How to Sharpen a Knife in one easy lesson with a minimal amount of pain, blood and cut fingers.

By

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Why sharpen a knife?

It is a simple question and yet quite a good one at the same time. Sharp knives have several factors in their favor over a dull knife. Firstly, a sharper knife is easier to work with. By using less physical force to do a cutting job, the chance of an accident is greatly lessened. Secondly, and perhaps on the more gruesome side, cuts to a human being done with a sharp knife heal faster, better and with less chance of scarification than with a dull knife. Bottom line, sharp knives cut, dull knives tear.

1) Edges and angles

Before you start grinding away with a hunk of rock on a knife you should have a basic understanding of how knife-edges are ground and why. There are several basic knife-edges defined by their geometry.

a) The Convex edge

Its outward roll of the metal characterizes the convex edge. It is most often used on objects like cleavers, axes or other chopping instruments. Its shape gives it an advantage in moving material away from the blade, thereby reducing the drag. The downside to this edge is that is almost impossible to maintain it at a razor like sharpness due to the amount of metal at the edge. Swords, for the most part, are made with this type of edge.

Convex Edge
b) The Concave Edge

This is the thinnest of all the edges. It is also known as a Hollow Ground Edge. Characterized by the extreme thinness of the edge it is one of the sharpest around. But, due to that thin edge it usually dulls quite quickly as there is not enough mass to support the edge and it folds over or blunts quite rapidly. By nature it has a higher drag factor on the blade, but that is compensated for with the extreme sharpness. Razor blades, scalpels and many kitchen knives have these edges. They are also one of the easiest to mass-produce with power grinders.

[Image: Concave (Or Hollow Ground) Edge]

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c) The Flat Grind

The flat grind is one of the most common edges found on knives that have been sharpened by hand without the use of a wheel. Characterized by its flat surfaces it is the easiest to do with the flat stone. It is a happy balance of sharpness and mass at the edge. This is the edge most commonly found on hand made knives that were not sharpened on a wheel and it is the edge made when sharpening a knife. Because of its shape it has a medium drag factor that is almost nullified by the sharpness of the blade.

[Image: The Flat Grind]
d) The Chisel Grind

This edge is not common on knives, but more commonly found on other tools. It has the natural advantage of directing all force to the cutting edge. Chisels, gouges and some knives have this edge. It has a low drag factor and a definite mechanical advantage when cutting. It also requires a special sharpening technique.

The Chisel Grind

Angles:

Sharpening it a simple balance of material versus angle of the edge. The rule of thumb is the steeper the angle, the sharper the blade, the sharper the blade, the thinner the edge and the thinner the edge, the faster it dulls. For you heavy in to geometry types here are a few examples:

Razorblades and scalpels =17 degrees
Skinning knives =20 degrees
General purpose =25 degrees
Heavy duty/Axes =30 degrees

Now there is some basis for argument as to where the angle is measures from. I'll impart my thought on this. The angle of grind is the measure from the face of the stone to the nearest flat edge of the knife. It looks something like this:
2) Basic Technique

There are, besides the needed sharpening surface, three things you need to have when you are learning to sharpen a knife. You need patience, time, and Band-aids. If you have the first two, you may not need the second. The actual process breaks down into several phases:

a) Access the knife: How dull is it? Does it need an entire new edge ground? Does it just need a touch up? This will determine how you proceed.

b) Sharpen: This is fairly simple to say, but takes time to master. The process of moving the blade along the stone at the correct angle is very strait forward. This is where patience and time come into play. Never be in a hurry or you will need the Band-aids, as you will most likely nick off the tip of a finger or thumb.

c) Check your work: Only remove enough metal to make it sharp. Stop and look for dull spots in the blade and concentrate on them. When in doubt, STOP!!!

d) Repeat: If you followed A, B and C you know if you need to go to A again or not.

Now I mentioned looking for dull spots. Dull spots fall into one of several areas. There is the flat edge, the burr, the nick and the blunt. A flat edge is just that, flat. Sharpen there to establish an edge. The burr is when there is a very thin edge of metal that keeps the knife from cutting. I will define more about the burr later. The nick is where a physical part of the edge is missing. Small nicks can be sharpened out; big ones need the attention of a knife maker. If you have a cheap knife odds are it will be more economical to replace it than to pay a knife maker to fix it. The blunt is where cutting the wrong materials dull the edge of the knife. For example, wire is right out. Did you cut through the sandwich and into the stone cutting board? These can usually be fixed with just a little work by hand.

I am going to tell you how to check if a knife is sharp. PAY CLOSE ATTENTION!!!!

**NEVER, EVER DRAW A FINGER OR THUMB ALONG THE BLADE!!!!!!**

I see people do this all the time and I’m always warning them about it. This will result in nasty cuts that do not like to heal and will be quite painful. I’ll say it again:

**NEVER, EVER DRAW A FINGER OR THUMB ALONG THE BLADE!!!!!!**

Sharpness can be determined in a number of methods. One of the simplest is the cutting of a sheet of paper. Does the knife need to be sawn through the paper? Does
the knife’s cut look ragged and frayed on the edges or is it clean? Does the paper make a nick in the knife? If it does, get a new knife and show me where you bought that paper!

A safer (note I said safer not safest) way of testing the edge is to draw it lightly across the thumbnail. Sharp areas feel smooth where dull areas will drag. This does take practice.

The safest way of testing an edge for sharpness is with a simple ballpoint pen with a plastic body. Grasp it like you were going to write with it and draw the edge across the body of the pen below and well clear of the fingers. Feel for when it slides smooth and when it drags. Remember you are not trying to cut the pen in half when you do this. All that is required is very light pressure.

3) Stones

There are multiple kinds of stone available for sharpening, but they fall into one of three classes. You have natural, man made, and high tech.

a) Natural stones:

Stones that occur naturally, duh! Now some different types of stones are better for sharpening than others. Most beneficial are sedimentary types of rock. Didn’t know this was going to a basic geology lesson as well did ya? Anyway, they are rocks formed by the long-term deposits in layers. Usually they are sediments, hence the classification name. Stones high in fine abrasives are good for edge dressing. Some of the quartz family (an exception to the sedimentary thing) is good for final dressing or edge polishing, but almost worthless to establish an edge.

b) Man made stones:

Okay women can make them as well, but I am not sure of what factory employs whom. Aluminum oxides and carborundium are common materials for stones. These are usually cast in a mold and then heated to bind them together. The have an advantage over natural stones as they are more consistent in grain size. Although they do loose out in the coolness area.

c) High Tech Stones

This is where you can lump together all the hybrid cubic zirconium and diamond-impregnated nickel steel sharpeners. Some of them are fantastic, but again loose out in the coolness factor. They do have the advantage of usually lasting longer then any other type of stone.
4) Improvised sharpeners

You’re at an event. You pull out your trusty “Pig Sticker 2000 Man Whacking Armor Piercing Feast Seeking Knife” (patent pending). You go to cut a hunk of string and then nothing. What has happened? Your knife is dull. Failure is not an option as the string is keeping you from your lunch, it’s late and you hungry with only 10 minutes before the class you wanted to take all year. ARRRRRGHGHGHIY!!!

Don’t panic. Stay calm and look around you. What do you see?

There are loads of things that make good emergency sharpeners. The unglazed bottom of a coffee cup or a plate works well. Terra cotta flowerpots do too. Something in the back of your mind reminds you there is a rock bed outside the entrance to the site. Sharpeners can be found everywhere, if you know what to look for. Be smart and think of what it is made of and make darned sure if you swipe a coffee cup to use that you ask, make sure it is empty, and return it full. Especially if it is my cup!!!

5) Strops

Did you ever see the Bugs Bunny cartoon where he was the barber of Seville or perhaps the 3 Stooges when they ran the barbershop? In both of these you can see them rubbing a straight razor back and forth on what look like a belt. That is a strop. The strop is any material soft enough to polish the knife. It is not used on the edge directly, but more to remove the burr from sharpening. When a blade is sharpened a very thin wire edge forms on the cutting edge. This is very blunt. The action of the strop is to bend the wire edge back and forth till it breaks away, leaving the sharpest edge possible. Some strops are oiled or even have polishing compounds on them to make that edge even sharper. When you use a strop remember to clean the blade afterwards. Polishing compounds taste very nasty, so speaks the “Voice of Experience”!

6) Problem edges and hopeless knives

There are times when you get a knife that will not hold an edge. Try as you might, it will be dull after the first use. Sometimes it is not the knife itself, but the person using it. What are they cutting? How do they use the knife? These factors can tell you a great deal about their knowledge or lack of it as far as a knife goes. Try to help them by teaching them about how to use their knife correctly. If you are sharpening it most likely you will have a captive audience while you work. Take into consideration the edge of the knife as you look at it. Was it sharpened like a scalpel only to be used as a machete? Was it sharpened at too shallow of an angle like an axe to then be used as a scalpel? Make sure the knife-edge matches what is expected of the knife. 20-25 degrees is a decent general-purpose knife for a camp. Resharpen it and try again.
Okay, you have tried changing the angle, teaching the knife user, and praying to whomever looks over the shoulder of blade sharpeners and still it is no good. There are a few knives that are hopeless. Due to bad construction, inferior materials or damage it will not take or hold an edge. Sometimes this news is as hard to take as being told you’re dead. Remember a burden shared is a burdened lessened. Go find another person who you know can sharpen a knife. Tell them you think it is a problem and you can’t keep an edge on it. Let them try. If it still won’t do it, you have the infamous second opinion. Talk with them out of earshot of the owner and the two of you break it to them. Offer condolences, chocolate, the name of a good knife maker, whatever you can to make it easier.

I know I seem to fuss about this but consider this: You take your car to the mechanic for the 3rd time and it still is not right. He tells you that you bought a junker. Not good, huh? Now change this scenario a little. You take your car to the mechanic for the 3rd time and it still is not right. He takes it to another mechanic at his cost and it still doesn’t run correctly. Then he breaks the news to you with his thoughts on what is wrong and gives you the name of a car dealer he trusts to try and replace it. He offers to check any potential new car you purchase for free before you spend any money. Who will you go to if that new car ever needs a tune up? Now do you understand?

Conclusion:

Well, by now you should have a bit of an understanding of the hows and whys of sharpening a knife. These techniques do also work on things other than knives like arrowheads, axes, swords, can openers, what have you. I have tried to write this to be able to be used when you’re not in the class, so keep it for a reference. If you can sharpen a knife now I task you with a simple quest: Teach someone else. There are too many people out there who do not know how or why to sharpen a knife. Let us go forth and show them to the light of keen edgy goodness.

I remain,

Eidiard