognition (personal or group recognition), recognition of work practice, recognition of job dedication, and recognition of results [13].

Community. A positive working climate has an effect on performance, customer satisfaction or perception of organizational justice [14]. Therefore, creating a working climate, where all employees are treated with appreciation and respect is an essential task for leaders.

Fairness. If employees feel that their efforts and benefits are unbalanced, they will experience that they are getting less from the organization than they expect [15] and this in turn has a negative effect on the well-being of employees [16]. In the sense of health-promoting leadership, this means that employees should be treated fairly regarding decisions and procedures and that all means should be shared correctly.

Value-fit. If the employees' individual values are consistent with the organizational values, then the employees can identify themselves with the organization [6]. On the other hand, if a person experiences a gap between individual and organizational values, the risk of experiencing burnout increases [17]. Leaders can reduce differences between individual and organizational values by actively communicating the organizational norms and ideals or by paying attention that the employees' tasks correspond with the organization's values.

An aspect that is not found in the areas of worklife but is connected with employee health is the aspect of *health awareness*. Leaders with high health awareness are found to have more healthy employees; as their employees show fewer health complaints, less work-family conflict and higher state of health [18]. Leaders are able to foster their employee's health by providing the infrastructure to support health behaviors. Specific leadership strategies involve communication about health-related topics, setting agendas for workplace health promotion, motivating employees to participate in health promotion activities and finally encouraging employees to adopt a healthy lifestyle [19].

Adding the dimension health awareness to the six areas of worklife, seven key aspects of health promoting leadership can be defined (see figure 1). These seven aspects refer to basic conditions that can be established in the working place with the help of leadership.



Fig. 1 Dimensions of health-promoting leadership

Questionnaire to measure health-promoting leadership

In line with the concept of health-promoting leadership, a new questionnaire (health-promoting leadership conditions, HPLC) was developed that focuses on leadership strategies that support healthy working conditions.

The aim of the questionnaire is twofold: First, the questionnaire measures health-promoting leadership from the employee's point of view. This external assessment can be used as an evaluation of leadership in the organizational environment but also gives leaders an individual feedback from their employees. Second, the instrument should measure health-promoting leadership from leader's point of view (self-assessment) to enhance self-awareness and self-reflection. Ideally, both versions of self- and external assessment can be used to bring together the perspectives of both leaders and employees.

As the concept of health-promoting leadership bases upon the six areas of worklife [6], the items for the HPLC were created in line with the area of worklife scale [20]. In the HPLC, all items were newly created in the sense that they represent health-promoting leadership behavior. One example for the external assessment version (employee-version) would be "In the past four weeks, my leader took care that... work is appreciated". A frequency scale ranging from never (0) to always (6) is used as an answer scale.

Health-promoting leadership: research findings

Leadership and the employees' recovery-stress state

Various studies show the positive effect of leadership on employee health. The most researched leadership style – transformational leadership – has been repeatedly positively related to the individual's well-being [2, 21].

To investigate if the seven dimensions of health-promoting leadership are related to the employees' health status, an online-study was conducted with 430 employees [7]. The employees had to fill-in the external assessment version of the HPLC as well as the Recovery-Stress Questionnaire for Work (RESTQ-Work, [22]). The RESTQ-Work focuses on the model of recovery-stress-balance [9], more specifically on the interaction of stress and recovery at the workplace. According to this model, negative outcomes of high demands – such as stress – can be reduced by enhancing recovery strategies. Therefore, both aspects (stress and recovery) have to be measured to get a detailed profile about the employees' health status.

Table 1. Correlations between health-promoting leadership and the employees' stress and recovery (N=430)

No.	Health-promoting leadership	social-emotional stress	general recovery	loss of meaning/burnout	leisure/breaks	psychosocial recovery	work-related recovery
1	health awareness	-.23	.25	-.35	.30	.33	.47
2	(low) workload	-.31	.34	-.48	.41	.31	.44
3	control	-.35	.33	-.47	.38	.35	.66
4	reward	-.31	.28	-.44	.31	.36	.58
5	community	-.23	.20	-.36	.21	.50	.44
6	fairness	-.36	.31	-.48	.31	.36	.57
7	value-fit	-.29	.26	-.42	.25	.34	.54

Note: all correlations significant $p < .001$

The results (Table 1) show that all seven dimension of health-promoting leadership are significantly related to the employees' stress and recovery. Highest positive correlations can be found by correlating the seven dimensions with work-related recovery. High negative correlations can be found with loss of meaning/burnout.

These results indicate that leaders are able to positively influence the balance between stress and resources with their behavior. Nevertheless, the results have to be interpreted with caution as causal effects cannot be interpreted with cross-sectional data.

Leadership and engagement

Next to health and well-being, another important topic in today's working and leading environment is engagement. Employees with low engagement and high demotivation come to a withdrawal experience, so it is possible that they cancel their jobs internally. Employees with high demotivation and high engagement can experience problems in their working environment as well. These people have a higher risk for burnout [23]. Leaders play a major role the case of motivation/demotivation, as they are able to foster engagement at the workplace.

In a study conducted by Jiménez and Dunkl [24], a representative Austrian sample (N=233) was asked about their engagement/demotivation at work and their leader's health-promoting behavior. Again the HPLC was used in the external assessment version (employee version). To measure engagement and demotivation, the Engagement-Demotivation Scale (EDEM, [23]) was used.

Table 2. Correlations between health-promoting leadership and the employees' engagement and demotivation (N=233)

No.	Health-promoting leadership	engagement	demotivation
1	health awareness	.30	-.37
2	(low) workload	.25	-.34
3	control	.41	-.42
4	reward	.39	-.45
5	community	.34	-.36
6	fairness	.38	-.44
7	value-fit	.40	-.48

Note: all correlations significant $p < .001$

The results (Table 2) show that all seven dimension of health-promoting leadership are significantly related to the employees' engagement and demotivation. Especially the dimensions control, reward, fairness, and value-fit are highly correlated with both engagement and demotivation. Interestingly, the correlations with demotivation are much higher, indicating that it is more critical to demotivate employees with bad leadership.

Leaders' needs and wishes

Leaders often serve as a key factor when it comes to workplace health promotion activities [25]. In a successful workplace health promotion projects leaders encourage their employees to adopt a healthy lifestyle and give information about health-relevant issues [19]. Moreover, leaders who illustrate the benefits of a workplace health promotion program are able to influence the participation level positively [26]. Therefore, interventions at the workplace have to be designed in accordance to the leaders' wishes, as leaders can be seen as one major success factor.

In an online-study [27], 412 leaders from Germany (49.3%) and Austria (50.7%) were asked about their opinion of app-based workplace health promotion programs. The leaders were mostly male (68.4%; female: 31.6%) and came from different industrial sectors (manufacturing: 15.5%, commerce: 12.1%, service: 10.2%, public sector: 9.2%, etc.). They were given questions about their opinion of using apps in workplace health promotion. More specifically, they were asked about their wishes and needs in an app-based workplace health promotion program. The findings are depicted in Figures 2 and 3.



Figure 2. Leaders' wishes about leadership-specific apps (excerpt) (N=410).

In Figure 2, the leaders' wishes about specific apps to support their leadership skills are listed. The results show that especially feedback about their leadership skills from their own employees receives the most interest (very + rather interesting: 50.6%, very interesting: 22.5%). Trainings in leadership skills or in stress management seem also important.

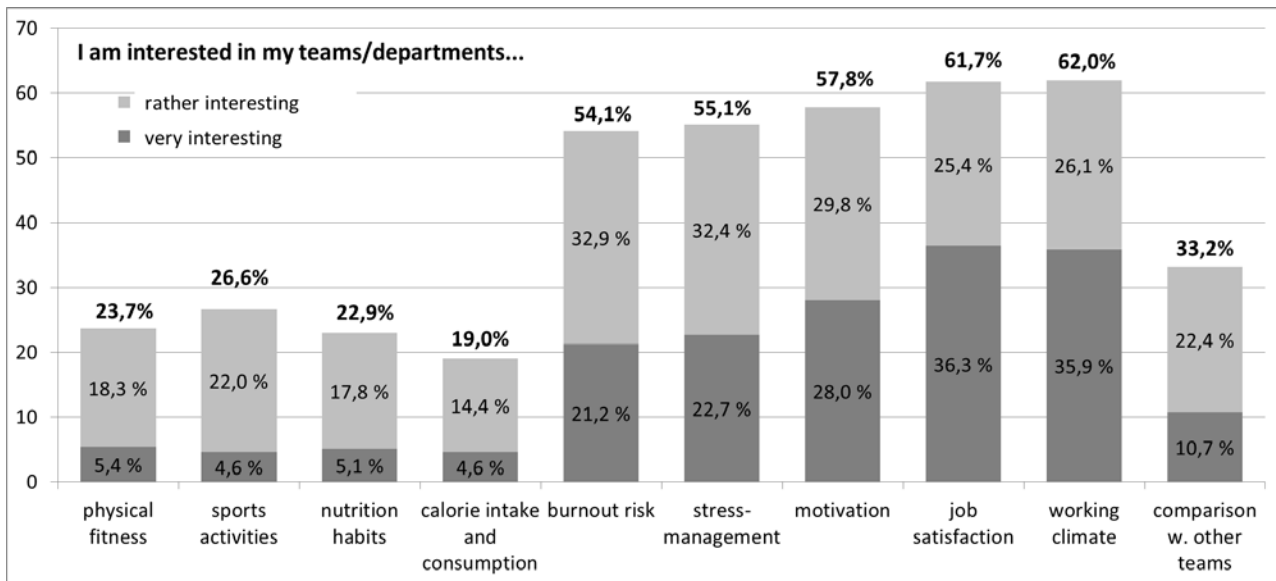


Figure 3. Leaders' feedback wishes about their department's statistics in an app-based workplace health promotion program (N=410).

In Figure 3, feedback possibilities from the leaders' department are depicted. Interestingly, the results indicate that leaders are more interested in organizational feedback (job satisfaction, working climate) and the psychological status of their employees (burnout-risk, stress-management, motivation) than in the individual health status of their employees. For job satisfaction and working climate, even one third is very interested in this kind of feedback (36.3% and 35.9%, respectively). Comparing their team/department with other teams/departments also receives less interest.

Conclusion

The present paper introduces the concept of health-promoting leadership and a questionnaire (health-promoting leadership conditions, HPLC) that measures seven dimensions: health awareness, (low) workload, control, reward, community, fairness and value-fit. The questionnaire offers the possibility to learn more about the working conditions and how leaders may influence these conditions positively. The findings of current research show that all seven dimensions of health-promoting are positively related to engagement at the workplace and the recovery/stress states of employees. Regarding the leaders' wishes for support, the results indicate that leaders are more interested in seminars/trainings to enhance their leadership skills as well as feedback from their own employees to reflect their current status. Regarding their department/team, leaders wish to have feedback about organizational aspects such as job satisfaction or working climate. The individual health status of their employees as well as comparing them to others is less important.

References

- 1] T. Dvir, D. Eden, B.J. Avolio, B. Shamir: Impact of Transformational Leadership on Follower Development and Performance: A Field Experiment, *The Academy of Management Journal*, Vol. 45 (2002), pp. 735-744.
- 2] J. Skakon, K. Nielsen, V. Borg, J. Guzman: Are leaders' well-being, behaviours and style associated with the affective well-being of their employees? A systematic review of three decades of research, *Work & Stress*, Vol. 24 (2010), pp.107-139.
- 3] H. Westerlund, A. Nyberg, P. Bernin, M. Hyde, G. Oxenstierna, P. Jäppinen, A. Väänänen, T. Theorell: Managerial leadership is associated with employee stress, health, and sickness absence independently of the demand-control-support model, *Work*, Vol. 37 (2010), pp.71-79.
- 4] S. Gregersen, S. Kuhnert, A. Zimmer, A. Nienhaus: Leadership Behaviour and Health- Current Research State, *Gesundheitswesen*, Vol. 73 (2011), pp. 3-12.
- 5] P. Leiter, C. Maslach: Areas of worklife: A model of the organizational context of burnout, *Journal of Health and Human Services Administration*, Vol. 21 (1999), pp. 472-489.

- 6] C. Maslach, M. Leiter: Early Predictors of Job Burnout and Engagement, *Journal of Applied Psychology*, Vol. 93 (2008), pp. 498-512.
- 7] A. Dunkl, P. Jiménez, B. Winkler: Leading Culture and Healthy Leadership in Organizations, Paper presented at the 13th European Congress of Psychology (July, 2013), Stockholm.
- 8] K. Göttlicher, P. Jiménez, K.W. Kallus: Burnout Prevention – a structural equation model of stress, recovery and volitional factors among IT professionals. Paper presented at the 7. Tagung der Fachgruppe Arbeits-, Organisations- und Wirtschaftspsychologie der Deutschen Gesellschaft für Psychologie (September, 2011), Rostock.
- 9] P. Jiménez, K.W. Kallus: Stress and Recovery of Social Care Professionals: Development of a screening version of the Recovery-Stress-Questionnaire for Work, In C. Korunka, P. Hoffmann (eds), *Change and Quality in Human Service Work*, Munich: Hampp, (2005), pp.311-323.
- 10] J. Nahrgang, F. Morgeson, D. Hofmann: Safety at Work: A Meta-Analytic Investigation of the Link Between Job Demands, Job Resources, Burnout, Engagement, and Safety Outcomes, *Journal of Applied Psychology*, Vol. 96 (2011), pp. 71-94.
- 11] B. Schreurs, H. van Emmerik, G. Notelaers, H. De Witte: Job insecurity and employee health: The buffering potential of job control and job self-efficacy, *Work & Stress*, Vol. 24 (2010), pp. 56-72.
- 12] M. Kivimäki, J. Vahtera, M. Elovaino, M. Vitanen, J. Siegrist: Effort-reward imbalance, procedural injustice and relational injustice as psychosocial predictors of health: complementary or redundant models? *Occupational and Environmental Medicine*, Vol. 64 (2007), pp. 659-665.
- 13] J.-P. Brun, N. Dugas: An analysis of employee recognition: Perspectives on human resources practices, *The International Journal of Human Resource Management*, Vol. 19 (2008), pp. 716-730.
- 14] B. Schneider, M. Erhart, W. Macey: Organizational Climate and Culture, *Annual Review of Psychology*, Vol. 64 (2013), pp. 361-388.
- 15] V. Rousseau: New hire perceptions of their own and their employer's obligations: A study of psychological contracts, *Journal of Organizational Behavior*, Vol. 11 (1990), pp. 389-400.
- 16] J. Robbins, M. Ford, L. Tetrick : Perceived Unfairness and Employee Health: A Meta-Analytic Integration, *Journal of Applied Psychology*, Vol. 97 (2012), pp. 235-272.
- 17] M. Leiter, E. Frank, T. Matheson: Demands, values, and burnout, *Canadian Family Physician*, Vol. 55 (2009), pp. e1-6.
- 18] F. Franke, J. Felfe, A. Pundt: The impact of health-oriented leadership on follower health: Development and test of a new instrument measuring health-promoting leadership, *Zeitschrift für Personalforschung*, Vol. 28 (2014), pp. 139-161.
- 19] J. Gurt, C. Schwennen, G. Elke: Health-specific leadership: Is there an association between leader consideration for the health of employees and their strain and well-being? *Work & Stress*, Vol. 25 (2011), pp.108-127.
- 20] M. Leiter, C. Maslach: *The Areas of Worklife Survey Manual 4th ed.* (Centre for Organizational Research & Development. Wolfville, NS, Canada, 2006).
- 21] E. Kelloway, N. Turner, J. Barling, C. Loughlin: Transformational leadership and employee psychological well-being: The mediating role of employee trust in leadership, *Work & Stress*, Vol. 26 (2012), pp. 39-55.
- 22] P. Jiménez, K.W. Kallus : Analysis of Resources and Strain at Work. The Recovery-Stress-Questionnaire for Work (RESTQ-Work). Versions for screening, organizational and individual Recovery-Strain-Analysis, Poster presented at the 16th Congress of the European Association of Work and Organizational Psychology (July, 2010), Melbourne.
- 23] P. Jiménez: Engagement und Demotivation bei Polizeibeamten - Vergleich öffentlicher Dienst mit anderen Berufen [Involvement and Demotivation at police officers – A Comparison of Public Service and Other Professions], *Polizei & Wissenschaft*, Vol. 2 (2004), pp. 24-33.
- 24] P. Jiménez, A. Dunkl: Unpublished data of an Austrian representative sample (2014)
- 25] L. Dellve, K. Skagert, R. Vilhelmsson: Leadership in workplace health promotion projects: 1- and 2-year effects on long-term work attendance, *European Journal of Public Health*, Vol. 17 (2007), pp.471-476.
- 26] E. Nöhammer, C. Eitzinger, M. Schaffenraht-Resi, H. Stummer: Zielgruppenorientierung und betriebliche Gesundheitsförderung [Target Group Orientation and Workplace Health Promotion], *Prävention Gesundheitsförderung*, Vol. 4 (2009), pp. 77-82.
- 27] P. Jiménez, A. Dunkl: Unpublished data (2015)

OCCUPATIONAL STRESS IN HEALTH CARE WORKERS: RISK FACTORS FOR INCREASED MORBIDITY

A. Ihan¹ and K. Resnik²

¹University of Ljubljana, Faculty of Medicine

Institute of microbiology and immunology, Zaloška 4, SI - 1000 Ljubljana, Slovenia

² RC IKTS Žalec d.o.o., Aškerčeva ulica 4A, Žalec, 3310, Slovenia

Keywords: Occupational stress, healthcare workers, burnout, immunity

Abstract.

Aims and objectives: Several studies have shown that healthcare service is accompanied with substantial work stress, health and behavioral risks in various occupational groups.

Methods: 80 female health care workers were included in the study to obtain data on their health condition and identify the underlying risk factors for the increased morbidity. We included 41 family doctors; (20 with moderate work load and 21 with high work load), 13 anesthesiologists and 26 surgical nurses. We measured body mass index, aerobic power, fatigue, quality of life, presentism and absenteeism, and inflammatory and immunological parameters.

Results: Among the analyzed groups (family doctors with moderate/high work load, anesthesiologists, surgical nurses) the differences in work load associated with different degrees of perceived stress, plasma cortisol levels and fatigue. The biggest deviation from the groups was observed in surgical nurses who reported the highest fatigue and lowest sleep quality. With highest amount of stress and fatigue the immune system inflammation was also present. The higher general fatigue, lower life satisfaction, low quality of sleep, and reporting higher number of health problems may be related to burnout in the group of surgical nurses.

Introduction

The psychological and physiological effects of stress in the workplace have been established as risk factors for a host of mental and physical health problems. Psychological responses to stress are often associated with negative emotions and cognitive processes such as rumination and worry can prolong stress responses. Such recurring activation of cognitive representation of stress, called preservative cognition, can induce physiological activation of stress-response systems (Brosschot, Pieper & Thayer, 2005).

Ongoing role occupancy such as work strain has been shown to lead to general decrease in wellbeing, psychological strain with increased anxiety and depression and weakened cognitive abilities such as concentration and productivity at work along with increase in biological stress markers (Schulz, Kirschbaum, Prüßner & Hellhammer, 1998; Chandola, Brunner & Marmot, 2006; Siegrist, 2008). Studies have shown that cortisol levels are higher in chronically stressed subjects. Workers experiencing burnout produce higher salivary cortisol levels than workers without the burnout syndrome (Melamed, Ugarten, Shirom, Kahana, Lerman & Fromm, 1999). Schulz, Kirschbaum, Prüßner, & Hellhammer (1998) found higher early morning cortisol levels after awakening only in the chronically stressed group and not in acute stress, thus it has been suggested that long term effect of stress need to be present in order for the physiological response to occur. There are gender

differences in stress research where larger increases of cortisol are found for chronically stressed women, women appear to report more worries than men (Robichaud, Dugas, Conway, 2003) and indicate higher stress responsiveness (Kudielka & Kirschbaum, 2005).

Professional burnout describes a state of exhaustion, which is often more emotional and mental than physical. The physical outcomes of burnout include headaches, sleeplessness, gastrointestinal disturbances and shortness of breath whereas behavioral outcomes show in frustration, irritation, difficulties controlling emotions and cynicism. Interestingly the phenomenon was originally observed among people who work in the human services and health care (Maslach et al., 1996).

The prevalence of burnout is 20-30% in practicing physicians whereas it is 1.6 fold higher in women physicians (Linzer, 2001). The state of burnout is associated with higher prevalence of work errors within medical staff (West, 2009) which can be dangerous in certain situations. Also what has been noticed in the literature is that general practitioners' mortality is 5 – 7 years higher compared to other specialists (Šelb & Albrecht 2000). Female GP life expectancy is more than 10 years lower compared to woman in general population and 73% of GP are woman. Survey of 422 general internists and family physicians revealed that they perceive their work as stressful. 48% of physicians report they work in a chaotic work place, 78% of people feel they have little control over their work, 27% reported they are definitely burning out, and 30% of physicians reported they were likely to leave the practice within 2 years (Linzer et al. 2009). Burnout among doctors may be due to high job stress resulting from high expectations coupled with insufficient time, skills and/or social support at work. When coupled with low personal autonomy the prevalence increases, thus it may be more frequent among medical students, residents, physicians, and medical nurses.

The aim of the current study was to detect psychological and physiological changes in health care workers which occur as consequence of ongoing occupational stress.

Methods

Subjects

Health care workers from two university medical centers (Ljubljana and Maribor) and family medicine association were invited to participate in this study. We analyzed 80 female health care workers with the mean age 44,6 (SD = 7,9) who volunteered to take part in the study. The sample included 41 general practitioners; (20 with moderate work load and 21 with high work load), 13 anesthesiologists and 26 surgical nurses.

Design and setting

A comprehensive study of strain at workplace and underlying risk factors for early morbidity in health care setting was conducted among pre-set groups of professions; family doctors, anesthesiologists, and surgical nurses. The assessment included physiological, behavioral and cognitive measures obtained during 10 days of testing. Data collection took place between August 2014 and January 2015. Each participant signed an informed consent to participate in the study.

Questionnaires

Each participant was asked to complete a set of questionnaires that included self-report measures described below.

World Health Organization's Health and Work Performance Questionnaire (HPQ). The questionnaire measures presenteeism with a global rating scale and has a good correlation with independent employer records of job performance within several occupations and

supervisor ratings of performance. For calculating the measure of absenteeism and presenteesim, the interpretation has been calculated based on the specific questions of the World Health Organization's Health and Work Performance Questionnaire (HPQ) following the methodology of Kessler et al (2003; 2004).

Satisfaction With Life Scale (SWLS). The satisfaction with life was obtained by assessing global cognitive judgment of participants' view of their life on a 5-item scale. There is a 7-point scale from "strongly disagree" to "strongly agree" and a score range is 5–35. A score of 20 represents the neutral point on the scale. Scores between 31 and 35 indicate extremely satisfied, 26 –30 indicates satisfied, 21–25 indicates slightly satisfied, 15–19 indicates slightly dissatisfied, 10 –14 dissatisfied, and 5–9 extremely dissatisfied. The scale has strong internal reliability and moderate temporal stability. Diener et al (1) report coefficient alphas of 0.79 to 0.89 and a 2-month test—retest stability coefficient of 0.64 to 0.82.

Modified Fatigue Impact Scale (MFIS) is a well validated 21-item questionnaire assessing several aspects of fatigue and activity. The scale was developed for clinical population particularly for the patients with multiple sclerosis, however it has been used in a healthy population for research purposes. Higher scores indicate a higher degree of fatigue. The scale can be interpreted in subscales of physical fatigue, cognitive fatigue, psychosocial fatigue, and the overall score of the fatigue scale. The MFIS contains 9 "physical" items, 10 "cognitive" items, and 2 "psychosocial" items. The maximum possible score is 84, with higher scores indicating a greater impact on quality of life. The original intention was to use the total score to reflect a global (unidimensional) score when reporting fatigue.

State-Trait Anxiety Inventory (STAI – X) measures anxiety as a stable personality trait, a persons' disposition to be nervous (Spielberger, 1972) instead of the more prominent use of the term assessing an emotional state characterized by subjective feelings of tension, apprehension, nervousness and worry, and by activation or arousal of the autonomic nervous system (Spielberger, 1972; Spielberger et al., 1983). Form X of the STAI (Spielberger, Gorsuch, & Lushene, 1970) contains 20 state anxiety items and 20 trait anxiety items. The state anxiety items are each rated on a 4-point intensity scale, from 1 for "not at all" to 4 for "very much so." The trait anxiety items are rated on a 4-point frequency scale (from "almost never" to "almost always"). Respondents are asked to indicate how they generally feel. Scoring is reversed for anxiety-absent items (e.g., "I feel calm"). STAI was developed as a unidimensional self-report measure. 10 items are positively worded, and 10 items are negatively worded. Score range is 20 – 80 and Higher scores indicate greater levels of anxiety. Test-retest reliability tends to be high for Trait and low for State, as expected. Test-retest for STAI Trait ranges from 0.73 to 0.86 over periods of 1 hour to 104 days. Alpha coefficients for both tests range from 0.83 to 0.95. STAI State and STAI Trait correlate between 0.59 and 0.75. The State Anxiety Scale is intended to measure transient levels of anxiety and, as such, is not expected to have high test-retest relationships. The Trait Anxiety Scale measures dispositional anxiety and has been shown to be relatively stable over time.

Sleep quality is the self-report measure, where participants needed to rate their sleep quality on the 5-stage Likert scale; 1 being very bad and 5 very good in either last month or last night.

Biochemical measurements

Blood samples were collected from the subjects' peripheral vein in the morning after a fasting period of 10 – 20 hours. The plasma and cell fractions were processed on the same day of collection. Plasma aliquots were stored at the -80 °C until use. Blood cells were stained and analyzed by flow cytometry. Analysis of plasma cytokines comprised inflammatory and immunological parameters; C reactive protein, interleukin 6, various lymphocyte subpopulations (CD3+, CD3CD19+, CD56+, CD4+, CD8+, CD56dim and CD56bright), and markers of activation, maturation, down regulation and susceptibility to immune cell apoptosis (CD25+, CD28+, CD45RA+, CD45RO+, CD69+, CD95+, HLA-DR+). Cytokine concentrations were obtained using the Luminex 100 system (Luminex Corp).

Physical ability test

Each participant underwent an aerobic power testing at our first meeting. The Rockport Fitness Walking Test (RW) is a maximal paced 1-mile walk test used to evaluate cardiorespiratory fitness through the estimation or prediction of maximal oxygen consumption (VO₂max) in adults (1). This test requires the participant to walk one mile (1609 meters) as fast as possible.

$$VO_2 \text{ max} = 132.853 - (0.0769 \times \text{Weight}) - (0.3877 \times \text{Age}) + (6.315 \times \text{Gender}) - (3.2649 \times \text{Time}) - (0.1565 \times \text{Heart rate})$$

Results

Study demographics

Participants in the current study showed sample differences. General practitioners with normal workload are the oldest group, least physically fit, with the highest BMI and lowest Vo₂max score on the Rockport test. Despite lowest workload and overtime hours, they report high anxiety, fatigue and fatigue related work errors. General practitioners with higher workload report lowest fatigue and best sleep quality however, their anxiety is among highest. The anesthesiologists report high workload, highest anxiety and highest number of somatic and physical pains. They report least work errors. Group of surgical nurses is the youngest and most physically fit. They report worse sleep quality and highest fatigue which might be due to their strenuous workload. They have highest cortisol and IL-6 and report highest levels of stress. See Table 1.

Table 1. Means and standard deviations of demographic and psychological variables in health care workers

Study variable	GP_normal (n=20)	GP_high (n=21)	Anesthesiologist (n=13)	Surgical nurse (n=26)	Full Sample (n=80)
Age (years)	46,55 (6,6)	47,16 (7,47)	45,62 (8,99)	40,72 (7,55)	44,65 (7,91)
BMI (kg /m ²)	25,42 (4,65)	24,17 (4,15)	23,02 (2,70)	23,04 (3,18)	23,86 (9,38)
VO ₂ max	36,48 (7,41)	36,81 (8,17)	37,88 (5,98)	38,82 (6,02)	37,60 (6,87)
Workload (hrs)	164,2 (15,04)	228,57 (42,52)	230,15 (56,98)	241,85 (48,14)	213,50 (50,41)
Overtime (hrs)	6,40 (10,81)	68,57 (42,52)	70,15 (56,98)	81,85 (48,14)	54,05 (49,61)
STAI-X	45,95 (3,43)	45,90 (4,33)	46,38 (5,95)	43,26 (5,71)	45,13 (5,00)

	40,65				37,36
MFIS	(16,14)	31,85 (14,11)	30,61 (11,15)	42,65 (18,09)	(16,22)
SWLS	24,55 (6,71)	27,23 (5,08)	26,84 (4,14)	23,23 (6,80)	25,20 (6,13)
Small work errors	4,65 (2,88)	3,80 (2,13)	2,69 (2,46)	3,38 (2,84)	3,7 (2,65)
Harmful work errors	3,65 (2,90)	2,76 (1,86)	2,30 (1,60)	3,00 (2,49)	2,98 (2,34)

Stress and behavioral effect on the health care workers

The health care workers who due to overstrain and stress perform their daily work obligations with difficulties, who find work less satisfying, who cannot perform every daily work task due to health related problems and stress and whose monthly work hours are higher, report higher incidence of the faults that could in work situation cause harm ($F = 7,329$; $p = 0,011$; $F = 5,309$; $p = 0,027$; $F = 13,816$; $p = 0,001$; $F = 107,839$; $p < 0,001$; $F = 11,085$; $p = 0,002$).

The health care workers who report higher general fatigue tend to be less satisfied with life, report lower sleep quality in the past month, perform less daily work obligations due to overstrain and stress, find work less satisfying and report higher incidence of health problems. ($F = 11,448$; $p = 0,002$; $F = 16,951$; $p > 0,001$; $F = 24,716$; $p > 0,000$; $F = 16,371$; $p > 0,001$; $F = 10,561$; $p = 0,003$).

One way Analysis of variance with the post hoc test revealed significant differences among professions in the health care.

The amount of overtime hours varies significantly among professions ($F = 2,903$; $p = 0,043$), where the most significant differences can be seen between general practitioners with normal work strain who worked the least overtime hours compared to medical nurses whose overtime hours are highest ($p = 0,038$).

There are significant difference in fatigue ($F = 3,496$; $p = 0,022$), where the biggest difference is found between surgical nurses, who report highest levels of fatigue and anesthesiologists who report lower general fatigue ($p = 0,019$).

The sleep quality significantly varies among professionals ($F = 5,317$; $p = 0,003$), surgical nurses report lower sleep quality than the general practitioners with normal work strain ($p = 0,010$), general practitioners with higher work strain ($p = 0,006$) and anesthesiologists ($p = 0,024$).

The number of physical symptom complains is the highest among anesthesiologists ($p = 0,007$) compared to general practitioners with higher work strain who report significantly lower amount of unpleasant physical sensations ($F = 3,902$; $p = 0,014$).

Relationship between biological and psychological variables

Pearson's product moment correlations were computed for the individual measures of psychosocial functioning, feelings of stress and burnout and biological markers of systemic inflammation and response to stress. We found significant correlations of immune parameters with work load, aerobic power and stress parameters. In the group as a whole, we have found correlation of higher workload and overtime with lower expression of CK and higher expression of HLA-DR+. With higher aerobic power we found a negative correlation with lipids and glucose (see Table 2).

Table 2. Correlation coefficients (r_s) between markers of systemic inflammation and metabolic subpopulations in health care workers

	CK	Glukoza	Holesterol	Trigliceridi	LDL	Kortizol	CD19	CD4	CD8	HLA-DR+
BMI	,330**	,246	,288*	,454**	,296*	-,256*	,315*	,264*	-,057	-,034
Age	,169	,160	,548**	,256*	,440**	-,320**	,066	,113	-,087	-,060
Profession	-,205	,076	-,072	-,087	-,074	,052	-,236*	-,083	-,025	,001
Workload	-,243*	,069	-,149	-,131	-,099	,063	-,055	-,031	-,012	,300**
Overtime	-,244*	,114	-,160	-,130	-,107	,054	-,046	-,024	-,010	,302**
STAI-X	-,040	,094	,039	,039	,118	-,213	,028	-,195	-,186	,125
MFIS	-,139	-,122	,037	,057	,079	,114	,146	,047	,233*	,178
SWLS	,104	,169	-,043	,046	-,034	-,220	-,050	-,057	-,090	,115
Vo2Max	,012	-,263*	-,376**	-,269*	-,262*	,117	-,084	-,134	,056	-,101

Discussion

Several studies have shown that healthcare service is accompanied with a substantial work stress, health and behavioral risks in various occupational groups.

Among the professions in health care we have analyzed; general practitioners with moderate/high work load, anesthesiologists, and surgical nurses we have seen differences in work load associated with different degree of perceived stress, plasma cortisol levels and fatigue. Generally, health care professionals are a more stressed population with straining job and workload.

Among professions in health care we have found that highest prevalence of burnout and exhaustion is present among medical nurses. Based on the Job demands-resources model (Porter & Steers, 1973), strain is a response to imbalance between demands on the individual and the resources he or she has to deal with those demands. Whereas job demands that can be psychological, social, or organizational for which a health care worker requires specific skills such as work pressure and emotional demands exceeds the resources the job has to offer. Higher occupational stress can thus be seen where there is lack of resources such as possibility to develop a career or where within an institution, an employee feels that he or she has low autonomy and high responsibility. According to unmet expectations paradigm, the burnout follows the longitudinal discrepancy between what an employee expected from the job and his position at workplace and what employee actually encounters. Unmet expectations result in negative work outcomes, such as decreased job satisfaction, higher levels of distress, and emotional exhaustion.

Psychological changes associated with work load in health workers may have a substantial adverse effect upon perceived stress, plasma cortisol levels, fatigue, sleep quality, satisfaction at work, ability to concentrate at work and prevent mistakes at work. The analysis showed that health workers can be followed by measuring critically raised biological markers of stress in order to prevent damage to their health condition as well as mistakes at work, that could, in certain circumstances, cause a damage to their patients. In the future work we aim to design an intervention for the health care workers that will enable decreasing burnout. Toker & Biron (2012) noted that things like realistic self-recognition, supportive help and talking to peers about issues and stressors and using humor and laughter can all help to release stress among co-workers. In the occupational settings realistic expectations need to be formed and boundaries should be formed in the working environment to avoid increased stress and misunderstandings. Also, working in various clinical settings or changing up the clinical duties can help individuals to stay focused and

alert. And what each individual can do to avoid stress is to find hobbies and leisure activities that do not involve work thematic to increase work-home balance in their life and most importantly include physical activity in their every day as it has been shown that is can significantly decrease burnout and depression.

Stress response is mobilization of physiological homeostatic mechanisms (neuro-hormonal, cardiovascular, metabolic, and inflammatory). There is a clear association between stress, elevated concentrations of inflammatory markers, and risk of cardiovascular diseases. So releasing work strain and occupational stress by being physically active is necessary for health, but is not a simple stress-antagonist, thus additional measures need to be taken in order to prevent burnout in the health care workers.

Zahvala | Acknowledgement

“Krepitev zdravja delavcev v zdravstvu» je na podlagi Javnega razpisa za sofinanciranje projektov za promocijo zdravja na delovnem mestu v letu 2013 in 2014 finančno podprl Zavod za zdravstveno zavarovanje Slovenije”

‘Strengthening Health for Health Professionals’ project is financially supported by the Health Insurance Institute of Slovenia on the basis of Call for Proposals for co-financing ‘Workplace Health Promotion’ projects for 2013-2014”

References

- Linzer et al. *Annals of Internal Medicine* 2009;151:28-36
- Brosschot, J. F., Pieper, S. & Thayer, J. F. (2005). Expanding stress theory: Prolonged activation and preservative cognition. *Psychoneuroendocrinology*, 30, 1043-1049.
- Pieper, S., Brosschot, J.F., 2005. Prolonged stress-related cardiovascular activation: is there any? *Annals of Behavioural Medicine*. 30, 91-103.
- Schulz, P., Kirschbaum, C., Prüßner, J., & Hellhammer, D. (1998). Increased free cortisol secretion after awakening in chronically stressed individuals due to work overload. *Stress medicine*, 14, 91-97.
- Chandola, T., Brunner, E., & Marmot, M. (2006). Chronic stress at work and the metabolic syndrome: prospective study. *BMJ*, 332, 521-525.
- Siegrist, J. (2008). Chronic psychosocial stress at work and risk of depression: Evidence prospective studies. *European Archives of Psychiatry and Clinical Neuroscience*, 258, 115-119
- Kessler, R.C., Barber, C., Beck, A.L., Berglund, P.A., Cleary, P.D., McKenas, D., Pronk, N.P., Simon, G.E., Stang, P.E., Üstün, T.B., Wang, P.S. (2003). The World Health Organization Health and Work Performance Questionnaire (HPQ). *Journal of Occupational and Environmental Medicine*, 45 (2), 156- 174.
- Kessler, R.C., Ames, M., Hymel, P.A., Loeppke, R., McKenas, D.K., Richling, D., Stang, P.E., Üstün, T.B. (2004). Using the WHO Health and Work Performance Questionnaire (HPQ) to evaluate the indirect workplace costs of illness. *Journal of Occupational and Environmental Medicine*, 46(Suppl. 6), S23-S37.
- Diener E, Emmons RA, Larsen RJ Griffin S. The satisfaction with life scale. *J Person Assess* 1985; 49:71–5
- Marrie RA, Miller DM, Chelune GJ, Cohen JA. Validity and reliability of the MSQLI in cognitively impaired patients with multiple sclerosis. *Mult Scler*. 2003 Dec;9(6):621-6

Fischer JS, LaRocca NG, Miller DM, Ritvo PG, Andrews H, Paty D. Recent developments in the assessment of quality of life in multiple sclerosis (MS). *Mult Scler*. 1999 Aug;5(4):251-9. Review

Spielberger CD. Theory and research on anxiety. In: Spielberger CD, editor. *Anxiety and behavior*. San Diego (CA): Academic Press; 1966. p. 3–20.

Spielberger CD. *Manual for the State-Trait Anxiety Inventory (Form V)*. Palo Alto (CA): Consulting Psychologists Press; 1983.

Spielberger CD. Anxiety as an emotional state. In: Spielberger CD, editor. *Anxiety: current trends in theory and research*. San Diego (CA): Academic Press; 1972. p. 24 – 49.

Gotlib IH. Depression and general psychopathology in university students. *J Abnorm Psychol* 1984;93:19–30.

5. Dobson KS. The relationship between anxiety and depression. *Clin Psychol Rev* 1985;5:307–24.

Endler NS, Cox BJ, Parker JD, Bagby RM. Self-reports of depression and state-trait anxiety: evidence for differential assessment. *J Pers Soc Psychol* 1992;63: 832– 8.

Kline G, Porcari J, Hintermeister R, Freedson P, Ward A, McCarron R, Ross J, Rippe J. Estimation of vo2max from a 1-mile track walk, gender, age, and body weight. *Med Sci Sports Exerc* 1987;19:253-59.

MAYO CLINIC'S APPROACH TO EMPLOYEE HEALTH AND WELLNESS: THE DAN ABRAHAM HEALTHY LIVING CENTER

Beth A. Riley, MBA

Mayo Clinic Dan Abraham Healthy Living Center, 200 First Street SW, Rochester, Minnesota, 55905, USA

Keywords: wellness center, employee wellness, innovative care models, health care integration, health fitness professional

Abstract.

The Mayo Clinic staff in Rochester, MN is the employer, the provider, the insurer, and the employee. As an employer, Mayo Clinic is committed to the health and well-being of its workforce and to providing an unparalleled wellness experience. The leadership at Mayo Clinic recognizes the importance of healthy living in prevention and treatment of many chronic diseases. The Dan Abraham Healthy Living Center serves as the cornerstone for onsite health and wellness offerings at Mayo Clinic and serves as the main effector arm for worksite wellness strategies. This presentation will highlight new models of care that include the health and wellness professional integrated into the traditional clinical care team that offer better patient outcomes, cost effective models and improved patient satisfaction. Mayo Clinic is approaching a scientific understanding of behavior change/behavior evolution and integrating these strategies into healthcare. Mayo Clinic is leading the way in terms of healthcare innovation, expanding the role of the health and wellness professional, communication and engagement strategies, and the total patient care experience.

References

- [1] K.A. Olsen, B.A. Warren: Integrating Health and Health Care, *American College of Sports Medicine's Health & Fitness Journal*, Volume 15 (2011), Issue 4, p. 29-34.
- [2] B. Borah, J.S. Egginton, N.D. Shah, A.E. Wagie, K.D. Olsen, F. Lopez-Jimenez: Association of Worksite Wellness Center Attendance With Weight Loss and Health Care Cost Savings: Mayo Clinic's Experience, *Journal of Occupational and Environmental Medicine*, Volume 57(2015), Issue 3, p. 229-234.

EXPANDING THE REACH OF MAYO CLINIC HEALTHY LIVING STAFF THROUGH WORKSITE WELLNESS

Kaisa C. Wieneke, MPH

Mayo Clinic Dan Abraham Healthy Living Center, 200 First Street SW, Rochester, Minnesota, 55905, USA

Keywords: worksite wellness, communication, work environment, wellness strategy, wellness champion

Abstract. Mayo Clinic leadership believes “Just as we care for our patients, we must also care for ourselves.” This is because in order to provide the best patient care, employees must first be in good health. At Mayo Clinic Rochester, employees have the opportunity to engage in comprehensive wellness programs delivered at the Dan Abraham Healthy Living Center. However, to engage employees across the entire campus, wellness programs must also be implemented where the employees are at – in the worksite. This presentation will highlight the benefits and rationale for a worksite wellness program and how to expand the reach of your health and wellness staff into the worksite. An overview of a comprehensive worksite wellness program will highlight leadership engagement, diverse communications, strategic planning, environmental changes, and the implementation of a wellness champions program. Developing a wellness program that leverages the expertise of the health and wellness staff into the worksite has helped establish a supportive environment for employees to practice a healthy lifestyle in the worksite.

References

- [1] N. Christakis, J. Fowler: The Spread of Obesity in a Large Social Network Over 32 Years, *New England Journal of Medicine*, Volume 357 (2007), Issue 4, p. 370-379.
- [2] T.M. Leahey, R.R. Wing: A Randomized Controlled Pilot Study Testing Three Types of Health Coaches for Obesity Treatment: Professional, Peer, and Mentor, *Obesity*, Volume 21 (2012), Issue 5, p. 928-934.
- [3] L. Linnan, E.B. Fisher, S. Hood: The Power and Potential of Peer Support in Workplace Interventions, *American Journal of Health Promotion*, Volume 28 (2013), Issue 1, TAHP p. 2-10.
- [4] M. Nunn, P.E. Terry: Wellness Champions Can “Be The Change!,” *American Journal of Health Promotion*, Volume 27 (2012), Issue 2, TAHP p. 6.
- [5] H.T. Tu, R.Cl. Mayrel: Employer Wellness Initiatives Grow, but Effectiveness Varies Widely, *National Institute for Health Care Reform*, (2010); Retrieved April 6, 2015, from <http://www.nihcr.org/Employer-Wellness-Initiatives.html>.
- [6] D Umberson, J. Montez: Social Relationships and Health: A Flashpoint for Health Policy, *Journal of Health and Social Behavior*, Volume 51 (2010), Issue Suppl, p. S54-S66.
- [7] R. Wing, R. Jeffery: Benefits of Recruiting Participants with Friends and Increasing Social Support for Weight Loss and Maintenance, *Journal of Consulting and Clinical Psychology*, Volume 67 (1999), Issue 1, p. 132-138.

PHYSICAL ACTIVITY OF EMPLOYEES

V. Strojnik

University of Ljubljana, Faculty of Sport, Gortanova 22, 1000 Ljubljana, Slovenia

Keywords: cardio-vascular fitness, muscle strength, flexibility, health, productivity, low-back pain, active rest, leisure time physical activity

Abstract. Physically active people report less illness and recover more quickly, are less absent from work and have less industrial injuries, report higher satisfaction with working conditions and have in general more positive attitude toward their work. There are many ways how employer can encourage employees to be more physically active. These include active commuting and transportation, active rests at work, flexible working hours for better time management of physical activities. Many companies promote participation in local fitness clubs and other physical activity and sport providers during leisure time. Physical activity during working hours can prevent acute problems (relaxation, activation, blood flow), while in leisure time long-term conditioning effects may be achieved. It is important, that physical activities are regular, with proper duration and intensity. Paper presents some examples how to tackle common health problems as low-back pain, neck pain, feet pain, and leg swelling.

Introduction

Physical activity of employees has important impact not only on employee but also company's life. It is essential for good health, reducing sickness absence and improving productivity. There are number of health conditions where physical activity can prevent and/or reduce already presented symptoms. Physically active people report less illness and recover more quickly, are less absent from work and have less industrial injuries, report higher satisfaction with working conditions and have in general more positive attitude toward their work.

Physical activity can be present in many forms. It includes active transportation (walking, cycling, etc.), occupational work, household chores (e.g. gardening, cleaning), leisure time physical activities (e.g. walk), sports or other planned exercises (e.g. fitness, active rest during job).

Both, employee and employer should be interested in promoting physical activity. In general, measures to promote better health related to physical activity are systemic (responsible employer) and individual. Among systemic are work organization and ergonomics of workplace. Individual measures include performing proper moving techniques and postures as well as other activities at specific working place (e.g. regular active rest, inclusion of nonsystematic physical activity) and physical activity in leisure time. Physical activities at workplace provide mainly acute effects (e.g. relaxation, activation, increased blood flow) and are not effective for long-term improvement of physical abilities.

The first steps to promote physical activity among employees should be education and motivation about the preventive measures at workplace. This includes ergonomic advices about proper movement techniques and postures, relaxation techniques and importance of regular exercising in leisure time.

There are many initiatives that employer can organize to encourage employees to be more physically active. These include motivating employees to walk or cycle into work. However, this needs to be accompanied with safe walking and cycle routes as well as cycle parking. Once at work, physical activities may include stairs walking instead using elevators; have a printer room to walk to collect the printed sheets; or arrange systemic regular active rest. Flexible hours enable better time management of physical activities. Some prefer early

exercise hours, some late, others would exercise during prolonged lunch break. Many companies promote and contribute a part of the payment the participation in local fitness clubs and in other physical activity and sport providers during leisure time. Of course, a company may have its own exercise room. It is important, that information about exercising opportunities and their benefits is available to every employee. For even better results, asking employees what types of physical activities they prefer to participate. Competition between employees and groups of employees often motivates people to do their best. Groups of employees (or individual) may compete in different activities such as walking, running or cycling. Using modern technology such as smart phones or small wearable devices make counting steps and distances a really easy job, offering an objective way of comparing results resulting in a boost in motivation.

Common physical health problems at working place

Although there are many different professions, the most common health problems are shared among most of them. These are related to prolonged sitting and standing, lifting heavy loads and maintaining bad postures or combination to more of them. Although they emerge in different conditions, most of physical activity measures are related to the problem and not to profession. Systemic approaches as better ergonomics of the working place and work organization are workplace orientated.

The reviews of all possible conditions at workplace are out of the scope of this paper. Therefore the focus will be given to some conditions that are most common. These include prolonged standing, sitting and lifting objects.

Common health problems during prolonged standing are sore foot, lower limb venous edema, back pain, sore neck and shoulders, and general joints pain.

Prolonged sitting include back pain, sore neck, shoulders and wrist, increased venous blood pressure and pressure at sitting surface. Troubles with these postures can be even worse with trunk rotations and lifting objects. There is a difference between lifting objects from the ground (low position) and over the shoulders. During sitting, trunk rotations are often occurs when sitting at the “L” shaped table. Often to save time and energy, rotations are made with trunk and not with the whole chair which provide additional load to the spine. Another reason for sore neck and shoulders is typing in ergonomically improper position such as unsupported hands and/or lifted keyboard.

In conclusion, physical health conditions that results from postures listed above are foot, low-back, neck and shoulder pain, reduced blood circulation and lower limb venous edema.

Actions to prevent common physical health problems at working place

Actions to prevent (and to reduce when they appear) these troubles are active and passive. Passive measures include choosing the proper personal working equipment and ergonomics (footwear, chairs, tables, counters, etc). Active measures include active commuting, active working breaks, and leisure time physical activities and exercise.

Feet pain

Feet pain can be reduced with proper footwear [1]. The idea is to reduce sole pressure peaks and muscle activation. Active approach would include muscle strength and flexibility training of calf and foot muscles, and sensory-motor training of ankle joint. Strong muscle will be able to maintain foot arches better, reduce pressure peaks and fatigue. Still, good footwear and strong muscles are not capable to support foot for many working hours. Feet need rest during working hours as well.

Lower limb venous edema

Passive measures include reducing lower limb blood accumulation due to lifting legs. This may look unusual in office to lift feet on desk occasionally (and why not?), but still it is possible to have legs in horizontal position. Another passive measure is wearing compression stockings. Active action would include short active rest periods, when employees can walk around for few minutes, promoting the calf muscle pump [2]. Muscle pump action may be enhanced with higher levels of muscle activity and greater muscle mass. This can only be achieved with regular physical activity and exercise (e.g. walking running, cycling, strength training) in leisure time.

Neck pain

Unsupported arms (e.g. during typing, manipulations) are often reason for neck pain. Weight of the arm is supported by shoulder muscles which originates from neck spine. These muscles can be active for hours during working time what makes them stiff and sore. Occasionally, physiological and morphological changes to spine and connective tissue may occur leading to pain. The main measure will be reducing the load to the muscles by supporting the arms. Active measures will include muscle strength and flexibility training of neck and shoulder muscles.

The other reason for neck pain is head leaning too forward. This brings additional torque to the neck spine which must be compensated by the activation of neck extensor muscles. Fatigued muscles are more prone to injuries. Additionally, these muscles strongly compress the neck spine in dehydrates intervertebral discs. Strong and stretched muscles may prevent earlier muscle fatigue, but the main focus should be reducing head torque by adjusting the sitting position.

Low-back pain

Low-back pain is perhaps the most common problem of modern human. There are numerous factors contributing to the pain, including psycho-social, physiological, and mechanical. Most low-back problems result from maintaining bad posture and lifting heavy loads. Among professions, nurses from intensive care seem to suffer the most. Researchers [3] showed that 90,3% experienced low-back pain at least once per month, 40,7% once per week, and 21,9% lasting pain.

Most physical activities will increase lumbar spine load over that of normal stance (which is considered close to neutral) [4]. For instance, normal office (school) chair sitting will load lumbar spine more than normal standing. There are ergonomic standards for optimal sitting. They include: both feet whole on the ground; seat support inclined 5° backwards, its length some 10 cm shorter than popliteal fossa when seated to the back support, its height that calves are vertical and thigh fully supported; back rest inclined at 110-130° (minimal head torque at 110°); lumbar support, arm rest to support forearm (or desk at that height). For computer work, the upper edge of the screen should be at the eye level. When typing, wrists should be supported at the level of keyboard which should not be inclined.

Most often, low-back pain is related to muscles and connective tissue problems. Long muscle activation times increase muscle fatigue which may result in soreness, spasms, micro traumas, intervertebral discs dehydration, etc.

Passive measures to reduce lumbar spine load and relax corresponding muscles are maintaining a proper posture, provide support to the back and use proper lifting technique. Optimal sitting position can be achieved with saddle chair and higher inclined desk [5]. In school children this reduced spine problems and increase strength of erector spinae muscle. The key element is pelvis position, which is tilted backwards during “normal” sitting and thus

affects spine curvature. Every proper posture should maintain normal spine curves. Short muscles may tilt pelvis during normal stance. Most often, shortened iliopsoas muscle (due to sitting posture) tilt pelvis forwards and increase lumbar lordosis. Increased activation of erector spinae muscle will compress the spine and increased lordosis will provide local load peaks on vertebra and intervertebral discs. Trunk rotation will just add additional load to the system.

Intra-abdominal pressure can reduce lumbar spine load up to 30% [6]. The intra-abdominal pressure directly oppose spine compression. Since it resides in front of the spine, it produces trunk extension torque. Therefore less activity of erector spinae muscle is needed and therefore less compression to the lumbar spine occurs. The third effect of the intra-abdominal pressure to the spine is increased stiffness at abdominal area. Muscles responsible for increasing the intra-abdominal pressure together with the pressure itself fixate pelvis and ribs to each other and thus prevent excessive movements in the spine to prevent high local loads in the spine.

Intra-abdominal pressure is acute action and to be effective must be achieved just before the movement starts. Normally, this is an automatic mechanisms. The training should stress this “stabilization-action” automatism and provide strength of all the muscles involved in lumbar spine function. The most neglected muscle in this regard is transversus abdominis muscle, which is the most related muscle to the increased intra-abdominal pressure.

Active break at work

Active breaks at work are preventive measure to release acute problems due to prolonged bad postures or heavy work. Goals related to physical fitness that can be achieved by taking active breaks are focused to promote blood flow, stretch and activate muscles. Walking for 2 to 3 minutes will promote blood flow. Muscle activation will be maintained through short strength exercises. Muscle relaxation and muscle lengthening will be achieved through stretching exercises. Good practice should include active rest every 30 minutes of sitting work.

Example of active rest. Start with walking or other low intensity activity that rhythmically activates as much muscles as possible. In office, walking at place without heel contact and simultaneously symmetrical (prevent trunk rotation) arm movements. Muscle strength part would include 3-5 times for 4 seconds close to maximal isometric activation of all muscles (including intra-abdominal pressure) during normal stance. In case of neck problems, similar actions should be performed for neck muscles (flexion, extension) with arm support in neutral spine position. Stretching part should include short stretch (~ 4 s, 2-3 times) of m. iliopsoas, hamstrings and m. erector spinae. This routine can be adapted to specific needs of employees in a way to include exercise for critical muscles. Typically, the break will take up to 5 minutes.

Active breaks can be upgraded with occasional walking for different reasons (working, hygiene, etc.), stretching tight muscles or activate “slept” muscles.

Leisure time physical activities

These activities have the greatest impact on health and physical abilities. To improve physical abilities, one should exercise regularly at proper intensity. This means that occasional activities have less potential to improve physical abilities than regular ones.

Leisure physical activities related to cardio-vascular system have the greater potential to fulfill these requirements than those related to strength or flexibility. The reason is that all activities that last at least 10 minutes (repeated few times per day) with sufficient intensity (> 50% VO₂max) affect cardio-vascular function. WHO recommendation includes 150 minutes

of physical activity per week with moderate intensity or 75 minutes of vigorous-intensity. For additional health benefits, durations should be doubled [7].

Strength training is local for specific muscle, which is harder to exercise regularly if different activities are performed occasionally (gardening, household chores, etc.). Lifted loads should be greater than 50% of the maximal load lifted once (1 RM) and number of repetitions close to maximum. If loads are greater, the number of repetitions per set will be smaller. To induce muscle hypertrophy, typical load will be 80% of 1 RM lifted 10 times per set with three sets with 1 minute rest between them per muscle. Such training should be performed twice per week for specific muscle or muscle group. Most typical set of exercises would include trunk extension, flexion, abduction and rotation, rotator cuff muscles exercises, arm abduction, and leg extension.

Muscle stretching should be performed daily, preferably several times per day. Typical stretching session would include exercises for ankle plantar flexors, hip flexors and extensors, trunk traction, shoulder internal and external rotation, and neck muscles. Principal method used would be static stretching. All exercises should be performed in balanced and comfortable posture which enable better muscle relaxation during stretching.

Start of every exercise session should start with warming up. For cardio-vascular activities this means start with a slower pace and then progress slowly to the desired pace. For strength and stretching exercises, warm up should include activities including large muscle mass (e. g. walking, jogging) at intensity that brings to the start of sweating after 7 minutes of performing such activity. For occasional short stretches no warm up is necessary.

Organized leisure time physical activities have greater potential for physical fitness improvement. They can be performed at local fitness or sport clubs, general exercise associations, or other physical exercise providers. One possibility is also to use of exercise programs based on information technology provided on internet, smart phones or/and other exercise gadgets. Few of these options provide exercise programs accommodated to individual needs and preferences. Most of them have trackers to record the activities and save them to computer for later analysis. Important, they are very flexible regarding your exercise time and organization.

Conclusion

Regular physical activity has many positive effects on employees and employers. For employees this means feeling better and easier coping with everyday job stressors. For employers it means greater productivity, less absence from work, less staff rotation, etc.

When performed during work as active rest, physical activity has potential to relax, relieve stiffness or pain, activate mind and body, and improve mood. For long-term improvements of physical fitness, more systematical, longer and intensive efforts are necessary. These can be arranged in leisure time.

Important part of physical activity represents active commuting and transportation. Performed regularly and with sufficient intensity will improve health.

To improve efficiency of physical exercise, more professional help may be needed. Information technology may fulfill a gap between professional (personal) treatment and non-systematical physical activities.

Acknowledgment

The author thanks to Miloš Kalc for his valuable comments.

References

- [1] J. Burns, K.B Landorf, M.M. Ryan, J. Crosbie, R.A. Ouvrier. Interventions for the prevention and treatment of pes cavus. *Cochrane Database Syst Rev*. Volume 4 (2007), CD006154.
- [2] C. Recek. Calf pump activity influencing venous hemodynamics in the lower extremity. *Int J Angiol.*, Volume 22(1) (2013), p.23-30.
- [3] K.J. June, S.H. Cho. Low back pain and work-related factors among nurses in intensive care units. *J Clin Nurs*. Volume 20(3-4) (2011), p. 479-87.
- [4] A.L. Nachemson. The lumbar spine, an orthopaedic challenge. *Spine (Phila Pa 1976)*, Volume 1 (1976), p. 59-71.
- [5] R. Koskelo, K. Vuorikari, O. Hänninen. Sitting and standing postures are corrected by adjustable furniture with lowered muscle tension in high-school students. *Ergonomics*, Volume 40(10) (2007), p. 1643-56.
- [6] I.A.F. Stokes, M.G. Gardner-Morse, S.M. Henry. Intra-abdominal pressure and abdominal wall muscular function: spinal unloading mechanism. *Clin Biomech (Bristol, Avon)*, Volume 25(9) (2010), p. 859–866.
- [7] Recommended levels of physical activity for adults aged 18 - 64 years. http://www.who.int/dietphysicalactivity/factsheet_adults/en/, obtained on 23.3.2015.