

Office workers suffer from pains in the lower and upper part of the back! Effects of exercise/movements

1 How do we know that office workers have problems with pains in the lower and upper part of the back?

Backapp AS has conducted a research project supported by the Norwegian Research Council (Skattefunn project). One of the targets was to document status of back pains for office workers and effects of Backapp Smart (chair) and Backapp 360 balance board.

354 office workers from Norway (KGH Custom Service) from Sweden (Kongsberg Maritime, Ving Thomas Cook Northern Europe Division, Tretton 37) and from Denmark (Kamstrup, Siemens Gamesa, Toyota and OK oil participated in the study.

Of the 354 participants, 209 were women and 145 were men. Average age was 42 years. Height and weight were normal.

The participants were sitting on normal office chairs with or without arm rests. All participants had electric sit/stand height adjustable desks. They used Backapp Smart chair and Backapp 360 balance board for 6 weeks. They replaced the normal office chair with the Backapp Smart chair the day the study started and used only Backapp Smart and Backapp 360 for 6 weeks.

The office workers answered a questionnaire that was created by Force Technology in Denmark, an independent third party. Force Technology also collected the data and reported the results.

2 What did we find?

The office workers were working in the sitting position in front of a computer screen an average 5.4 hours per day. They were working in the standing position an average 1.2 hours per day.

The office workers were asked if they had pains in the lower back or in the upper back during a normal work week. The answers were reported anonymously. It was possible to choose more than one pain area. Results are in Table 1.

Table 1. Which of the following types of pains have you experienced during a normal workweek? You can choose more than one pain area

	Before the study started		After 6 weeks with Backapp		After 6 weeks – Before the study	Change
	Number	Percent*	Number	Percent*	Number	%
Lower back pain/stiffness	175	49,4	141	39,8	-34	-19,4
Shoulder and neck pain/stiffness	241	68,1	135	38,1	-106	-44,0
Arms and/or hand pains	73	20,6	39	11	-34	-46,6
Headaches during or after work	125	35,3	68	19,2	-57	-45,6
None of the above	31	8,8	89	25,1	58	+287,1

*% of 354

175 (49,4%) had Lower back pain every week before the study. After 6 weeks using Backapp Smart and Backapp 360 it was 141 (39,8%).

241 (68,1%) had Shoulder and neck pain. After 6 weeks using Backapp Smart and Backapp 360 it was reduced to 135 (38,1%).

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73 (20,6%) had Arms and/or hand pains. After 6 weeks it was reduced to 39 (11%).

125 (35,3%) had Headaches during or after work. After 6 weeks it was reduced to 68 (19,2%).

Only 31 (8,8%) reported no pain in the lower and upper back. After 6 weeks using Backapp Smart and Backapp 360 the number of office workers having no pains in the back was 89 (25,1%). The number of pain free office workers almost tripled.

The office workers reported in average 1,79 pain areas per office worker before the study started. After 6 weeks using Backapp Smart and Backapp 360 the number of pain areas per office worker were reduced to 1,15.

3 What did we learn?

The results were astonishing. The hidden main disease among office workers are Shoulder and neck pains. As many as 68,1% of the office workers reported Shoulder and Neck pains every week before the study. Shoulder and neck pains may cause headaches and problems in arms and hands. 49,4% of the office workers had low back pains. Only 8,8% were pain free.

We knew from previous studies that use of Backapp Smart increased muscle activity and decreased pains in the lower back (¹O`Sullivan et al 2012) (²O`Sullivan et al 2012) (³O`Keefe et al 2013). You exercise the spine support muscles by active sitting keeping the balance on Backapp Smart. Pains in the lower back were reduced significantly when sitting on Backapp Smart compared to sitting on a normal office chair.

Pains in the upper part of the back, shoulder and neck pains, pains in arms and hands and headaches were drastically reduced by using Backapp Smart and Backapp 360. The reduction was on average approximately 45% for all 3 pain areas.

The number of pain free office workers almost tripled. Before the study it was 31 (8,8%). After 6 weeks using Backapp Smart and Backapp 360 it was 89 (25,1%). The number of pain free office workers almost tripled.

The results are convincing. All office workers should have the possibility to exercise by sitting and standing. All companies with office workers should focus on exercise and movements for the employees. The profit is enormous. For example:

A company with 354 office workers pay salaries and costs of approximately 292 million NOK per year. 1% saving from higher productivity and less sick leave can be calculated to 2,92 million NOK. The costs for purchasing Backapp products to all employees is 3,2 million NOK or 0,64 million per year (5 years of depreciation). The results from this study indicate that the potential saving is much more than 1%.

We need to focus on the whole body. Office workers use mainly their head and arms/hands for work. The rest of the body is passive. The results from this study indicate that office workers may experience huge positive health effects by introducing more activity at the workstation.

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4 Literature

1 Manual Therapy (Volume 17, Issue 6) Pages 566-571

"Can we reduce the effort of maintaining a neutral sitting posture? A pilot study". Kieran O'Sullivan, Raymond McCarthy, Alison White, Leonard O'Sullivan & Wim Dankaerts 2012.

2 Ergonomics (Volume 55, Issue 12) pages 1586-1595

"Lumbar posture and trunk muscle activation during a typing task when sitting on a novel dynamic ergonomic chair". Kieran O'Sullivan, Raymond McCarthy, Alison White, Leonard O'Sullivan & Wim Dankaerts 2012.

3 Ergonomics (Volume 56, Issue 4) pages 650-658

"Specific flexion-related low back pain and sitting: comparison of seated discomfort on two different chairs" Mary O'Keefe, Wim Dankaerts, Peter O'Sullivan, Leonard O'Sullivan & Kieran O'Sullivan 2013.