What is becoming more widely recognised is how work itself can make people ill, with a high price to be paid by individuals, organisations and society in general (Boedeker & Klindworth 2007):

- In the European Union (EU) in 2005, there were about 4.4 million accidents at work resulting in more than 3 days absence by the employees involved.
- Each year in the EU 350 million working days are lost due to work-related health problems and almost 210 million due to accidents at work.
- 35% of workers consider that their health is negatively affected by their work.
- The costs of workplace-related illnesses in Europe are estimated to be between 2.6% to 3.8% of Gross Domestic Product (GDP).

It is this interrelation that makes workplace health such an important element of modern public health policies. This is beginning to be reflected in EU policy; e.g. the EU Commission now considers workplace health as one of the most important aspects of EU policy-making on employment and social affairs and is striving for consistency with public health policies.

Workplace Health Promotion (WHP) has pointed effects on the improvement of the health of employees as well as on the economic position of enterprises. As a scientific consensus it can be highlighted that preventive measures lead to a reduction of risk factors and diseases and have a positive return on investment (ROI). Observed effects are, among other things, reduced absenteeism, fewer visits to the doctor, less prescriptions of pharmaceuticals as well as less days spent in hospital etc.

The reduction of health risks can have an impact on a reduction of the actual diseases several years later. Insofar, the exhaustive financial effects of the health promotion programmes possibly only crop up many years after the health risks have been reduced – which makes the observed short-term effects even more remarkable. Summed up, it is this positive economic effect which makes a most powerful health promotion argument for companies and social insurance.
However, WHP is still not deployed in the majority of companies. It is sometimes argued that sickness costs are not a burden to all companies as absenteeism is low in these days and medical costs incur to social insurance institutions only. Furthermore, companies may find it difficult to identify health promotion measures which are in line with scientific recommendations and at the same time fit into their enterprise culture. Finally, employers apparently tend to mistrust even well designed intervention studies from outside their company and suspect that the results may not be carried over.

There is a great deal of interest in determining the economic and health impact of WHP. One of the goals of this paper is to provide a framework for thinking about costs and benefits in connection with WHP. This paper will show that economic consequences are not only caused by absenteeism. Research on the so-called presenteeism is still relatively new, but there is concern about the increasing burden to companies by this phenomenon. Secondly, to show that WHP programmes are a viable and effective method to improve the health of employees and reduce employee-related expenses, the paper presents a summary of the evidence for the effectiveness and efficiency of WHP programmes. A promising approach to show the economic potential of WHP interventions is the so-called prospective return on investment. To give an idea how enterprises could estimate the possible positive financial return on investment with the help of this kind of economic model, some examples are presented at the end of this paper.

Presenteeism – a new challenge to Workplace Health Promotion?

“The majority of Germans go to work even when they feel sick” (Bertelsmann Stiftung 2007). By press releases like this one, it is increasingly pointed out that economic consequences of bad health can not be valued by absenteeism only. In contrast, from a company viewpoint a reduced productivity caused by sick but present employees might be much more important. This phenomenon called presenteeism plays therefore an increasing role in workplace health promotion. Absenteeism and presenteeism are partly inversely related as presenteeism can be high where absenteeism is low.

Presenteeism is not as much a new concept but is used in different meanings. If used for economic evaluation it simply addresses consequences of illness more thoroughly by accounting for both the sickness induced absence and reduced performance. From a workplace health promotion point of view however, there is no difference as the aim should be to prevent illness in both cases.
Presenteeism sometimes is referred to as a new threat to health. Because sickness might not get cured properly when employees work while sick presenteeism could lead to a further deterioration of the health condition or even to chronic diseases. In this meaning the recommendation to fight the consequences of presenteeism would be to increase the absenteeism. However this notion can be challenged by recommendations of evidence based medicine. Increasingly medical guidelines do no longer favour bed rest or absence from work. With respect to back disorders or mental disorders e.g. it is advised to keep employees at the workplace as long as possible or enable a fast return to work. The workplace is considered an important part of the evidence based treatment of diseases and from this point of view the recommendation would be to increase presenteeism.

Besides these different understandings of presenteeism the concept is relevant for workplace health promotion because it helps to make visible that prevention is a business case for companies even when absenteeism is low (Schultz & Edington 2007).

In Germany, the Initiative Health and Work (IGA) regularly conducts surveys on the attitudes of employees to their work and companies – the so-called IGA-Barometer. In order to assess the magnitude of productivity losses due to health problems the Work Productivity and Activity Impairment Questionnaire (WPAI) was used as an ad hoc module to this survey (Boedeker & Huesing 2008). The WPAI is a quality approved instrument which is internationally used and available in many languages (Lofland et al. 2004). It measures the productivity losses due to absenteeism as well as to presenteeism by only five questions. The answers are standardized to a percentage scale (Reilly 2008).

In a representative sample of the German working population 27% of the respondents suffered from a health problem at the time of the interview. 14% of these (that is 4% of all employees) reported absence from work during the last 7 days prior the interview whereas 59% (14% in total) considered their productivity reduced due to these health problems. As can be seen from the following table, companies are differently affected according to their size. Small companies suffer least from absence but are most affected by presenteeism. In general, presenteeism can be seen as a necessary complementary indicator in order to thoroughly assess the economic impacts of bad health on companies.

<table>
<thead>
<tr>
<th>Company size</th>
<th>Absent</th>
<th>Unproductive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very small (&lt; 10 Employees)</td>
<td>4%</td>
<td>13%</td>
</tr>
<tr>
<td>Small (10-49 Employees)</td>
<td>2%</td>
<td>17%</td>
</tr>
<tr>
<td>Medium (50-249 Employees)</td>
<td>5%</td>
<td>15%</td>
</tr>
<tr>
<td>Large (&gt; 249 Employees)</td>
<td>5%</td>
<td>11%</td>
</tr>
<tr>
<td>All</td>
<td>4%</td>
<td>14%</td>
</tr>
</tbody>
</table>

Source: IGA-Barometer 2007
Workplace Health Promotion: Is there evidence for the effectiveness and economic benefit?

Based on the question “What is the scientific state of knowledge of the health-related and economic benefits due to workplace health promotion programmes?” IGA started a couple of projects during the last years to find answers. In 2003 IGA published a first systematic survey of the scientific literature, which was translated into English in 2004 (Kreis & Boedeker). Following up this report IGA recently released an update (Sockoll, Kramer, Boedeker 2008). The report now includes the results of more than 40 reviews published in the period of 2000–2006. The results of the studies were assigned to the following category groups: general well-being, mental health, musculoskeletal disorders as well as economic benefits. The main conclusions are as follows below.

General well-being

Results of controlled studies concerning eight different intervention groups – physical activity, nutrition, smoking, alcohol, weight-control, health circles, multi-component programmes, participatory ergonomic interventions – argue for a reduction of well known risk factors. Below some examples.

Research has shown that workplace interventions aimed at the individual to promote physical activity can positively influence the behaviour of employees. Trainings and exercise classes of high intensity are effective, if they are matched to the needs of the employees. A doctor’s advise within a medical check-up results in no significant change regarding the physical activity. There is also evidence that the combination of behavioural and organisational health promotion interventions, e.g. access to exercise facilities and lockers plus specific consultation services and trainings, enhance the physical activity of employees. Furthermore even low-cost interventions such as motivational signs to promote the use of the stairs instead of an elevator are effective.

One of the most frequently studied topics are workplace interventions for smoking cessation. The effectiveness of behavioural interventions (e.g. group programmes, individual counselling) is proven, except self-help material (e.g. brochures). Smoke-free workplaces and clean indoor air laws are an effective intervention on the organisational level to improve air quality.

Convincing results were found also for the positive promotion of healthy nutrition through individual (e.g. nutrition counselling) and environmental interventions (e.g. healthier food choices in cafeterias).
Mental health
Workplace interventions for the promotion of mental health predominantly deal with the interventions aimed at the individual level and the handling of stress. Studies have shown that in particular, e.g. cognitive-behavioural interventions are useful for employees with or without any symptoms as well as for people at high risk. Moreover there is a strong evidence for the reduction of absenteeism by this kind of interventions. Nevertheless the most long-term effects are achieved by comprehensive stress interventions which are taking into account different risk factors and both individual and organisational interventions.

Musculoskeletal disorders
According to reviews, most convincing evidence exists for physical exercise to reduce the prevalence and absenteeism caused by musculoskeletal disorders. Current literature has also shown that educational instructions e.g. ergonomic interventions as well as stress intervention programmes have no primary preventive effect in relation to absenteeism or prevalence. Surprisingly the classical back schools are ineffective. There is also no evidence for the use of back belts for prevention of occupational low back pain.

In consequence of limited research regarding interventions on the organisational level the evidence base is either nonspecific or contradictory.

However, there is evidence for the positive effect of comprehensive multi-component programmes which are taking both levels – individual and organisational – into account.

Economic benefit
A total of ten reviews deal with the economic benefit of WHP programmes. They all conclude that enterprises financially profit by the implementation of such interventions in the long term. The most frequently used factors to visualize the savings are absenteeism and medical costs. The included reviews report a return on investment between 1:2.5 and 1:10.1 for absenteeism, as well as a ROI between 1:2.3 and 1:5.9 for medical costs. For every spent $1 on WHP programmes enterprises can save a minimum of $2.50 due to reduced absenteeism and additionally a minimum of $2.30 due to reduced medical costs.
Figure 1 summarizes the percent change in economic variables – sick leave absenteeism and health costs – reported in 56 peer-reviewed studies identified in a review published by Chapman (2005). Included studies had to report on multi-component programmes consisting of a combination of at least three interventions offered for a minimum of twelve months. The use of sick leave absenteeism was measured in 25 of 56 studies. The average percent change in sick leave absenteeism is specified with -26.8%. Health cost analyses occurred in 28 studies and show an average percent change in health costs of -26.1%. The average benefit ratio of the studies is mentioned with 5.81.

There is solid evidence to encourage more implementation and investment in WHP programmes, not only for large companies, but also for medium and small companies. Well designed and for the particular company adjusted programmes pay for themselves in reduced absenteeism and health care costs, and improved productivity.
Promising practice: Estimating the return on investment with an economic model

Rising health care costs, productivity losses due to absenteeism and presenteeism, and an aging workforce evoke an increase of WHP activities. Current literature about the impacts of WHP programmes brought up new evidence about the savings associated with such interventions (see Sockoll et al. 2008).

Often enterprises have to justify their investment decisions in WHP programmes. Despite the fact that these programmes improve employee health, the decision-maker are primarily concerned with the economic terms. Executives want to know what kind of savings and possible financial return on investment they could expect from an investment in health promotion programmes. They are interested in a key data model that presents the possible savings due to WHP.

A promising approach to show the economic potential of WHP interventions is the so-called prospective return on investment. It is a certain cost-benefit-analysis that estimates the prospective cost-benefit in the run-up to the programme implementation. The prospective ROI analyses the cost-effectiveness and evaluates the efficiency of an investment or compares the efficiency of different interventions. The key figure can be used as an instrument to convince management of workplace health promotion. Furthermore it can be used by external consultants and health insurance companies as an argument for a rational allocation.

Over the past years scientists, mostly in the US, developed some models to calculate the prospective ROI. In 2007 IGA initialized a project to this topic with a main focus on the identification, analysis and description of such models. The results are summarized in a report (Kramer & Boedeker 2008) that includes a detailed description of four models for different risk factors and diseases as well as some supplemental studies.

The analysed software-programmes - “Alcohol Cost Calculator” (Ensuring Solutions), “Business Case for Smoking Cessation” (America’s Health Insurance Plans & Kaiser Permanente, Center for Health Research), “Employers’ Diabetes Costs Calculator” (Agency for Healthcare Research and Quality & Mid-Atlantic Business Group on Health) and “NCQA’s Quality Dividend Calculator 2007” (National Committee for Quality Assurance & HSM Group, Ltd.) – are based on either a risk factor, a disease or a combination of it. The programmes are easy to use. They differ in complexity regarding to the required data input by the user and presentation of results. Some inputs are essential, some optional. A range of statistics, surveys and studies are used for the calculations. The aim of the tools is to show how many employees (and family members) are affected by a certain risk factor or disease. By reducing risks and diseases enterprises can expect cost reductions. The models calculate the financial return based on the data input and the statistical data used for the calculations.
Presenting the possible economic impact of Workplace Health Promotion for Germany – development of the IGA-ROI-Calculator

Cost avoidance is one of the key interests of employers who invest in WHP interventions. Enterprises consider investments especially worthwhile, if interventions lead to reduction in absenteeism and/or health care costs and improved productivity. Investing in WHP interventions can reduce business costs and save valuable employees. Workers who are healthy and motivated are essential for competitiveness and capacity to innovate. It is no news, that work affects health and health affects work.

Based on the results of the mentioned project IGA set up a follow-up project aimed at the development of an own calculator for Germany. The analysis of the tools and studies made clear that there are different influencing variables used for calculating a return on investment by the US compared to Germany. This is caused by the different health insurance systems: a pluralistic health care financing system in the US versus a more centralized payment system in Germany.

In the USA there are diverse health insurance options: employer-sponsored health insurance, different kind of private insurances and government funded healthcare programmes (Medicare, Medicaid, Veterans Administration). Companies often voluntary offer private health insurances for their employees, because of the competition for workers. The health benefit is part of the salaries. The payment of contributions depends on the claiming of benefits. For this reason ROI-studies from the US include e.g. direct health costs (prescription for pharmaceuticals, hospitalization etc.) besides absenteeism.

The German health insurance system is predominantly based on the statutory health insurance and completed by private health insurance. The statutory health insurance rests upon certain premium rates and does not depend on the claiming of benefits. Therefore the calculation of a return on investment in Germany from a company viewpoint focuses on absenteeism and thereby influenced productivity and not directly on direct health costs. German health insurances are involved in health promotion and prevention. For this reason they are interested in savings caused by health promotion and prevention interventions. These savings can then partly be transferred to companies by bonus programmes. German health insurances could use ROI-calculations for rational allocation of resources.
IGA is developing an economic model for Germany that provides companies and health insurances with an estimate of the costs of missed workdays due to absenteeism and costs of different diseases as well as costs of decreased productivity. The tool is based on evidence and combines findings from literature and statistics. A first model is based on the assumption that interventions of WHP lead to a reduction of the costs of missed work days due to absenteeism for a certain percentage. The model connects demographic information with average health care costs and average missed work days due to sickness to show the estimated amount of money caused by different diseases. The costs are calculated for a range of industry sectors using a standard industrial classification, different diseases using the ICD-10 and gender splits.

The results in the end of the calculations reflect the potential savings that might be realized by implementing a well-designed, employee-adjusted and multifactorial programme. According to the review by Chapman (2005) the time duration of the programme is set up with at least twelve months. Costs are estimated by assessing the impact of three hypothetical interventions combined with default prices. The aim is to set up the option to choose between those hypothetical interventions or others. The costs of implementing different interventions vary greatly, depending on the vendor, the intensity and the number of included employees. For more precise estimates for individual employers, the calculator requires companies to use information about their organisation as an input, e.g. prices for the interventions.

The goal of IGA is to create a computer-based tool that is easy-to-use and requires minimal information from the user. The calculator will provide default values for some inputs, but to provide company-specific estimates, the enterprise could also choose their own data, if available. The aim is to assess the potential return on investment to enterprises by improving employees health through WHP programmes.
Conclusions
This paper provides a look at the diversity of aspects which go along with the business case of WHP. A growing body of scientific literature documents the value and importance of WHP for employers as well as for employees. There is solid evidence to encourage more implementation and investment in WHP programmes, not only for large companies, but also for medium and small companies. There is also consensus that not just any kind of WHP interventions done any way at all will produce high levels of financial benefit. But well-designed and for the particular company adjusted programmes pay for themselves in reduced absenteeism and health care costs, and improved productivity. The key data model of the prospective ROI could be a promising approach to convince disbelieving management and sceptics of investing in WHP. The estimate of the possible financial return on investment could help to finally enhance the use of WHP programmes.

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