



Improving health, wellbeing and productivity of office workers

# Wellnomics Risk Management

## White paper

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## Wellnomics

It is Wellnomics' mission to improve health, wellbeing and productivity of office workers through standard software solutions. With more than 1 million users worldwide, we are the market leader in this niche. Many Global 500 companies are among our clients, such as Chevron Corporation, Intel, Boeing, NASA, ESA, CNA, Shell, BP, ING Bank, PWC, Nike, and Eli Lilly. Our products are designed for multinational companies. The software is available in 12 languages and includes legislation and best practices from Europe, North America and Australasia. Wellnomics has offices in The Netherlands, New Zealand and the United States.

### Vision

Health and wellbeing largely determine the productivity and long-term employability. Employees are expected, much more than in the past, to take responsibility for their employability. Wellnomics enables employees to responsibly improve their occupational health and safety. Employers are expected to create working conditions in which health and wellbeing of employees can be realized. Wellnomics software facilitates progress in occupational health efforts to be responsible, efficient and demonstrable.

### Organisational values

Critical for support and success is that our customers are demonstrably successful in improving occupational health and safety and enjoy the use of our software. Our client relationships transcend therefore the sale of a product. We take an active role in helping to achieve their goals. For example by sharing best practices or through the use of our professional services team in the areas of training, change management and customer-specific implementation.

Wellnomics software is developed based on extensive scientific evidence (by independent third parties).

### Expertise

Wellnomics is heavily involved in scientific research. We have several strategic partnerships with international experts, such as TNO and UCLA. This enables us to provide our customers with the most recent insights in maximizing health and wellbeing. It also means that our products are scientifically validated and that they are based on the latest research in the field. We share this knowledge regularly in the form of lectures, white papers and newsletters.

## Progress in prevention

When taking the WIA inflow as a benchmark, liberalization of the disability schemes seem not to be very successful. Financial risks for employers have increased. Liberalization of Dutch laws and regulations on health and safety in 2007 has not led to a substantial decrease in absenteeism. See Appendix 1. The leading causes of work-related absenteeism among office workers hardly decrease. Prevention from absenteeism and complaints is often seen as a controversial activity. Partly this is due to taboos, partly due to lack of tangible success. Wellnomics Risk Management provides a rationalization of the prevention process, with effective preventive measures and lower costs as a result.

## Wellnomics Risk Management

Wellnomics Risk Management (WRM) is a tool for office workers with which they can identify, analyse and resolve their occupational health risks. Encouraged and supported by their employer, employees secure their long-term employability. Focus on improving occupational health remains effective when the process of identification, analysis and solution is done at least annually. WRM enables also Het Nieuwe Werken to be responsible and safe. The WRM content is a very effective. Design and ease of use make working with the

software as very pleasant experience. Speed of generating analyses and the quality of the advice make WRM very valuable for the end user.

## Ergonomics Training

Employees can attend online 'Ergonomics Training'. This training learns them to independently identify and solve basic occupational health risks. The training is interactive, enjoyable and it is short. It meets the legal requirements for information and instruction to employees.

## Identifying hazards

WRM identifies occupational health hazards on the following aspects;

- 
- |                                    |                                 |
|------------------------------------|---------------------------------|
| • <b>Computer working patterns</b> | • <b>Fysical condition</b>      |
| • <b>Posture and workstations</b>  | • <b>Psychosocial condition</b> |
| • <b>Discomfort</b>                | • <b>Psychosocial load</b>      |
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Computer working patterns contain occupational health risks caused by work intensity, rest behavior and the ergonomical impact of keyboard and mouse use. These bottlenecks are identified automatically. Bottlenecks in the other aspects mentioned are detected by short do-it-yourself risk assessments. These assessments contain 37 questions. Full answering lasts approximately 14 minutes. The assessments can be done in phases. The added value of the WRM inventory of health hazards is the high degree of automation, the user friendliness and substantiated scientific relevance.

## Analysing hazards

After identification the WRM algorithm calculates the seriousness of health hazards and the impact of multiple health hazards. In their personal health portal stakeholders (e.g. employee and occupational health expert) receive feedback on the severity and nature of the health problems through the so-called 'Traffic Light Model'. The feedback is being given on an individual and at an aggregated level. The risk calculation is unique in its kind and is comprehensive and scientifically validated by independent third parties.

## Solving hazards

In their personal health portal the employee automatically reads his advice for resolving his health risks. These recommendations are basically cost neutral and scientifically founded. The employee can immediately start implementing it.

## Client specific advice

The standard advice given in WRM is solidly based. However, appropriate advice is often influenced by corporate culture and policies. WRM facilitates this by applying the advice of clients into the WRM system. By using the system, the client gradually learns what the most effective advice is for his organization.

## WRM for the Health and Safety Expert

With WRM, the occupational health expert can invite (groups of) staff to attend the Ergonomics Training or to assess risks. He can monitor progress and, where necessary remind (automatically). He identifies hazards at an earlier stage and can therefore resolve hazards earlier. He is no longer just depending on employee willingness to identify hazards. WRM offers many aggregated reports and export of data capabilities. The health and safety expert saves costs of one-size-fits-all preventive measures and by reducing discomfort.

## Support by Wellnomics

Wellnomics takes an active responsibility in helping clients to achieve their goals. For example, by sharing knowledge and best practices. But also through the efforts of our professional services team in the areas of training, change management and customer-specific implementation.

## Effectiveness of Wellnomics Risk Management

Wellnomics Risk Management is so valuable because occupational health problems are consistently collected, analysed and translated into improvement advice. The collection, analysis and advice are extensively scientifically based and well proven.

### Scientific substantiation

Wellnomics Risk Management makes extensive use of existing and proven tools for the risk assessments for office workers, including the visual analog pain scale (VAS), the Copenhagen Psychosocial Questionnaire (COPSOQ) and aspects of Rapid Upper Limb Assessment (Rula).

The relevance of the questionnaires Wellnomics Risk Management and the evidence for their importance in the causation and prevention of WMSD and negative effects on the health and wellbeing of employees is supported by extensive published research. Appendix 2 is a summary of Wellnomics whitepapers. These white papers describe the published research behind the software, the validation of the product components and the origin of the data used for benchmarking and calibration solution. This includes:

- An overview of published experimental and epidemiological literature on office ergonomics
- A display of European legal regulations in the field of health and safety in the office
- Data on computer from almost 100 organizations in Europe and North America.

Appendix 3 provides an overview of whitepapers that the effectiveness and benefits of the solution and validate certificates.

### Effectiveness for users

The use of Wellnomics Risk Management by our clients has led to a significant improvement of the health and wellbeing of their employees. However, our customer base is generally not willing to share with us specific details of the reduction of complaints and claims and as a result their financial savings. This information is seen as very commercially sensitive. We can share the following feedback from a selection of our clients who were recently interviewed by an independent agency on the effectiveness of the program.

The general response was that the use of Wellnomics Risk Management has contributed significantly to the reduction of health and safety hazards. These were the customer statements:

- In ergonomics field the impact is significant. Not everyone uses it, but more and more employees and managers use it as a tool that keeps employees safe and healthy.
- We use Wellnomics Risk Management for the prevention of health problems, something that previously occurred at many office employees.
- Wellnomics Risk Management helps managers with employees with high occupational health risks.
- WRM fully empowered employees to take responsibility for their own occupational health.
- It is a huge positive experience because I am able to manage risks that I never have been able to manage.
- Since Wellnomics Risk Management is there, we have no more employees with carpal tunnel symptoms. The numbers show it.
- 10 years ago discomfort numbers grew and grew. Wellnomics Risk Management reduces them.
- With Wellnomics Risk Management you are less likely to develop symptoms. Because it is given to them, employees do not overstrain themselves anymore.
- Employees who benefit from Wellnomics continue using it and remain alert to their health
- The overall risk rate has decreased.
- Internal research shows since we use the program, it makes a big difference in the percentage reduction of office-related incidents and accidents.
- Risk Management Wellnomics prevents from complaints. Employees are happy using it.
- We have data to quantify / prove that it has contributed to a reduction in claims costs by psychosocial problems.
- Managers are usually looking at a fixed format as the basis for risk reporting. This is a quick and easy way to see what is happening.

- It makes it easy for me to determine with employees that their risk levels are reduced. This is important and it is easy to do.
- The reporting capabilities are great. It gives you an overview of the office workers at high risk, medium risk and low risk. It shows you how to focus.
- The report is 100% useful for me, because I am the Wellnomics coordinator. I make risk reports and train others to the reporting functions of the tool.
- The greatest strength is the reporting tool; it has a very unique risk calculation algorithm, which is of the most important value to us.
- The reporting function is very strong (risk management). No other company offers reporting with that many details. It is a big plus for us.
- The ability to aggregate reports for different groups and the anonymous individual data. Our managers can view group reports, not the individual results.

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### Interviewed clients

The following companies were interviewed about using Wellnomics Risk Management :

- Chevron Corporation
- Boeing/NASA
- Idaho National Laboratory
- BP
- Eli Lilly
- Weyerhaeuser
- Intel
- Dow Chemical

The number of employees that used Wellnomics Risk Management ranges from 500 to 90.000 users. The registration period varies from 1-5 years.

### Interviewed officials

For each company, several employees were interviewed. It concerns the following officers:

- Safety Manager
- Safety Specialist
- Global Security and Safety
- Health & Safety Advisor
- Global Deployment of Wellnomics
- Health & Safety Consultant
- Corporate Ergonomist
- Special Projects Manager
- Health Program Manager
- Senior Industrial Hygiene Advisor

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## Security for clients

The value of WRM is the assurance that the program retrieves and analyses every ones occupational health risks in a consistent manner. It consistently analyses and provides solutions. The program is standardized and scientifically substantiated (Deming quality circle). The eight areas of occupational risk assessment, risk analysis and advice given are standardized and comprehensive scientifically validated. The system security and privacy protection meet the highest standards. As a web application WRM is very quickly operational.

With WRM clients can develop a very valuable data collection in the field of occupational health and safety issues within their organization and about the effectiveness of the advice and solutions given. To avoid possible concerns in the field of privacy clients can choose to have WRM hosted/managed by Wellnomics.

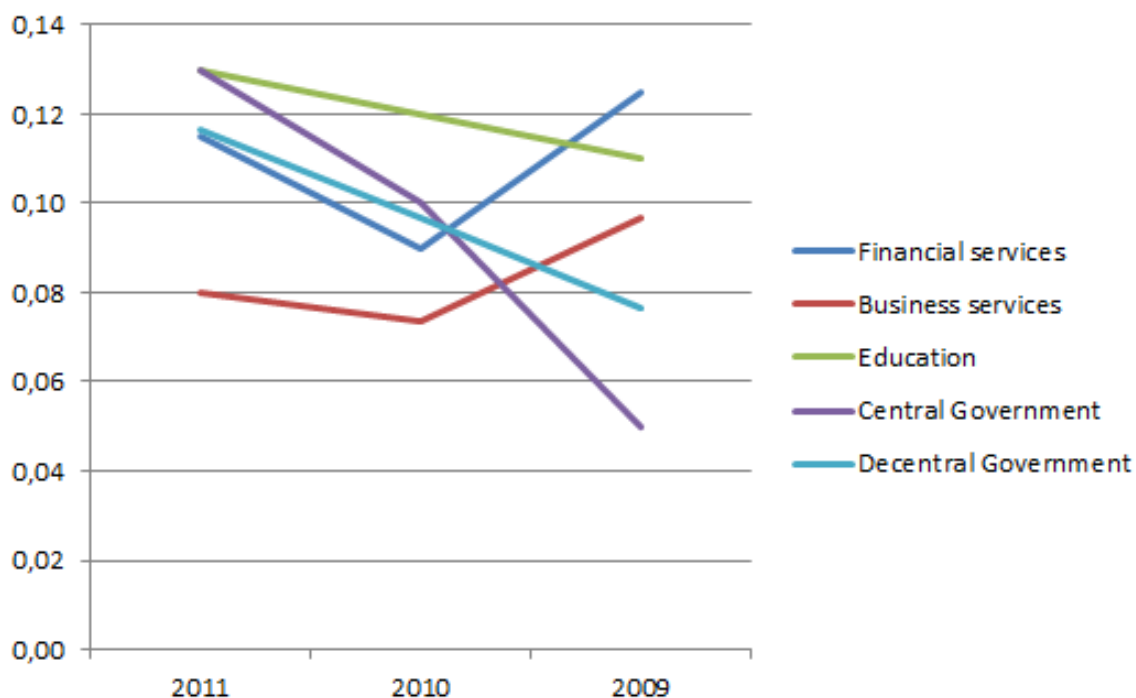
WRM enables customers to advice their employees evidence-based on how to increase their occupational health and safety. So they sustain to be employable on the longer term. In that perspective a trustworthy relationship between all stakeholders can be strengthened.

## Appendix

### 1. Nationale Enquête Arbeidsomstandigheden TNO (2006 en 2011)

Causes work related absenteeism	Average		Business services		Financial services		Public services		Education	
	2006	2011	2006	2011	2006	2011	2006	2011	2006	2011
% Work pressure, work stress	36,4	33,1	41,4	34,4	57,2	57	38,8	34,5	58,1	60,5
% RSI (computer)	11,7	10,8	12	14,6	14,2	8,9	11,1	14	6,9	4,7
% Hierarchical issues	6,5	6,3	7,4	7,1	6,8	3,6	9,3	7,5	9,2	5,3
Hours per day on office computer work	3,68	4,49	5,18	4,89	6,29	6,66	5,17	5,41	3,35	3,93
% Individual sick leave	4,49	4,31	3,92	3,75	3,83	3,54	5,15	5,11	3,82	4,52

### 2. WIA inflow Big Enterprises 2009-2011 (UWV)



### 3. Overview research for product design, algorithm and advice

Document / White paper	
<i>The research behind Wellnomics Risk Management (3 pages)</i>	High level summary of some of the key research behind Wellnomics Risk Management, covering: <ul style="list-style-type: none"> <li>• Measuring discomfort using Visual Analog Scale</li> <li>• Measuring Psychosocial Factors using COPSOQ</li> <li>• Validation of Wellnomics WorkPace for accurately measuring computer use</li> <li>• Risk model used to develop risk algorithm</li> </ul>
<i>Reference Literature for Wellnomics Risk Management (5 pages)</i>	Extensive list of experimental and epidemiological studies used to determine which risk factors should be measured and their relative weighting in the product.
<i>Comparison of Computer Use across different Countries (12 pages)</i>	Describes large source dataset from nearly 100 organisations that was used to benchmark the calculation of computer use related risk factors in Wellnomics Risk Management. Paper was presented at PREMUS 2006.
<i>Computer Use Exposure as a Risk Factor for RSI Symptoms (5 pages)</i>	Scientific evidence for computer use exposure being a risk factor for office MSDs and the thresholds at which the risks arise.
<i>Forearm support during keyboard and mouse use (4 pages)</i>	Summary of research supporting changes in posture for office workers to lower discomfort and associated advice that should be provided therefore.
<i>Individual factors, What are they and why are they important (6 pages)</i>	Scientific evidence for individual factors and their risk for MSDs in office workers.
<i>Psychosocial risk factors, What are they and why are they important (7 pages)</i>	Scientific evidence for psychosocial factors and their risk for MSDs in office workers.
<i>Speed &amp; Intensity Risk Factors</i>	Explanation of the analysis done on large real word dataset to derive the risk thresholds for the speed & intensity risk factors analysed by the product
<i>Use of the Visual Analogue Scale for Pain Assessment (2 pages)</i>	Short reference to the research supporting the choice of the VAS for pain assessment
<i>Opinion regarding optimal break schedules (3 pages)</i>	Scientific evidence for choice of different stretch-break routines and their benefits
<i>Legislative and Best Practice Requirements – EU (9 pages)</i>	Summary of the relevant EU legislation and guidelines that the product has been designed to follow and implement



#### 4. Substantiation for and validation of effectiveness of the program

Document / White paper	Description
<i>Is Wellnomics® Breaks &amp; Exercises (WorkPace®) a proven instrument? (3 pages)</i>	Evidence from multiple sources showing Wellnomics Breaks & Exercises both reduces symptoms and improves productivity in office workers
<i>What are the productivity losses caused by musculoskeletal disorders? (5 pages)</i>	Summarises the research on productivity losses from WMSD and their association with different risk factors. The expectation is these productivity losses will be reversed if these risk factors are addressed.
<i>Interventions to decrease MSDs and discomfort - do they affect productivity? (9 pages)</i>	Summary of the research supporting productivity benefits as a result of interventions to address WMSD risk factors, such as those measured by the product.

#### 5. Team of experts

Involved in research and creation of advice in WRM.

- Dr Paulien M Bongers                      Senior Researcher
- Drs. Marjolein Douwes                      Senior Researcher
- Drs. Mathilde C. Miedema                      Senior Researcher
- Drs Kiem H. Thé                      Physical Movement Scientist
- Dr. Birgitte M. Blatter                      Occupational Epidemiologist
- Drs Sjors J. Frielink                      Health Scientist