

# Steelcase Leap<sup>®</sup> Chair's Impact on Office Work Effectiveness, Productivity and Health

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## Study Objectives

The Leap chair incorporates technology that passively supports dynamic spine and pelvis motion. A study conducted at Michigan State University in 1999 demonstrated that the Leap chair is more sensitive and supportive of a wide variety of natural postures compared to other seating products. The work effectiveness study seeks to validate the advantages that Leap technology offers through observing the long-term effects of sitting in the Leap chair in a natural work setting. The primary research goals are to demonstrate the health benefits, quality of work life improvements, behavioral changes and economic impacts of two office ergonomic interventions:

- Leap chair
- Office ergonomics training

## Study Procedure

A team of seven multi-disciplinary researchers and ergonomic specialists, both external and internal to Steelcase was assembled to design and implement this longitudinal field based study.

For the first phase of the study about 300 people were recruited at a revenue collecting agency in Minnesota. These volunteers were placed in one of three groups; one receiving Leap chairs and ergonomic training, one receiving training only, and a control group receiving no training or chair. All groups were physically separated to avoid crossover of information or new behaviors learned during training. Most of the 300 people eligible to take part in the study elected to participate. The control group will receive the same ergonomics training when data collection is complete. Another site is now participating and approximately one thousand office workers will eventually be recruited to take part in this study.

Two rounds of baseline measures were collected prior to any interventions, which included a mix of objective and subjective surveys. Self-reported measures included daily health scores (Figure 1), work environment, and general health surveys. For the daily health scores participants reported pain levels within the following body parts three times per day for one week; neck, shoulder, upper and lower back, elbow, lower arm (hand and wrist), knees, buttocks and thighs, and lower legs (ankles and feet). Body posture and use of workstation equipment was observed and recorded by ergonomists utilizing RULA (Rapid Upper Limb Assessment) and the Office Environment Assessment, a survey tool developed for this study. Data that reflected individual productivity levels was collected from Human Resources. The study began in February of 2001 with baseline measures collected in March and May. New Leap chairs and training were also delivered in May. Post intervention measures were then made at two, six and 12-month intervals.

## Study Summary

Two and six month data show that the group receiving the Leap chair and formal training, experienced a significant decrease in the level of discomfort over the course of the workday and improved employee vitality by reducing fatigue (see Figure 2). Discomfort scores for the chair group remained consistently lower than the beginning of day scores of the non-chair groups. The Leap chair group improved its monthly output by 4.5 percent compared to the control group. Average revenue collected increased by over \$2,000 per month for employees who received the Leap chair and training. For this group the Leap chair paid for itself plus the cost of training within seven working days. The twelve-month data has not been assessed at this time.

**Study Summary (cont.)**

*Outcome Measures*

The Leap chair group experienced a marked improvement in the following functions compared to either the training only or the control group, at two and six months. Leap users reported that hand and wrist functioning improved during the first six months. Workers in the chair plus training group also reported significantly fewer lower back, upper back, neck and leg limitations. During the study period these workers were able to more effectively meet the mental demands, physical demands and social demands of their work as compared to the control and training only groups. Employees originally reporting pain levels as distracting experienced increases in productivity to the degree that their improvement in individual performance cost-justified purchasing Leap chairs for the entire group.

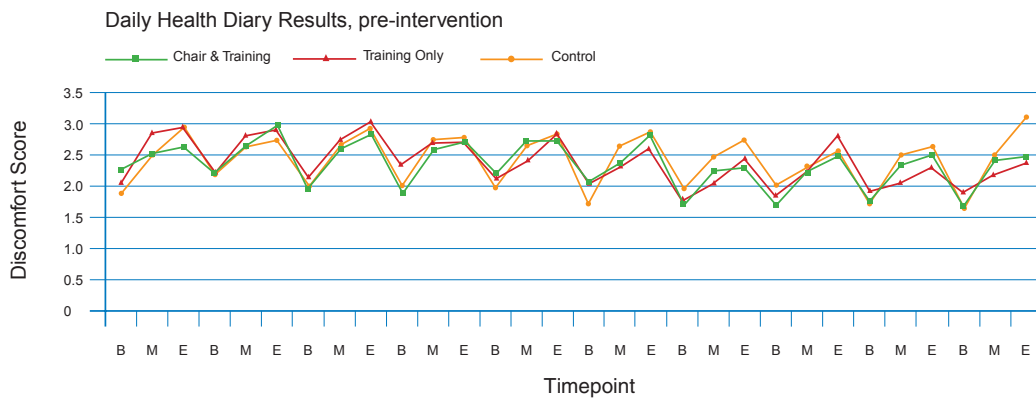
*Office Ergonomics Training*

Participants who received training reported that the information was both beneficial and applicable to their immediate workstation. Training increased knowledge of how to adjust the chair and workstation to maximize the comfort zone. Additionally the training allowed employees to effectively use their workstation and chair. The two groups that received training were observed to have lower RULA postural risk scores compared to the control group.

*Perception of Leap*

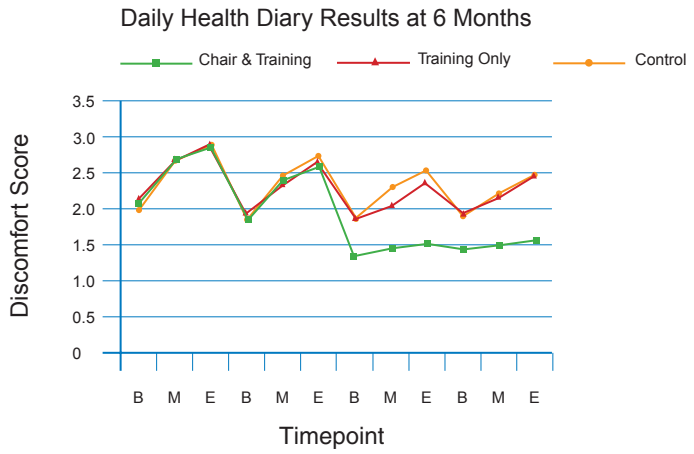
Users of Leap described the chair as more comfortable and rated chair satisfaction much higher than their previous chair. They also reported that it was easier to adjust despite having more controls.

**Figure 1: Reports of discomfort prior to using Leap chair**



This graph shows that each group's level of discomfort grows from the beginning (B) of the day, through the middle (M) until the end (E) of the work day. The first half of the graph depicts reports from March and the second half are results from May, before the chairs or training were received. Both experimental and control groups are included in this chart.

**Figure 2: Effects on discomfort after sitting in Leap chair**



This graph shows what happened to discomfort scores after the training and introduction of the Leap chair. The first half represents reports before the interventions. The second half of this chart, shows that discomfort scores were significantly lower at the beginning of the work day for Leap users and grew at a much lower rate throughout the day.