Scientific evidence of the benefits of Wellnomics® WorkPace® break software

Wellnomics® White Paper

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Measuring the effectiveness of breaks and exercise software

A breaks and exercise software tool such as Wellnomics® WorkPace® may be judged 'effective' if it provides statistically significant benefits to either the end user or their employer. The potential benefits promised from breaks and exercise software are:

1. A reduced incidence of pain and discomfort complaints.
2. A reduction in Work-Related Musculoskeletal Disorder (WMSD) or RSI injury statistics.
3. An increase in productivity.

It is generally assumed that a reduction in pain complaints (1 above) will lead to a reduction in WMSD injuries (2 above). It is an assumption that has yet to be proven conclusively for any ergonomic intervention, but it is seen as a reasonable assumption to make. Most company health and safety ergonomics programs are currently based upon this assumption, i.e. that reducing pain and discomfort complaints will directly lead to a decrease in injuries.

A strong body of evidence from the last 15-20 years shows that the introduction of breaks, micropauses, and exercises into the work routine of VDU users leads to a decrease in complaints, and, in some cases, an increase in productivity (see Wellnomics White Paper "Research paper on Repetitive Strain Injury (RSI) and breaks"). Until recently, studies have used simple methods of introducing breaks and exercises, such as timers or voluntary schedules. This document looks at some of the findings to date of using more sophisticated break software tools like Wellnomics WorkPace and discusses recommendations for maximising the effectiveness of break software. It also looks at the receptiveness of users to break software.

Reduction in pain and discomfort due to use of Wellnomics WorkPace

Eli Lilly Clinton Laboratories Study

A study using Wellnomics WorkPace was conducted with 118 computer users in Eli Lilly's Clinton Laboratories, by Industrial Hygienist, Dana L Brown. Results were published in the American Journal of Industrial Hygiene 'Ergonomics - Computer Issues Papers'. The study collected discomfort ratings from users before and after using Wellnomics WorkPace, finding that:

> *"The number of users in nearly every category of discomfort was decreased after Wellnomics WorkPace was installed. The total number of users experiencing discomfort in all categories decreased from 51 to 39 after using Wellnomics WorkPace."*

The charts below summarise results, showing a statistically significant (to the 95% level based upon a Chi-squared analysis) reduction in pain levels after using Wellnomics WorkPace.

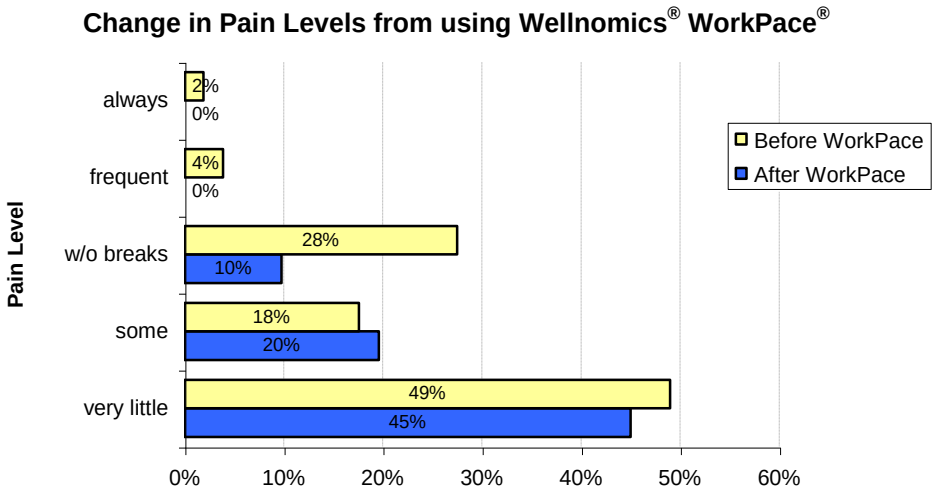


Figure 1 User pain levels before and after using Wellnomics WorkPace (w/o breaks refers to "pain only when working without breaks").

After using Wellnomics WorkPace there were no longer any users with pain frequently or always, and a 64% reduction in users having pain when working without breaks. The study concluded that the results

> *"…may affect a mandate for all computer users at the Eli Lilly and Company, Clinton Laboratories to have Wellnomics WorkPace installed on their computers".*

Dutch TNO Research Institute Study

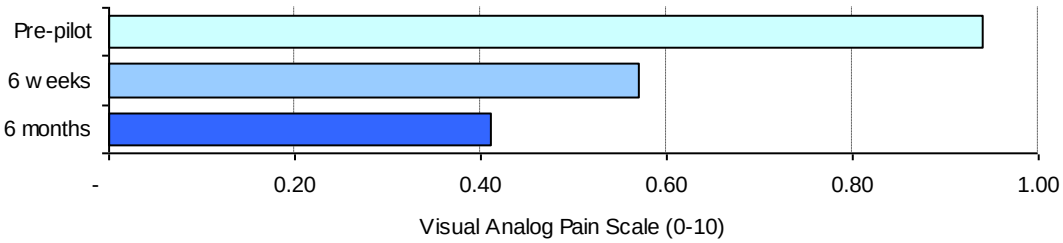
In a study supported by the Dutch government funding agency ZorgOderzoek and conducted by the Work and Employment group of the Netherlands TNO Research Institute to test the effectiveness of Wellnomics WorkPace. 268 workers were selected with pre-existing complaints from the employees of GAK Nederland. Workers with the worst complaints were sent for medical treatment and excluded from the study.
Study participants were divided into a control and two experimental groups (one with breaks only, the other with both breaks and exercises from Wellnomics WorkPace). The study found:

> *"Compared to the controls, more subjects in the experimental groups reported more recovery (55% vs. 34%) from their complaints and fewer reported deterioration (4% vs. 20%)."*

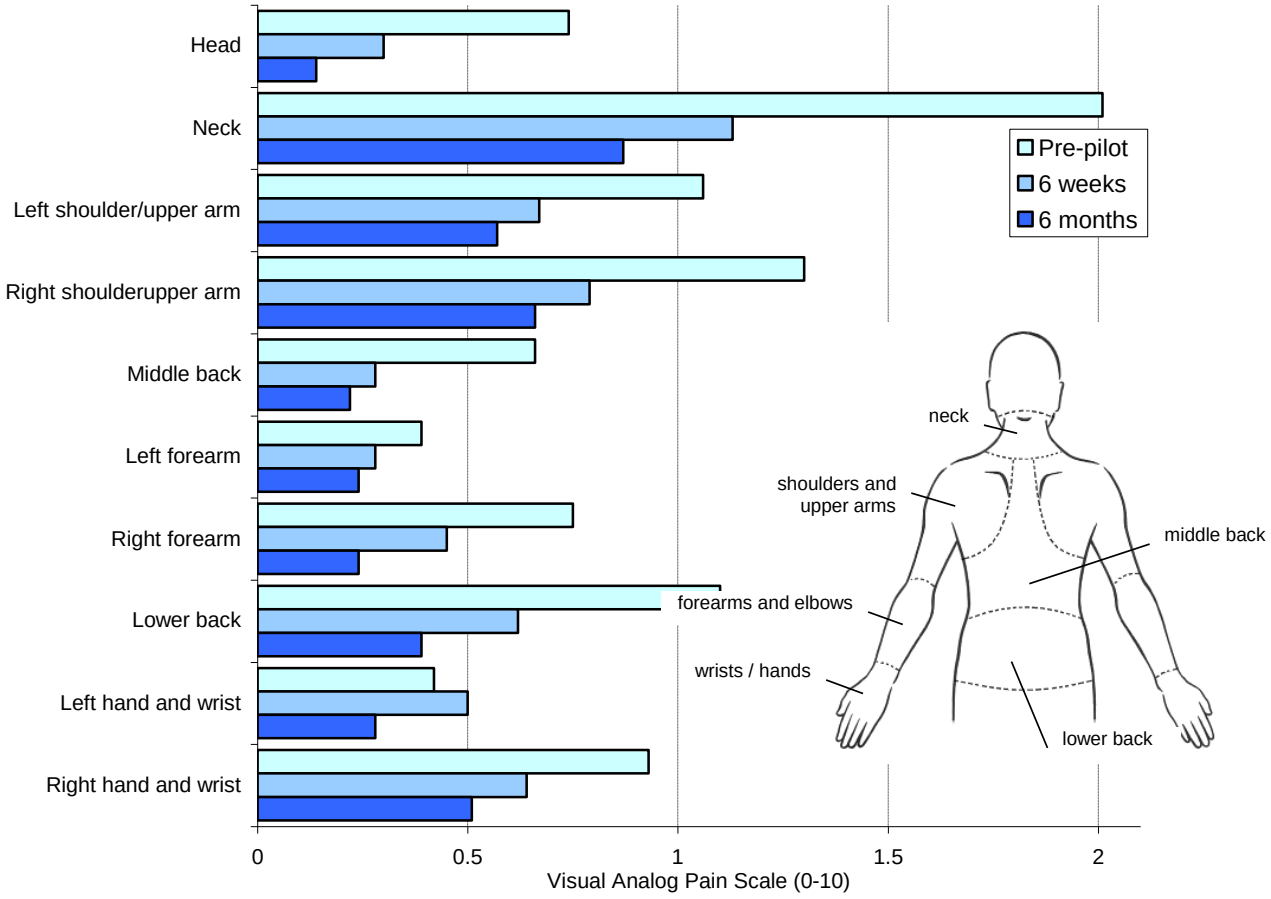
6 Month Study in Boeing

A 6 month study using 500 users across ten sites was conducted in the Boeing Company to evaluate the benefits of using Wellnomics WorkPace ahead of a potential wider organisational implementation. The study surveyed discomfort levels before the pilot, at 6 weeks after using Wellnomics WorkPace, and then again at 6 months. The results of the study were very positive, with a significant 36% reduction in pain incidence, a 56% reduction in average pain and discomfort levels. Impressively, there was a pain reduction in almost every upper body area, although greatest reductions were seen in the neck, lower back, and right arm (see charts below).

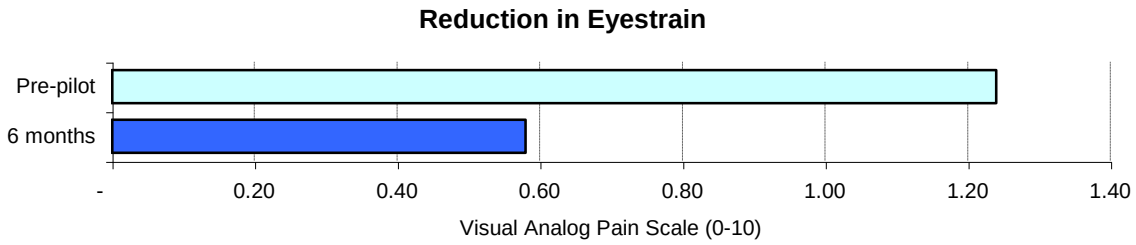
Reduction in Pain and Discomfort Levels after using Wellnomics® WorkPace®



Reduction in Pain and Discomfort Levels for each body area after using Wellnomics® WorkPace®

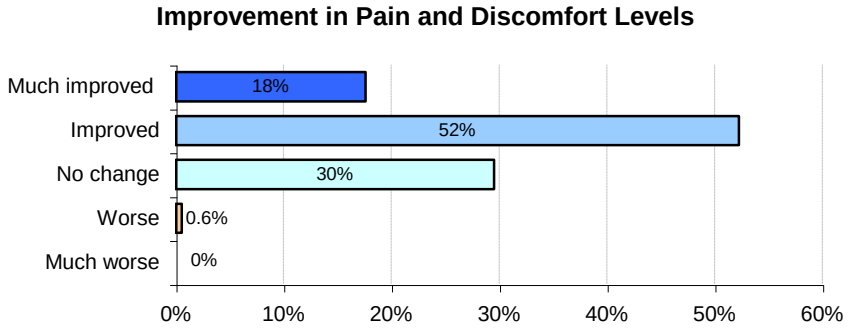


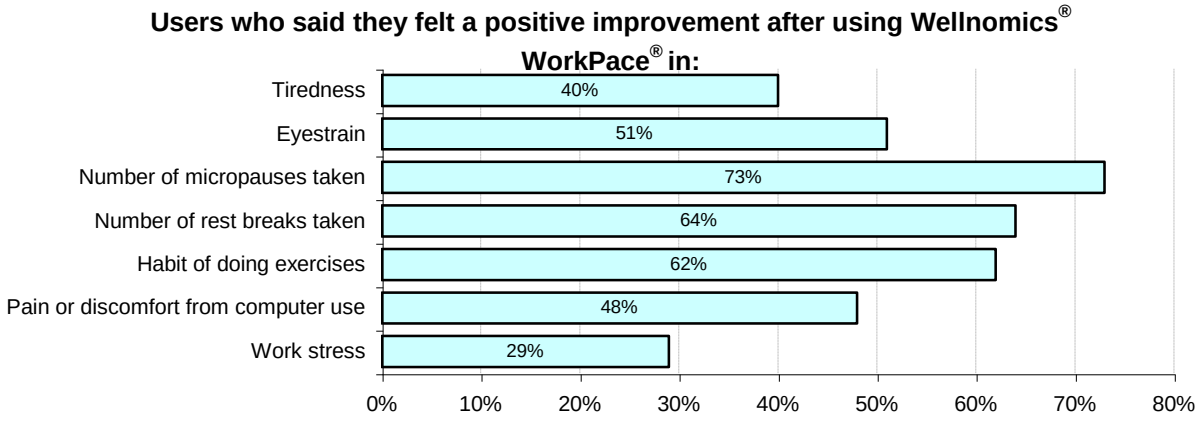
Eyestrain is a very common complaint amongst computer users. A 54% reduction in eyestrain was found after using Wellnomics WorkPace for 6 months.



Summary Data from Wellnomics WorkPace Pilots in 50 Organisations

To date over 50 pilot studies using Wellnomics WorkPace have been conducted in organisations in the United States, United Kingdom, Netherlands, Australia and New Zealand. All these pilots are run to a standard format, with 30-80 participants using Wellnomics WorkPace for 6 weeks, and each participant completing a number of evaluation questionnaires. For computer users with some level of existing pain and discomfort (about 50% of participants) on average 70% said they found their pain either Improved or Much Improved after using Wellnomics WorkPace.





Improvements in productivity due to use of Wellnomics WorkPace

A number of previous studies have demonstrated productivity benefits as a result of the introduction of breaks (see Wellnomics White Paper "The Benefits of Breaks and Micropauses – a Survey of the Literature").

Dutch TNO Research Institute Study

The TNO Research Institute study mentioned earlier is one study that has analysed the effects of Wellnomics WorkPace on productivity.

This study found statistically significant improvements in total daily keystrokes, and keystroke accuracy.

	Control Wellnomics WorkPace	Wellnomics WorkPace, Breaks only	Wellnomics WorkPace, Breaks and Exercises
Users	75	89	69
Average Daily Keystrokes	5,351	▲ 6,460 (+21%)	6,034 (+13%)
Typing Accuracy	93%	▲ 95%	▲ 95%

▲ Indicates a significant (p<5%) lower or higher value compared to the control group based on the contrast results in ANOVA. Data was adjusted for gender, age and education level.

Table 1 Productivity levels of study participants (measured as mean daily number of keystrokes and keystroke accuracy). (Total keystrokes – number of delete or backspaces ÷ total keystrokes).

Van de Heuvel concluded:

> *"When people take more breaks it can be expected that the productivity of these people will decrease, as their working time is shorter. However, the results of this study, and comparable results from other studies (Sauter en Swanson 1991, Thompson 1990, Henning et al. 1993, Galinsky et al. 2000, Dababneh et al. 2001) suggest this appears to be a misunderstanding. No negative effects on productivity were found. On the contrary, the number of key strokes and the accuracy rate were even higher in the experimental groups than in the control group."*

Reduced injury rates due to use of Wellnomics WorkPace

The ultimate benefits to an employer of using a break software tool are a reduction in injury rates and injury costs. Detailed statistics on injury reduction are difficult to provide here, due to the sensitive nature of such information for most organisations. However, many organisations who have implemented Wellnomics WorkPace have obtained significant reductions in RSI injury statistics. This reduction will certainly be partly attributable to wider initiatives taken to reduce RSI injuries, as many organisations implement Wellnomics WorkPace as part a wider ergonomics programme. However, feedback from clients is that they attribute a high value of the effects of Wellnomics WorkPace ongoing, Wellnomics WorkPace being one of the few interventions that is present every day for each computer user providing ongoing risk minimization.

User Acceptance of Wellnomics WorkPace

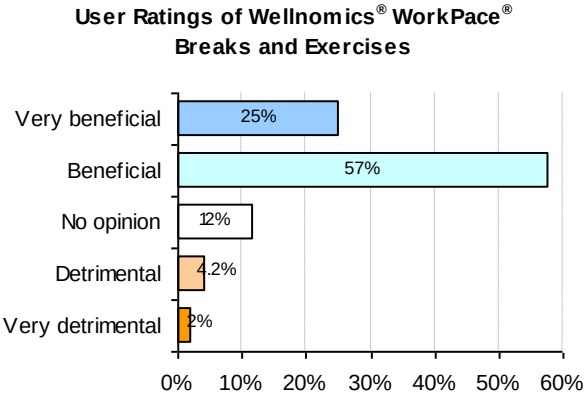
The benefits of Wellnomics WorkPace appear to be well proven. However, whether these potential benefits can be realised in a real office environment depends upon user acceptance of the changes in working behaviour that the software introduces.

Considerable design effort has been put into Wellnomics WorkPace to correctly balance the importance of getting users to take breaks against the need to avoid unwanted work disruption or distraction.
Experience has also shown that sufficient education/training of users before they begin using Wellnomics WorkPace is also important to good acceptance. Accordingly, Wellnomics WorkPace provides built-in user training, and is accompanied by staff training materials.

Following these proven processes user satisfaction with Wellnomics WorkPace has been consistently measured as being high, with results from supporting data listed below.

Summary Data from Wellnomics WorkPace Pilots in 50 Organisations

Data gathered from users' questionnaires from pilots conducted on Wellnomics WorkPace in 50 different organisations shows a high user acceptance of Wellnomics WorkPace across a wide range of office environments. Averaged across these 50 pilots 83% of users said they thought Wellnomics WorkPace was either beneficial or very beneficial for them, with 84% recommending the software be implemented in their organisation for staff.



Of the small minority of users (6%) who rated Wellnomics WorkPace as detrimental the normal concerns are of being interrupted with breaks at inconvenient times. Often this is simply a matter of adjusting Wellnomics WorkPace settings better (for example, setting up a schedule of normal break times), or further education on the importance of breaks for these users. It is often the case that those most in need of breaks (those working long hours at the computer without stopping) are the ones who find taking breaks the hardest. Using Wellnomics WorkPace is part of a long term behaviour change that takes time to implement.

Dutch TNO Research Institute Study

The TNO Research Institute study collected some information on user responses. After using Wellnomics WorkPace for 8 weeks 91% of users said they were neutral, satisfied, or very satisfied with using the product. 69% said they wished to continue using the software after the study had completed. 54% said they felt more relaxation after using Wellnomics WorkPace.

The general body of evidence from the studies reviewed here, and experience with many organisations that have used Wellnomics WorkPace suggest that the following points are important for achieving maximum effectiveness.

1. Provide user training/education before introducing the software.
2. Implement the break software as part of an overall ergonomics/health and safety initiative aimed at prevention of computer related injuries.
3. For those with existing complaints, provide stricter settings customized to the individual and their level of complaints.
4. Follow up complaints made by dissatisfied users and address their concerns through education or the adjustment of Wellnomics WorkPace settings.

Further Research

There are further research studies currently being conducted on Wellnomics WorkPace. These include the Danish IT-ANV study, a Danish NIOSH computer use and stress study, the Dutch PROMO study, and a study on use of Wellnomics WorkPace by the Dutch Coronel Institute at the University of Amsterdam. As new results become available this document will be updated further. This ongoing research is used to continually improve the solutions produced by Wellnomics Limited.

References

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