



BY **cority**

© 2024, Cority rev 3/7/2024

***Exploring the Research on  
Efficacy of  
Work Breaks and RSI Guard's  
BreakTimer***

[www.rsiguard.com](http://www.rsiguard.com) / [www.cority.com](http://www.cority.com)

## Overview

Cority's RSiGuard is a software application designed to measure and lower risk of repetitive strain injuries (RSI). In addition to many other components, RSiGuard includes:

- DataLogger – a data collection system that measures time, exposure, break patterns, and many other statistics relevant to computer safety.
- BreakTimer – a tool designed to encourage computer users to take sufficient breaks. Although the name implies it is a “timer”, unlike a timer, it is designed to monitor a user’s break-taking patterns and only suggest additional breaks when needed. The intent of this design is to increase compliance with break suggestions by reducing unnecessary interruptions.

Because BreakTimer can impact a user by interrupting their workflow to take rest breaks (i.e., if they don't take enough breaks on their own), it is important to consider the value of those interruptions.

## Goals

The purpose of this whitepaper is to:

- 1) Present the research literature to establish the importance and value of taking rest breaks.
- 2) Determine if RSiGuard's BreakTimer increases the likelihood that users will take breaks and thus deliver the benefit of additional rest time.

## Taking Breaks is Important

A large body of research suggests that taking regular breaks while working on the computer has various benefits, including lower error rates, positive or neutral impacts on productivity, improved comfort in various body areas, and improved psychosocial outcomes. This research is summarized in Appendix A. The first reference is a systematic review study from August 2022 published in the peer-reviewed journal Plos One. For each study, the appendix provides: the year the study was released, the study title, a link to an abstract, and a summary of research conclusions.

## RSiGuard's BreakTimer Increases Break Taking

For this research, data from all customers with integrated RSiGuard (a version of RSiGuard in which collected data is aggregated onto a Cority server) were included anonymously. Within each customer, the distribution of BreakTimer use varies. The distribution of BreakTimer users vs. non-users depends on company policies, company culture, and various other factors. The goal of this research was to see how the break-taking patterns of people who use BreakTimer compared to those who do not.

Samples were defined as user-days. In other words, data for a particular person on a particular day constituted a sample.

Samples were divided into 3 exposure bins of total computer use per day: 0-2 hours, 2-4 hours, and 4+ hours. No analysis was done for the 0-2 hour group on the presumption that the need for breaks for people working under 2 hours on the computer was minimal. “Breaks” were defined as any period of inactivity (i.e. no keyboard or mouse use) lasting 4 minutes or longer.

The users in the 2-4 hour bin were subdivided into “BreakTimer enabled (BE)” and “BreakTimer disabled (BD)” groups. The average time working on the computer for the BE group was 2 hours, 58 minutes, 44

seconds. The average time for the BD group was 2 hours, 59 minutes, 0 seconds. Thus, the BD group spent an average of 16 seconds more, per day, active on the computer (~0.1% more). The BE group took an average of 0.87 more breaks per day than the BD group (about 0.29 additional breaks per hour).

The users in the 4+ hour bin were also subdivided into BE and BD groups. The average time working on the computer for the BE group was 5 hours, 16 minutes, 55 seconds. The average time for the BD group was 5 hours, 18 minutes, 40 seconds. Thus, the BD group spent an average of 1 minute, 45 seconds more per day active on the computer (~0.5% more). The BE group took an average of 2.46 more breaks per day than the BD group (about 0.46 additional breaks per hour).

## Discussion

The amount of time spent on the computer was not significantly different between the BD and BE groups in either the 2-4 hour or 4+ hour groups.

The research in Appendix A suggests benefits for breaks about once every 30-60 minutes. Using a 45-minute value, the 2-4 hour bin samples, with an average ~3 hour workday, if the work were continuous, would suggest 3 breaks would typically be needed. So, an additional 0.87 breaks per day is a significant increase. For the 4+ hour bin samples, with an average ~5.3 hour workday, if the work were continuous, 6 breaks would be recommended. So, an additional 2.46 breaks per day is a significant increase towards that goal.

Although there are complex factors involved, the large sample dataset (on the scale of  $10^8$  samples) suggests a significant increase in break-taking occurs for users of BreakTimer as compared to non-users. Since the research suggests increased break-taking beyond what users self-prescribe is beneficial, this implies BreakTimer will, on average, impart significant benefits, including lower error rates, increased productivity, increased comfort, and improved psychosocial outcomes.

## Conclusion

Use of BreakTimer significantly increases the number of breaks users take. It does not significantly impact the amount of time users spend actively using their computer.

## Appendix A - Literature Review

2022 - "Give me a break!" A systematic review and meta-analysis on the efficacy of micro-breaks for increasing well-being and performance - <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9432722> - A review of 22 studies in 19 publications that revealed consistent benefits from work breaks.

2021 - Individual Determinants of Rest-Break Behavior in Occupational Settings - <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8544579/> - Study found that job control and intention were important to how effectively an employee was able to take regular breaks. Having an organization-provided indicator that taking breaks was acceptable, and when they should be taken, is an effective way to improve rest-break behavior.

2018 - Comparison of rest-break interventions during a mentally demanding task - <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6585675/> - Explored the value of different types of rest breaks. It concluded "the effects of rest breaks during mentally demanding tasks can be enhanced by engaging in physical activity or relaxation exercises."

2014 - Postural variability: an effective way to reduce musculoskeletal discomfort in office work. - <https://www.ncbi.nlm.nih.gov/pubmed/25490805> - Posture-altering workstation interventions, specifically sit-stand tables or reminder software with traditional tables, were effective in introducing posture variability. Further, postural variability appears to be linked to decreased short-term discomfort at the end of the day without a negative impact on productivity.

2007 - Supplementary breaks and stretching exercises for data entry operators: a follow-up field study. - <https://www.ncbi.nlm.nih.gov/pubmed/17514726> - Expanded 2000 Galinsky study providing further converging evidence that supplementary breaks reliably minimize discomfort and eyestrain without impairing productivity.

2007 - Influence of work duration or physical symptoms on mental health among Japanese visual display terminal users. - <https://www.ncbi.nlm.nih.gov/pubmed/17485878> - Compared a group of employees given breaks (vs. not) and impact on mental health. Logistic regression analysis showed that not receiving breaks during VDT work (and other factors such as age and pre-existing discomfort), were significantly associated with poor mental health status.

2005 - Transforming work breaks to promote health. - <https://www.ncbi.nlm.nih.gov/pubmed/16376711> - Examined approaches to making break time healthier (e.g. doing movement/stretching vs. snacking/smoking).

2003 - The effect of work-rest schedules and type of task on the discomfort and performance of VDT users. - <https://www.ncbi.nlm.nih.gov/pubmed/12745696> - Compares benefits of various schedules. More frequent breaks consistently led to lower discomfort in various body parts as well as significantly increased speed, accuracy, and performance for a data entry task.

2002 - Short-term effects of workstation exercises on musculoskeletal discomfort and postural changes in seated video display unit workers. - <https://www.ncbi.nlm.nih.gov/pubmed/12036399> - Exercises done by video display unit operators while at a workstation resulted in short-term decreases in both musculoskeletal discomfort and postural immobility.

2001 - Impact of added rest breaks on the productivity and well being of workers. -

<https://www.ncbi.nlm.nih.gov/pubmed/11209875> - In a meat processing plant, standard break schedule was compared with 2 treatments that each added 36 minutes of rest (12 3-min vs 4 9-min). Both had no impact on productivity. Employees generally preferred the 4 9-min schedule, and that schedule led to reduced discomfort in lower extremities.

2001 - Computer terminal work and the benefit of microbreaks. -

<https://www.ncbi.nlm.nih.gov/pubmed/11394463> – Studied EMG, perceived discomfort, and productivity of 3 microbreak schedules (user discretion, every 40 minutes, and every 20 minutes). More microbreaks had no detrimental effect on productivity. Discomfort was reduced most in “every 20 minute” group and next in “every 40 minute group.”

2000 - A field study of supplementary rest breaks for data-entry operators. -

<https://www.ncbi.nlm.nih.gov/pubmed/10877480> – Compared a conventional break pattern (2 15-min breaks/day) with supplemented (added 5-min breaks to each hour without conventional break, 20 min extra breaks). No drop in productivity was measured and discomfort was lower in various body parts, with best results in right forearm, wrist and hand.

1997 - Frequent short rest breaks from computer work: effects on productivity and well-being at two field sites. - <https://www.ncbi.nlm.nih.gov/pubmed/8995049> - At one worksite, productivity and eye/leg/feet comfort improved with microbreaks plus breaks with stretching exercises.

1994 - The effect of different work-rest schedules on fatigue and performance of a simulated directory assistance operator's task. - <https://www.ncbi.nlm.nih.gov/pubmed/7957021> - Compared 3 schedules (30m work/5m rest, 60m work/10m rest, 120m work/no rest). First 2 options with rest led to significantly lower error rates as compared to no-rest treatment.

1989 - Microbreak length, performance, and stress in a data entry task. -

<https://www.ncbi.nlm.nih.gov/pubmed/2806221> - Longer microbreaks were associated with lower post-break error rates, however, users did not self-prescribe long enough microbreaks to fully recover (implying that prescribed longer microbreaks would reduce error rates further).