Work ability and Social Inclusion
CB52

WASI Results - LATVIA

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Introduction

Similar to partner countries Latvia took part in almost all project activities:

» Web based questionnaire based on the Nordic SQ, WAI (Workability index), and Kiva questionnaires
» Metal Age training and intervention programs
» Measurements of workplace risk factors (e.g. indoor air quality, lighting levels etc.)
» Saliva cortisol measurements together with some other parameters (e.g. blood pressure etc.)
Latvian group

- All together 636 respondents from 13 companies were invited to take part in survey as intervention group and control group:
  - 636 invitations sent out
  - Response rate - 56% for intervention and control group
- 236 participants took part in second round of questionnaires
  - 497 invitation were sent
  - Response rate - 47%

Problem: - low response rate for web based surveys!
Latvian group

13 different companies involved
- 7 intervention group (5 used for both rounds and 2 dropouts)
- 6 control group

Distribution by NACE Rev.2.
- 2 of the companies - working in the field of Financing and insurance,
- 2 - Manufacturing of Food Products,
- 3 - Public Administration and defence sector,
- 2 - Communications (Radio broadcasting and telecommunications),
- 2 - Transport industry
- 1 - Education sector
Metal Age training

- Provided for Metal Age trainers by Dr. Nasman (RSU group and selected participants)
- Provided for company group leaders by RSU Metal Age trainers
- Provided for company participants together with RSU Metal Age trainers
- All together ~70 participants trained
Main results from Metal Age groups

- Carried out in 7 companies (2 companies dropped out)
- Main areas of intervention:
  - Improvements in internal communication to promote both vertical and horizontal exchange of information, e.g.:
    - internal newsletters,
    - summary of board meeting results,
    - internal webpages,
    - e-mail based information etc.);
Main results from Metal Age groups

- Improvements in working conditions and rest facilities, e.g.:
  - improvements in office equipment,
  - provision of additional ergonomic tools and solutions,
  - provision of hand-free phone systems,
  - improvements in rest facilities – e.g. better rest rooms
  - possibility to do physical exercises during breaks, possibility to eat own food and to warm it up etc.)
Main results from Metal Age groups

- **Improvements in work organization, e.g.:**
  - better distribution of tasks,
  - more clear definition of tasks,
  - adequate training,
  - sufficient staff in case of sick leaves etc.
  - clear career development of staff
  - possibility to attend professional development courses etc.).
Main results from Metal Age groups

- Various workplace health promotion activities, e.g.:
  - health insurance,
  - payments for physical activities (e.g. swimming pools etc.),
  - availability of healthy food etc.
KIVA questionnaire before and after intervention (10-point scale)
## KIVA pirms un pēc Metal Age

<table>
<thead>
<tr>
<th>The question</th>
<th>Office 1</th>
<th>Office 2</th>
<th>Office 3</th>
<th>Office 7</th>
<th>Office 10</th>
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<td>B/A</td>
<td>B/A</td>
<td>B/A</td>
<td>B/A</td>
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<td>5.8/7.8</td>
<td>4.4/5.2</td>
<td>7.3/6.9</td>
<td>6.5/6.5</td>
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<tr>
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<td>8.2/9.3</td>
<td>8.1/8.8</td>
<td>6.4/7.4</td>
<td>8.4/8.0</td>
<td>8.0/8.1</td>
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<td>3</td>
<td>7.8/7.8</td>
<td>6.9/8.4</td>
<td>5.4/5.8</td>
<td>7.9/7.7</td>
<td>7.2/7.1</td>
</tr>
<tr>
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<td>7.8/8.2</td>
<td>7.7/8.0</td>
<td>6.8/7.8</td>
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<td>8.3/8.3</td>
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<td>7.5/7.2</td>
<td>6.9/8.4</td>
<td>5.2/5.4</td>
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<td>7.4/7.2</td>
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<td>7.5/6.7</td>
<td>6.9/8.2</td>
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<td>7.4/7.0</td>
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<td>7</td>
<td>7.0/5.2</td>
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<td>4.4/4.2</td>
<td>6.2/6.2</td>
<td>6.3/6.2</td>
</tr>
</tbody>
</table>
CORTISOL

- Cortisol - steroid hormone - the major glucocorticoid; is synthesized from cholesterol in cells of the zona fasciculata of the adrenal cortex.
- ~90% of cortisol – protein bound;
- Non-protein bound generally regarded as being physiologically active;
- Cortisol plays the main role in the regulation of most essential physiological processes, including energy metabolism, maintenance of electrolyte balance and blood pressure, immune-modulation and stress responses, as well as regulation of memory and cognitive functions.
SALIVA

Saliva can provide a useful, non-invasive alternative to blood collection, because it can be collected rapidly, frequently and without stress.

Saliva samples were collected three times during a single working day using Salivette® tampons - in the morning (8 – 9), at noon (12-13) and in the afternoon (16 – 17).
HPLC separation of an extracted saliva sample

- CORTISOL
- INTERNAL STANDARD (IS)

AU × 10^{-4}

0 6.5 13

minutes
Cortisol concentration for individuals (nmol/L)

**ID 2617**

<table>
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<th>Time</th>
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<th>2013</th>
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<tr>
<td>Morning</td>
<td>8.9</td>
<td>5.6</td>
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<td>8.7</td>
<td>6.3</td>
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<td>5.1</td>
<td>4.1</td>
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</thead>
<tbody>
<tr>
<td>Morning</td>
<td>9.9</td>
<td>5.6</td>
</tr>
<tr>
<td>Lunch</td>
<td>6.4</td>
<td>6.3</td>
</tr>
<tr>
<td>Evening</td>
<td>10.4</td>
<td>5.3</td>
</tr>
</tbody>
</table>
Cortisol results

A – before intervention B – after intervention
Work ability index (WAI)

Work ability is built on the balance between a person’s resources and work demands.

The WAI is a self-administered questionnaire used in clinical occupational health and research to assess work ability during health examinations and workplace surveys.

Current work ability compared with the lifetime best comprises the work ability score that is often used as a separate indicator of work ability (0–10 points).
The WAI can be divided into the following four classes

<table>
<thead>
<tr>
<th>Points</th>
<th>Work ability</th>
<th>Objective of measures</th>
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</thead>
<tbody>
<tr>
<td>7–27 points</td>
<td>poor</td>
<td>Restore work ability</td>
</tr>
<tr>
<td>28–36 points</td>
<td>moderate</td>
<td>Improve work ability</td>
</tr>
<tr>
<td>37–43 points</td>
<td>good</td>
<td>Support work ability</td>
</tr>
<tr>
<td>44–49 points</td>
<td>excellent</td>
<td>Maintain work ability</td>
</tr>
</tbody>
</table>
Work ability index for groups with intervention

<table>
<thead>
<tr>
<th>Office</th>
<th>WASI 1</th>
<th>WASI 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office 1</td>
<td>32.3</td>
<td></td>
</tr>
<tr>
<td>Office 2</td>
<td>33.3</td>
<td>39</td>
</tr>
<tr>
<td>Office 3</td>
<td>35.3</td>
<td>39.3</td>
</tr>
<tr>
<td>Office 7</td>
<td>33.1</td>
<td>36.8</td>
</tr>
<tr>
<td>Office 10</td>
<td>34.3</td>
<td>36.5</td>
</tr>
</tbody>
</table>

Office WASI 1  Office WASI 2
Assessed factors

- Microclimat
  - temperature
  - relative humidity
  - air flow

- Lighting

- Carbon dioxide
Methods

- Microclimate (temperature, air humidity and air velocity) measured in accordance with LVS EN ISO 7726:2004 “Ergonomics of the thermal environment - Instruments for measuring physical quantities”
- Carbon dioxide measured in accordance with ISO 16000-26 „Indoor air – Part 26 Measurement strategy for carbon dioxide”
## Carried out measurements

<table>
<thead>
<tr>
<th>Project stage</th>
<th>Count of companies</th>
<th>Measured work places count</th>
<th>Lighting</th>
<th>Indoor temperature</th>
<th>Relative air humidity</th>
<th>Air flow</th>
<th>Carbon dioxide</th>
</tr>
</thead>
<tbody>
<tr>
<td>WASI 1 (count)</td>
<td>12</td>
<td>170</td>
<td>110</td>
<td>236</td>
<td>236</td>
<td>236</td>
<td>269</td>
</tr>
<tr>
<td>Measurements range WASI 1</td>
<td></td>
<td></td>
<td>83-2044 lx</td>
<td>18-27 °C</td>
<td>14-62 %</td>
<td>0.0-0.16 m/s</td>
<td>875-3036 mg/m³</td>
</tr>
<tr>
<td>WASI 2 (count)</td>
<td>10</td>
<td>95</td>
<td>61</td>
<td>134</td>
<td>134</td>
<td>134</td>
<td>151</td>
</tr>
<tr>
<td>Measurements range WASI 2</td>
<td></td>
<td></td>
<td>89-2626 lx</td>
<td>21 - 29 °C</td>
<td>24 - 62 %</td>
<td>0.0 - 0.12 m/s</td>
<td>802 - 2491 mg/m³</td>
</tr>
</tbody>
</table>
Indoor air temperature measurements

- **Warm period** reference: +20 - +28 °C
- **Cold period** reference: +19 - +25 °C

- **Warm period** (according to regulations nr. 359 of Cabinet of Ministers) is period when average air temperature outside is more than +10 °C.
- **Cold period** (according to regulations nr. 359 of Cabinet of Ministers) is period when average air temperature outside is +10 °C or less.
Relative air humidity

Reference values: 30% - 70%

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<tr>
<td>29</td>
<td>33,3</td>
<td>39,1</td>
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<td>57,5</td>
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<td>53,1</td>
<td>51,9</td>
<td>31,3</td>
<td>48,3</td>
</tr>
</tbody>
</table>
Air flow

reference values: 0.05 - 0.15

air velocity, m/s

Office 1  Office 2  Office 3  Office 4  Office 5  Office 6  Office 8  Office 9  Office 10  Office 11  Office 12

WASI 1  WASI 2
Lighting

recommended value: 500 lx
Carbon dioxide

reference value: 1830 mg/m³
Conclusions

- Metal Age approach useful to promote internal communication and awareness of various problems.

- In many companies several of the proposed high priority actions were recognised as too complicated or impossible (e.g. changes in management, legal changes, changes in workload etc.).

- Many of the proposed intervention rather easy to carry out, sometimes with little investments.
Conclusions

- Cortisol results for individuals in most of cases show normal curve

- Higher levels of cortisol detected for persons who work in contact with customers

- Work ability index for office workers mostly is moderate or good.
Conclusions

- Air temperature measurements and carbon dioxide mostly correspond to the reference values.

- Low humidity and lack ventilation are common problems of office environment.

- It is difficult to assess microclimate factors changes depending on research activities (intervention), because those factors are depending on a lot of other factors (ventilation, season, heating system, conditioning, workers count etc.).

- Lighting levels is under recommended in a half of cases, it’s hard to assess intervention influence.
Thank you for attention!