Is it possible to work comfortably and productively on a tablet?

An overview of tablet use for professionals
Introduction

The tablet is no longer simply a new gadget, as professional use of this technology is becoming a global trend. More and more organisations are recognising the advantages of equipping their employees with this convenient device, and, as a result, the tablet or iPad is being used much more intensively. Many employees see the tablet as convenient not only for taking to meetings or reading reports, but also for typing long e-mails or even entire reports. This whitepaper shows that while tablets were never ergonomically designed for these long-term tasks, the right accessories can prevent the physical strain caused by uncomfortable tablet use.

This whitepaper provides an introduction to the smart and healthy use of the tablet. Firstly, it describes why the tablet is not the best tool for prolonged (professional) use. We then look at the legislation and norms pertaining to intensive tablet use, before addressing the effects of tablet use on health and performance. Finally, we provide a convenient selection guide to determine which accessories are most suitable for each kind of tablet use.
When does use of the tablet become unhealthy?

The professional use of tablets often involves more than watching videos and surfing the internet. Activities like answering e-mails and writing texts are more similar to what we are used to doing on a computer. And, just as with a laptop, working for long periods on a tablet is healthy and comfortable only when using suitable accessories.

As the drawing below shows, placing a tablet flat on a table means bending over to use it, which can result in extra strain on the neck and shoulders. Not until the screen is placed higher is a healthy posture encouraged. Prolonged typing on a touchscreen also leads to increased muscle tension in the shoulders and neck, especially when the arms are raised during typing or using the mouse on the tablet. What’s more, the tactile and auditory feedback is barely noticeable when typing on a tablet. The use of an external keyboard provides the right feedback and better posture so that comfort and productivity are enhanced.
What does European legislation say?

Article 5.1 of the Dutch Working Conditions Provisions stipulates a number of specific requirements with which a computer workstation has to comply. These legal requirements were derived from Council Directive 90/270/EEC which provides the basis for each country’s national legislation.

**Screen**

According to the norms, the screen and keyboard have to be separate units. This is not the case with a tablet as the screen also includes a touchscreen and mouse (touchpad). A simple tablet, therefore, does not fulfil the requirements placed on a healthy workplace for engaging in computer work. Even a tablet accompanied by a compact keyboard fails to comply with the requirements because its mouse function is still linked to its screen. Many tablets don’t have a mouse driver either, thus eliminating the use of a mouse altogether.

**Keyboard**

The integrated touchscreen keyboard of the tablet itself fails to meet the requirements stated in ISO 9241-410 because, for one thing, its keys provide little if any tactile and auditory feedback, as upon touching the ‘keys’, the user feels no counterpressure and hears no resulting sound. Another problem is that the keys on the separate micro-keyboards that are sometimes found in tablet cases, which are often used in combination with a tablet, do not measure the required 19 mm centre-to-centre key spacing. According to the ISO norm, these micro-keyboards are suitable only for people with small hands and for short-term use.
Health effects

Various studies have shown that the strain on neck and shoulders is greater when working with a tablet. There are three ways to reduce that extra strain.

1. Place the tablet higher and at an angle that improves both the neck posture and the viewing angle. A recent study by Young et al. (2012) concluded that using a tablet leads to a greater flexion of the neck compared to using a laptop or desktop computer.

2. The ideal tilt angle is 45°. In fact, a study conducted by Albin & McLoone (2007) indicated that visual display unit (VDU) users prefer a tilt angle of 45°. A wider angle makes typing on the screen difficult. A narrower angle reduces the comfort of reading from the screen. Tipping the tablet also has a beneficial effect on neck posture because this reduces neck flexion.

3. If the tablet is often used for typing, a separate keyboard and mouse should be used. Gwanseob Shin and Xinhui Zhu (2011) concluded from their research that using a touchscreen (tablet) leads to a significant rise in the experience of discomfort in the shoulders, neck and fingers. A touchscreen can also lead to an increase in muscle tension in the shoulders and neck, particularly when the arms have to be lifted during typing or when using the mouse on a tablet without an external keyboard and mouse.
Performance effects

The tablet is just the thing for reviewing information or using the internet while on the move. However, this useful device is less suitable for multiple e-mails or report writing. This is because typing on a tablet takes much longer than typing on a conventional keyboard (Chaparro, 2010).

While the users who participated in Chaparro’s study did not have very much experience with typing on a tablet, it is not likely that a person could type faster on a tablet than on a conventional keyboard. The reason for this is that receiving tactile and auditory feedback during typing is very important. A tablet provides neither form of feedback while typing, and without clearly perceptible feedback you simply make more typing errors (Feuerstein, 1997; Yoshitake, 1995).

Another thing that tablet users have to consider is that a tablet is not suited for working with certain applications or documents (e.g. large or detailed Excel spreadsheets) that require a large screen.
Selection guide

Each employee uses a tablet for different purposes. One employee will use the device solely for looking up information while others will use it to type entire records and reports. The selection guide below helps you find the accessories that are best for a specific employee profile or for your own personal tablet use.

<table>
<thead>
<tr>
<th>Short-term reading from the screen, little typing or mouse use:</th>
<th>tablet in holder</th>
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<tbody>
<tr>
<td>1-2 hours/workday spent reading, typing and using a mouse:</td>
<td>tablet in holder and separate keyboard</td>
</tr>
<tr>
<td>More than 2 hours/workday spent reading, typing and using a mouse:</td>
<td>use a laptop with a separate keyboard and mouse</td>
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</tbody>
</table>

Video

This video shows how to work comfortable and productive on a tablet. It also shows the tablet use in a variety of places: home, lunchroom, in the office.

Watch the video on bakkerelkhuizen.com
A tablet is actually intended only for short-term reading, watching videos or surfing the internet. Now that it has become increasingly commonplace to use tablets in the business world, they are being used more intensively, however, using a tablet without accessories does not satisfy the legislature and norms established for VDU work and computer workstations. When a tablet is used solely for short-term reading and limited typing and mouse use, a tablet holder will suffice. For the healthy and comfortable use of a tablet over longer periods, the minimum requirements will be a tablet riser and a separate keyboard. With these accessories, work can still be done in a healthy way while on the go or in between meetings, without having to take a laptop along. For everyday activities lasting longer than two hours, the use of a tablet is not recommended. In these cases, a laptop with ergonomic accessories is more suitable.
About BakkerElkhuizen

BakkerElkhuizen develops excellent products for making computer use healthy and efficient. Products from BakkerElkhuizen display the perfect combination of function, ergonomics and design.

BakkerElkhuizen advises and helps companies equip their workplace, including offices that use telecommuting and flexible working, so that each workstation receives the right solution and the right accessories.

BakkerElkhuizen bases this on four workstation concepts:
- permanent workstation
- mobile workstation
- flexible workstation
- home workstation

The point of departure is that an employee must be able to perform his or her computer work comfortably, healthily and efficiently wherever he or she works. People come first in everything that BakkerElkhuizen does, whether it concerns developing new products, performing research or cooperating with suppliers, resellers and customers.
References


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