DYNAMIC SITTING: How Much Do We Move When Working At A Computer?

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Background

- Several recent ergonomic standards and guidelines suggest that it is desirable for computer workers to sit in a chair that can support dynamic sitting (e.g. CSA-Z412-00, 2000; BSR/HFES100, 2002).
- Dynamic sitting is recommended because there is an association between working in static postures and the risks of upper body musculoskeletal disorders (Graf *et al*., 1995).
- Dynamic sitting assumes that the seated worker will make frequent changes to their posture throughout the day, and the chair should be capable of supporting and accommodating these changes.
- Many “ergonomic” chairs are designed to facilitate “dynamic sitting”

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Background

- Dowell *et al*. (2001) observed different types of office work and found that during their day technical/professional workers reclined almost three times longer than customer service workers, however, customer service workers changed their upper extremity posture about twice as often. They concluded that the amount of movement was a function of job tasks and that different chair features might be useful for different groups of workers.

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Background

- van Dieën *et al*. (2001) tested subjects sitting in either fixed-back or dynamic back chairs for 3 hours periods, during which they did one hour of computer-aided design work, one hour of word processing and one hour of text document work. They found that a dynamic chair back decreased spinal compression.
- They suggest that ergonomic chairs should be able to move with the worker rather than being locked at a given position.
- However, they did not observe greater use of the chair back during this time.

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Study Objectives

- This study investigated the effects of a dynamic chair backrest on body movements while typing on a computer.

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Procedure

- Eighteen subjects, 9 men and 9 women, participated in this study.
- Ss were University student volunteers who were paid $20. All signed an informed consent form approved by the University Committee on Human Subjects.
- Ss typed continuously with either the chair backrest locked (30 minutes) or unlocked (30 minutes).
- Treatment order was counterbalanced.

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Results

- Showed no significant differences between chair back conditions in either the total number of movements or specific body movements over the duration of the test.

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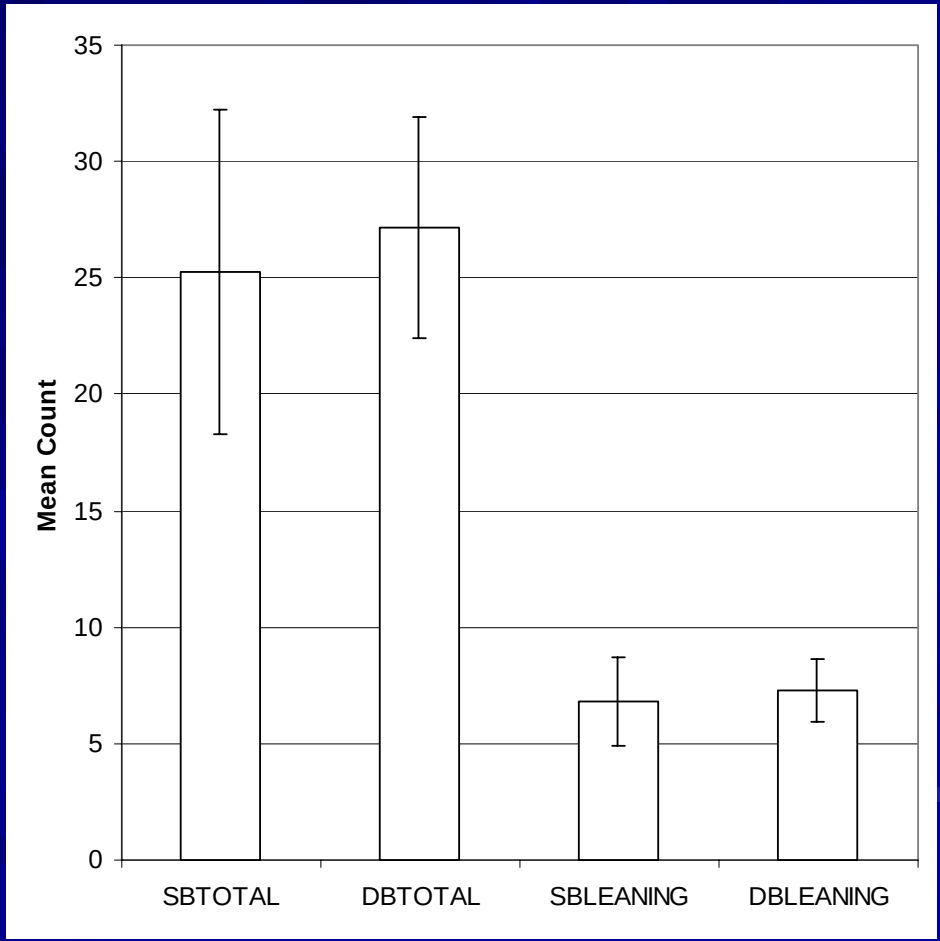
Results

- Ss made some body movements at approximately once per minute in both test conditions.
- There were no statistically significant differences in counts of either the total body movements or the number of back recline movements for the SB and DB conditions.



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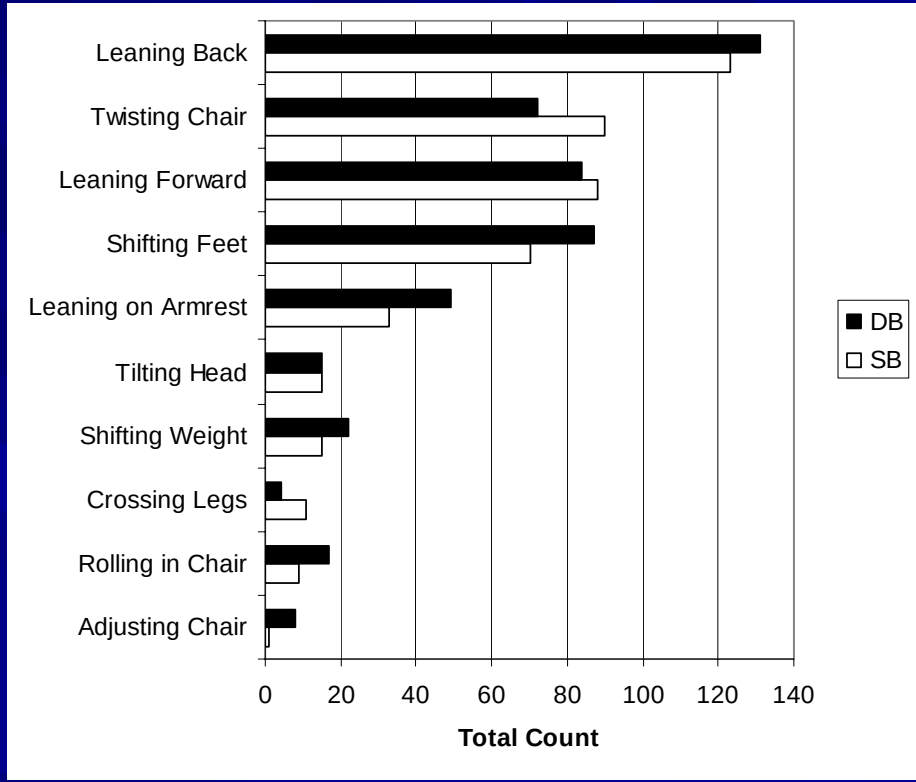
Results

- Comparison of the total counts for all subjects for each of the movement categories for the SB and DB conditions.
- Back recline movements were the most frequent movements made but their frequency did not differ between conditions. No other differences in movements between conditions were statistically significant.



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Conclusions

- Even though body movements occurred, typing is a task that inherently requires a relatively static posture, and sitting in a chair with a dynamic back may not necessarily encourage greater movement while typing.
- Use of a free moving dynamic chair back did provide better back support for subjects when they changed from upright to reclined postures.

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Future Research

- The results of the study need to be treated cautiously because it only examined effects over relatively short durations for sedentary work, and it is possible that over much longer time periods of say 8 hours, the body may fatigue more when sitting in a static chair than when sitting in a dynamic chair, and differences in movement frequencies may emerge.

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