

Avoiding Injury While Using Tools

Part II: Tool Selection



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This discussion of selecting appropriate tools follows our article on tool designs that affect your risk of injury. Choosing the right tool for the job can be difficult. It is critical to use a tool that is designed for the particular task. For example, impact drivers are not appropriate for boring holes, but they are great for driving screws. For general drilling tasks, a regular drill works fine.¹ But if you are not going to buy two tools for drilling and screw driving, a drill driver is a good choice. A cordless screwdriver can be a handy, lightweight alternative to a bulkier drill.

As you can see, there are many choices! “Tool junkies” can go nuts buying various tools, and it is nice to have a variety. However, there is one more observation to make: spending money on a top quality multi-purpose tool for general tasks (e.g., drill driver) is probably the most economical way to solve everyday problems. If you have one big job, like building a large deck, purchasing a specific tool (i.e., impact driver) makes sense because it will reduce wear and tear on your wrists and hands that accumulate to cause Cumulative Trauma Disorder, also known as Repetitive Strain Injury (RSI).

Tool Options

Impact drivers have an internal hammer that assists in tightening and loosening tasks and prevents the twisting of the hands and wrists under a heavy load.² In fact, they have three times the twisting force or torque than conventional drills.³ They are lighter and smaller (12-14.4v), so are less fatiguing than conventional drills, but they are also slower, may require special bits, and are extremely noisy.^{1,2,3}

Power drills are generally not the best choice, although they are the least expensive. The least expensive drills are underpowered and don't hold a charge for long, so using them can be frustrating. They can cause wrist strain or injury if the drill bit hits an obstruction or when the drill jerks to a stop as a screw becomes fully tightened. Our recommendation is to spend a little more money to buy a drill driver.

Drill drivers have all of the features of a regular drill and they have a torque clutch.¹ A numbered ring just behind the chuck can be adjusted to vary the maximum amount of torque that is delivered to the screwdriver tip.¹ The highest setting is appropriate for drilling tasks. For screwdriving, the torque should be set to just the amount that allows you to drive the screw, then the clutch starts slipping and you hear a gravelly sound.¹ Setting the torque too high can cause the bit to slip out of the head, thus ruining the screw and causing strain on your wrists and hands as the screw becomes fully tightened and the drill jerks to a stop.

Cordless screwdrivers

Most cordless screwdrivers are adjustable to operate at either straight or right angles, which permits work in tight spaces where a regular drill won't fit. Unfortunately only a few cordless screwdrivers have a torque control. This can cause overdriving screws that puts torque on the wrists and hands.⁴

Power Tools

When purchasing power tools, the obvious things people look for is *power* to do the job and, for cordless power tools, the *length of charge* and *speed of recharging*. The evolution of more user-friendly tools is being facilitated by users who are paying more attention to how tools feel in their hands and how they feel once they have finished using them.⁵ Tool manufacturers have maximized run times and durability, so advances in comfort and ergonomics will distinguish them from competitors.⁵

Unfortunately, horsepower and run time are very important features for most users, so tool design is not the primary consideration. Consequently, users will develop work-arounds that increase the risk of injury.⁵ For example, instead of using an uncomfortable tool handle, users may grip the tool by the motor housing, which is not how it was designed to be used.⁵

When purchasing a power tool, try different models and manufacturers to find the one that is the most comfortable and that minimizes vibration.

We do not want to diminish the importance of horsepower and run time, but they do not have to be sacrificed in good tool design. Using an underpowered tool and/or one that doesn't hold its charge long enough to complete a task causes frustration and additional strains. For instance, using an underpowered drill increases the amount of time needed to complete the task. The user will use more force as the frustration level increases. The best tool is the one that performs the task successfully *and* is easy to use.

Ergonomic Tool Innovations

While reviewing several tool websites, we observed that ergonomics were mentioned in most tool descriptions, so clearly the industry is becoming aware that safety and comfort are important to users. But you cannot believe everything you read in product descriptions. As with office products, manufacturers who market their tools as "ergonomic" confuse consumers and trick them into believing that "ergonomic" products have some magical properties that will prevent injury.⁶ In fact, there are many so-called "ergonomic tools" that cause as much or more injury than ones without this description because the tool does not fit the user or the task.⁶

Some manufacturers are going to great expense and time to work with users to design new products that incorporate ease of use and functionality. The Porter-Cable website details the effort to design new framing and roofing nailers.⁷ The DeWalt website doesn't go into great depths about design factors, but acknowledges that ergonomics is a prime consideration in their tools and the success of their products.^{8,9}

Although most tool manufacturers are paying attention to such things as balance, vibration, and weight, some are still focusing on "macho" qualities like speed and durability, expecting the user to adapt to the tool. Three manufacturers who are paying special attention to the ergonomics of their tools are Barbara K, Tomboy, and OXO. It is possible to have effective, powerful tools that are comfortable to use and don't cause injury!! The best way to find out if a tool works for you is to try it out. Buying a tool on the internet may save money, but you will never know how it fits

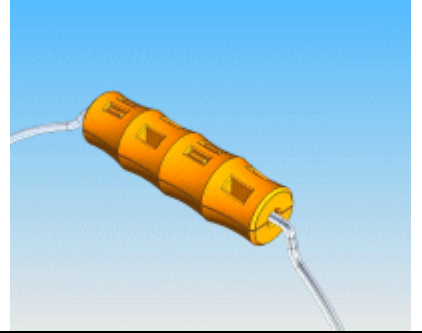
your hand without holding it. Nor will you be able to feel the balance, weight and vibration of the tool, nor know how much noise you will be exposed to. To reduce risk of injury, you need to know if it causes awkward positions of your hand, wrist, and arm.

Finally, there is a nifty adapter for carrying buckets with wire handles that we wanted to share made by Snappy Grip.

Snappy Grip are contoured handles that come in two pieces, but snap onto any wire handle to distribute the weight more evenly and allow a much more comfortable grip.

Available from www.Snappygrip.com

Sample 2/packs available free (\$2.00 shipping)



Barbara K Tools

Designed for women, these tools are lightweight, but sturdy. They are perfectly suitable for men. Every piece is well balanced and has easy-to-hold, non-slip rubber handles. The various kits (including automotive and gardening tools) come with do-it-yourself information booklets.¹⁰ The cordless power screwdriver is a wimpy 4.8v, but the power drill is a satisfactory 12v. Be aware that the Barbara K drill is not a drill driver, so it does not provide torque control. All tools performed as well as or better than Sears gender-neutral tools in a Consumer Reports test by four women and five men. All tools required less twisting force and strain because of their fat, padded grips.¹¹ The only complaint by panelists was that the ribbed padding on the pliers dug into their hands.¹¹

Barbara K tools are available online (www.barbarak.com), and at Target, Bed Bath & Beyond, and our local Palo Alto Hardware store on the corner of Alma and Channing Streets (875 Alma Street, 327-7222, paloaltohardware.com).

Staple gun


Easy loading. Compatible with 3 types of staples and nails.






Hammers

Curved handle for better wrist angle. 7 oz or 16 oz hammers available.



<p>Utility knife Bent handle to prevent bent wrist with downward force. Comfort grip. Quick change blades.</p>	
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Tomboy Tools are lighter weight and smaller like the Barbara K tools. The Consumer Reports panelists were as equally enthusiastic about Tomboy tools as they were about the Barbara K tools due to the good design and fat, cushy grips.¹¹ There are fewer Tomboy tools available, but some are different, so it is worth checking out both product lines.¹¹ They are sold online (www.tomboytools.com) or at gatherings like Tupperware parties.¹¹ Refer to the website for a complete listing and description of tools available. Many have very good design to reduce strain.

<p>Paintbrushes Patented design, premium bristles, fingertip control, right or left-handed grip. Available in 1.5", 2" and 2.5".</p>	
<p>Mini hacksaw All metal construction with adjustable 6 way cutting angle. Rubber grip.</p>	
<p>Caulking gun Smooth action trigger with easy-load securing cartridge. Unique pivoting handle for continuous flow. One hand pressure release clip used in conjunction with gravity.</p>	

OXO Tools
Familiar to many people for years, the OXO brand is known for its cushy black handles with comfortable grips. They aren't competing for the power tool market (yet), but they offer a wide variety of tools that will minimize strain to your hands. OXO tools are available on their website (www.OXO.com), some grocery stores, and in stores such as Target and Costco.

6. **Ergonomic Guidelines for Selecting Hand and Power Tools.** By James East and Deepti Soo. 12/20/2005, Occupational Hazards. <http://www.occupationalhazards.com/articles/14499>
7. **Porter-Cable Nails Down Framing and Roofing: New Line of Nailers Address Regional Demands.** Press Release, 6/23/2003. <http://www.portercable.com/index.asp?e=276&p=203224>
8. **DeWalt's DW988K-2 18-volt cordless hammerdrill is my pick. It's got impressive ergonomics, power, and performance, and it's reasonably priced.** By Erik Elwell, Tools of the Trade, Sept/Oct. 2002. http://www.dewalt.com/us/articles/product_review.asp?ID=1176
9. **DeWalt Adds Power and Torque, Improves Chuck and Ergonomics on New 3/8" Electric Drills.** Press release Nov. 2002. http://www.dewalt.com/us/articles/press_release.asp?ID=824
10. Lakeland Limited. <http://www.lakelandlimited.co.uk/product.aspx/solutions/gardenshedgarage!20577>
11. **Tools for handy women (and men).** <http://www.consumerreports.org/cro/home-garden/tools-power-equipment/tools-for-women-and-men-605/overview.htm>