

SCRUB FREE SYSTEM BIOMETRIC TESTING RESULTS



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UNITED STATES ERGONOMICS



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EXECUTIVE SUMMARY:

Ecolab partnered with US Ergonomics to understand the Ergonomic Impact of the Scrub Free Bathroom Cleaning and Disinfecting System across several key metrics for housekeepers during the bathroom cleaning process. The testing was conducted at two separate major hotel chains and included 12 professional housekeepers.

The results indicate that the Scrub Free process produced measurable and statistically significant advantages over the other cleaning processes tested. The benefits included faster cleaning times, reduced muscle effort and cardiovascular exertion, improved working postures, reduced ergonomic risk and enhanced worker safety.

The benefits of the Scrub Free cleaning process are expected to provide measurable ergonomic health and safety benefits to housekeepers and improve the overall efficiency of bathroom cleaning.

A highlight summary of the test methods and findings are presented below. A complete documentation of the study is available for review.

Test Layout:

Two different bathroom configurations were tested including 1) separate tub and shower and 2) combined tub and shower, to best represent the market conditions. US Ergonomics tested 12 different housekeepers and captured multiple data points per subject when they completed three cleaning scenarios commonly seen in the market. These scenarios included:

- Standard cleaning chemistry and process using rag with no additional tools
- Standard cleaning chemistry and process using additional tools including scrubbing pad, etc.
- Streamlined cleaning process using Scrub Free Chemistry and tools



The collected data points include:



- Muscle effort of the hands and arms
- Heart rate
- Postural analysis
- Time to clean the bathroom
- Subjects reaction to different cleaning methods

Summary Results:

The Scrub Free process and tools resulted in statistically significant reductions and improvement in all the items measured. These include:

- Compared to the standard cleaning methods the scrub free process reduced the total bathroom cleaning cycle time by 30.4%. This results in a **daily time savings of 26.8 minutes per housekeeper for a typical 15 room cleaning schedule, which translates to up to 2 minutes time savings per room.**
- The Scrub Free process **reduced the overall cardiovascular workload by 26%** thereby reducing whole body fatigue potential and the associated injury risks.
- The Scrub Free process required **28% less hand and arm muscle effort** thereby minimizing the risks of localized muscle fatigue and the associated upper extremity injury risks.
- An examination of the muscle effort for the chemical application, spreading and scrubbing steps combined for the shower/bathtub areas revealed that the Scrub Free process required 175% less total muscle work than the standard cleaning process.
- The Scrub Free process improved the working postures, minimizing reaching, bending and awkward hand/arm technique, thereby **lowering the overall ergonomic injury risk.**
- The Scrub Free process also eliminated the need to step into or out of the shower/tub to perform scrubbing, thereby minimizing the exposure to standing on wet slippery surfaces, enhancing safety.
- The Scrub Free Process received the best overall ratings and was ranked as the most preferred cleaning process among the professional housekeepers for effort, speed, comfort and overall performance.



Illustration of test participant wired for electromyography