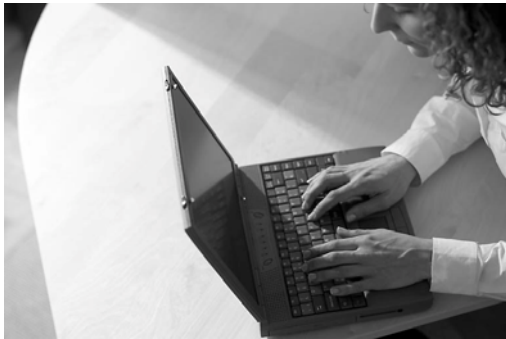


Unergonomic Laptops

The design of laptops violates a basic ergonomic requirement for a computer, namely, that the keyboard and screen are separated. In the early days of personal computing, desktop devices integrated the screen and keyboard into a single unit, and this resulted in widespread complaints of musculoskeletal discomfort.



By the late 1970s a number of ergonomic design guidelines were written, all recommending the separation of screen and keyboard. The reason is simple - with a fixed design, if the keyboard is in an optimal position for the user, the screen isn't; and if the screen is optimal, the keyboard isn't.

Laptop Posture

As indicated above, laptops violate basic ergonomic design requirements, so using a laptop is a trade-off between poor neck/head posture and poor hand/wrist posture.

Laptop User Type

Are you an **occasional user** who works on your laptop for short periods of time, or are you a **full-time user** with the laptop as your main computer? All users should pay some attention to how they use their laptop, but full-time users are at greater risk of developing a musculoskeletal disorder.

Occasional Users

Because the neck/head posture is controlled by a larger muscle group, you are better off sacrificing neck posture rather than wrist posture:

- Find a chair that is comfortable, one in which you can sit back while positioning the laptop in your lap for the most neutral wrist posture that you can achieve.
- Angle the laptop screen so that you can see it with the least amount of neck deviation.



Full-time Users

If you use your laptop at work as your main computer, you should:

- Position it on your desk/work surface in front of you so that you can see the screen without bending your neck. This may require that you raise the laptop off the desk surface using a stable support surface, such as a computer monitor pedestal.

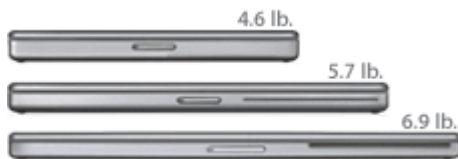
- Use a separate keyboard and mouse. These devices may be plugged into the back of the laptop or to a docking station.
- Use the following ten tips for a perfect fit:



1. **Position head so ears are over the shoulder**
2. **Monitor 18-24 inches from eyes**
3. **Monitor in direct line of sight and at correct height**
4. **Shoulders relaxed**
5. **Upper arm in line with torso**
6. **Elbows at 90 degrees and close to the torso**
7. **Wrist in neutral posture**
8. **Mouse on same plane as keyboard**
9. **Good lumbar support**
10. **Feet flat on the floor or on foot-rest**

Laptop Dimensions

Many laptops offer large screens (15" plus) which can work as desktop replacements (giving the viewing area of a 17" monitor). Consider where you will most be using your laptop to help you choose the best size. The larger the screen, the more difficult it will be to use in mobile locations (e.g., airplane, car, train). There are a number of smaller notebook and ultraportable laptops on the market. Consider the issues of screen size and screen resolution. The smaller the laptop, the smaller the keyboard, so make sure that you can comfortably type on a keyboard that may be only 75% the size of a regular keyboard.



Laptop Weight

If you are a mobile professional who will be frequently transporting your laptop, think about the weight of the system. By the word "system" we mean the weight of the laptop plus the required accessories (e.g., power supply, spare battery, external disk drive, zip drive, CD-RW, etc.). Many lightweight portables can become as heavy as regular laptops when you add the weight of all the components together. If your laptop plus components weigh 10 lbs or more, then you should certainly consider using a carry-on bag that you can pull along. If you want a smaller bag and can comfortably carry your laptop, consider a good shoulder-bag design.



Excerpts taken from Cornell University and MEMIC.



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