IFA
Institut für Arbeitsschutz der
Deutschen Gesetzlichen Unfallversicherung

0408

Focus on IFA's work

Edition 03/2019 617.0-IFA:638.22

Investigation of dynamic office workstations in operation at the workplace

Problem

Long-term sitting postures are being discussed as a cause of chronic diseases: Studies show a disadvantageous relationship between constant physical inactivity and musculoskeletal complaints, obesity, cardiovascular diseases, type II diabetes and premature death. In Germany, about 18 million employees currently work in sitting postures, some of them for long periods of time. Manufacturers are now offering so-called dynamic office workstations, which permit the execution of office and computer work combined with light physical exercise (e.g. the "Deskbike", see illustration).

Against this background, IFA has already cooperated with the Dutch TNO institute in carrying out a comparative laboratory study on dynamic and conventional office workstations. Dynamic workstations led to a significant increase in physical activity and energy turnover. Cognitive performance was scarcely impaired, but the acceptance of the dynamic workstations examined was not very high among the test subjects.

In the light of this and at the request of a member company planning to use dynamic workstations in its offices, IFA has now examined which dynamic workstations currently available on the market are suitable for use at the workplace.

After the shortlisting of suitable products, these were then to be examined in a field study for their effectiveness in increasing exercise, user acceptance, practicability and actual useful life.

Use of a Deskbike at the office workstation
Image: Worktivity, Bonn

Activities

So that suitable dynamic workstations could be chosen, a market research was first carried out and a catalogue of requirements was drawn up together with the company. In a pilot study, the dynamic workstations of employees working in offices and at computers determined in this way were tested and evaluated in company practice. The dynamic workstations that scored best in this pilot process were subsequently selected in a controlled intervention study with approx. 60 persons (healthy office staff, approx. 30 persons each in the intervention and control groups).

After a detailed briefing of the test persons on the use of the dynamic workstations, the six-week intervention phase began.

All participants were equipped with wearable measuring devices to quantify daily physical activity. The dynamic workstations were available at lending stations developed for the study. Sensors were used to record both the borrowing period and the actual duration and intensity of use.

Before and after the intervention, the subjective perception of complaints, the sense of comfort at the office workplace and the acceptance of the dynamic workstations were surveyed in standardised interviews.

Results and Application

As a result of the market research and a pilot study in the company, the “Deskbike” desk ergometer and the “activeLife Trainer” under-table device were selected for the intervention study. Subsequently, the borrowing and usage behaviour of the participants of the intervention group was recorded, the physiological effects of using the two device types were measured and the motivation for use and subjectively perceived practicability were examined. Also analysed were the effects of usage on general and work-related well-being in a control group design.

The results show that, on 40 % of the days during the intervention period, the dynamic workstations were used for an average of 54 minutes per day. The energy turnover and heart rate increased significantly during workstation use compared to sitting work.

The Deskbike was used more frequently overall and resulted in a greater subjective increase in heart rate compared to the activeLife Trainer. The participants felt that both workstations were well suited to use in the office, they did not feel disturbed in their work by their use and were personally motivated to use the stations. An improvement in general well-being was only shown if used at least two to three times per week. The investigated dynamic workstations are suitable for daily use and both types of equipment can be recommended for use in the office.

Area of Application

Offices, employees at office and computer workplaces

Additional Information

Ellegast, R.; Heinrich, A.; Schäfer, A.; Schellewald, V.; Wasserkampf, A.; Kleinert, J.: Active Workplace: Physiologische und psychologische Bedingungen sowie Effekte dynamischer Arbeitsstationen. IFA Report 3/2018. Ed. Deutsche Gesetzliche Unfallversicherung e. V. (DGUV), Berlin, 2018

Expert Assistance

IFA Institute Management

Literature Requests

IFA Central Division

Published and printed by:
Deutsche Gesetzliche Unfallversicherung e. V.
(DGUV), Glinkastrasse 40, 10117 Berlin, Germany

ISSN (Internet): 2190-006X
ISSN (print version): 2190-0051

Edited by: Prof Dr Rolf Ellegast
Institut fuer Arbeitsschutz der Deutschen
Gesetzlichen Unfallversicherung (IFA)
Alte Heerstraße 111, 53757 Sankt Augustin
Tel. +49 30 13001-0/Fax: -38001
E-Mail: ifa@dguv.de, Internet: www.dguv.de/ifa