Laptop Beefs

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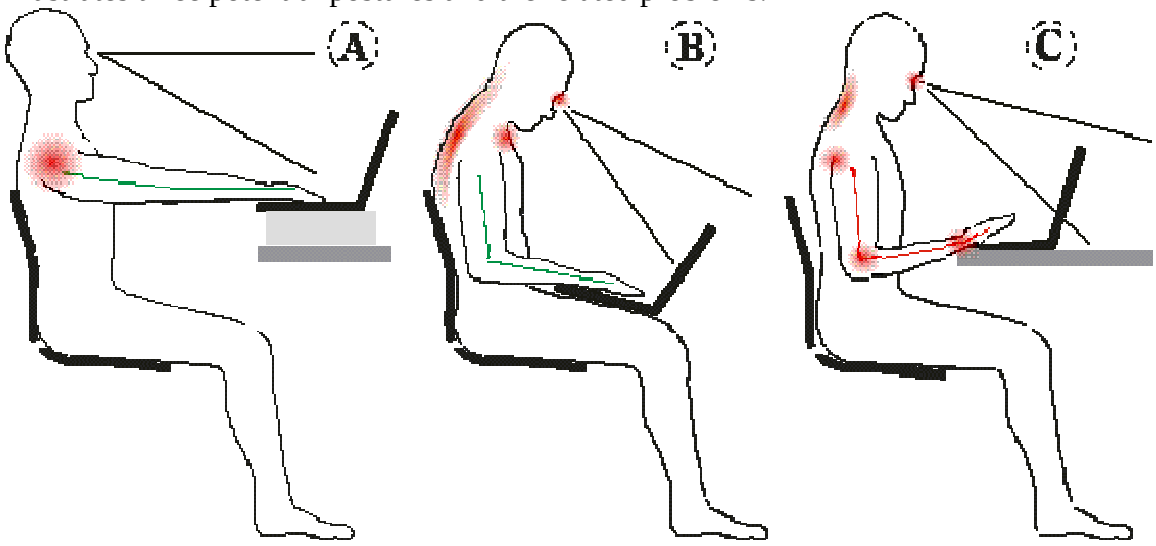
Laptop computers are a part of many people's lives today. While they improve work efficiency and increase recreational possibilities, laptops are creating havoc for our upper bodies. Laptops were originally designed for portability and short-duration use. However, their use has changed due to improved speed and storage capabilities, which enables many people to replace desktop computers with only a laptop. In addition, the situations in which laptops are used have extended to planning an evening out, showing ideas to peers, taking notes at meetings, presenting reports, browsing the web, reading and writing, and even watching sports and movies. A final benefit is that the laptop is flexible and adaptable to many environments, so the user can change positions frequently.

If laptops are so great, what is the beef with them? We list four main reasons below. Even laptop manufacturers provide warnings and information concerning the ergonomic problems associated with laptop use. The main problem with laptops is that, since laptops do not have a detachable display and keyboard, there is no posture that is correct while using them. The figure below illustrates three potential postures and the related problems.[1]



In "A", the laptop is too high and distant, with the user's arms raised and outstretched, resulting in unnecessary fatigue in the shoulders, neck, back, forearms and hands. In "B", the user has the laptop in the lap, which facilitates good arm position, but the user's head is dropped, causing muscle tension in the back, neck, shoulders and chest. In "C", the laptop is on a "standard"

surface that is too low and close for comfortable viewing, and too high for upper body comfort. Notice that the hands are higher than the elbows, the wrists are resting on the edge of the worksurface, and the low back is not supported. This position increases risk for injury to the neck, back, elbows, and wrists.

If you observe someone using a laptop computer, you will likely see a variation of one of these postures. **Any** time spent in an awkward, forceful position pictured above will increase the likelihood of future chronic pain. Griffin[1] points out different environments where laptops can be used that pose additional problems:

- The furniture in hotel rooms, trains, cars, or planes, and at home, is invariably inadequate for laptop use.[2]
- Lighting conditions are often not adjusted for computer(laptop) use. Therefore, glare, combined with improper viewing angle and lack of display adjustability often results in awkward posture.
- The narrow viewing angle of Liquid Crystal Displays (LCD) is poorly suited to sharing, discussion, and collaboration with multiple people.

Additionally, the small keyboard and pointing devices on laptops are frequently awkward or less than optimal for the user. For many people, the small keyboard requires harmful hand positions. The use of "eraser head" pointing devices is inaccurate and often results in unnecessary force on the finger and forearm.

The fourth major reason laptop use has caused an increase in Repetitive Strain Injuries is that laptops can be used anywhere. Therefore, more people are spending more time at a computer.

If you use a laptop for extended periods of time, please plug an external keyboard and mouse into the USB ports (or use a hub) and place the keyboard and mouse at the appropriate height. Then the laptop display can be positioned high and far enough away to avoid neck, upper body, and eye strain. Alternatively, a docking station will allow plug-in use of the laptop in conjunction with an external monitor, keyboard, and mouse without requiring multiple connections for each device. These solutions mean that you can have the advantages of a correct workstation at locations where you are likely to spend a majority of your computer time, avoid the headache of installing programs on multiple computers, transferring data between them and also have the flexibility to work in other environments. Please refer to our laptop web page to find these resources: http://working-well.org/plaptop.html#stands.

Although the design of laptop computers has not changed to allow more comfort for the user, there are new devices being developed which make them less awkward and harmful in some environments. We will be discussing some ways to make laptops work better with your body in the next article.

1. Griffin, Timothy, "The Adaptive Laptop". October, 2001. Timothy Griffin, Industrial Design Program, The University of Calgary. http:www.ucalgary.ca
2. Kupper, Ansgar (2004) "Seating and the Virtual Office", http://www.system-concepts.com/articles/office-ergonomics/seating-and-the-virtual-office/

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