

# Small Craft Warning

## Craftwork without Pain



By Tamara Mitchell

Crafts are a source of fun and satisfaction for many people. For those who enjoy it, craftwork is usually a relaxing hobby. However, most craftwork is physically demanding on the hands, eyes, neck and shoulders, even though it's easy to think of it as sedentary and restful. Those who have done craftwork for a while will most likely confirm that pains and strains are common.

We wrote this article to help you find ways to do your crafts with less pain and strain so that you can continue to do them for the rest of your life!

There are activities we do that cause damage to our muscles, tendons and ligaments because they require awkward posture, repetitive motion and using some force without rest. In addition, there are environmental factors and health issues which can make matters worse. If you pay attention to, and try to minimize, these factors, you will be more comfortable and less likely to hurt yourself, and you are more likely to recover from Repetitive Strain Injuries (RSI)/Cumulative Trauma Disorders (CTD). Hopefully, these factors sound familiar because they are the same things that cause problems in the office.

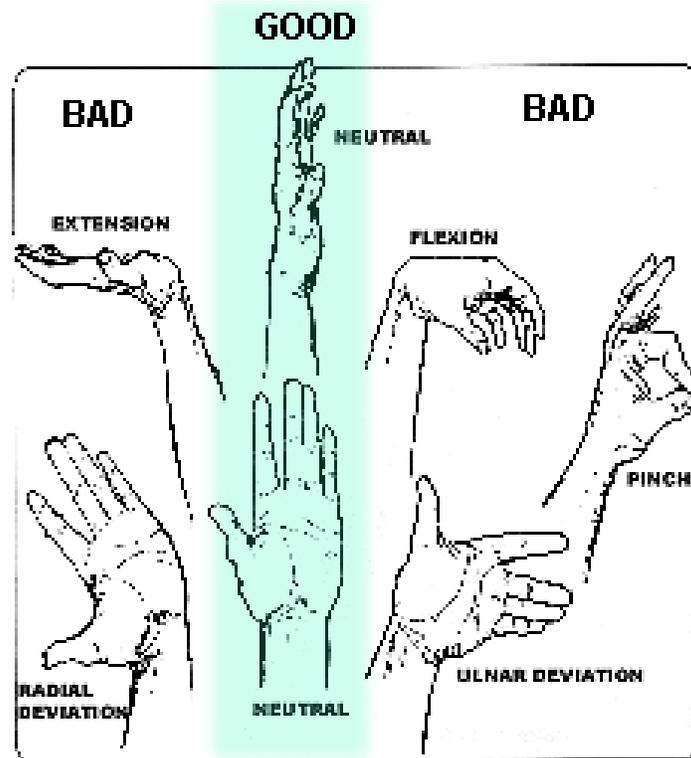
Please assess what physical issues you are having after doing your favorite craft and pinpoint the potential causes. Yes, you may have to take a couple of hours to revamp your setup, but afterward, you will never have to work in pain again. A lot of modifications are inexpensive to implement. Some may require a bit more investment in time or money, but if you really love your craft, take the plunge and it will give you so much more enjoyment while you are crafting!

For your convenience, we have included a summary table of points made in this article. Feel free to print this and keep it handy and make copies for friends.

### **Awkward positions and motions**

It is very common for people to get into some amazingly uncomfortable positions when they are engaged in an activity that absorbs their attention. At the end of an evening after working on a hobby, you may find that your muscles are tired and cramped, your neck is sore, and/or your hands tingle. To avoid serious, life-long pain, pay attention to your posture and your hand positions while performing your hobby. Is your wrist straight in all dimensions? For some activities, it's impossible not to bend the wrist occasionally, but your wrist should be straight most of the time.

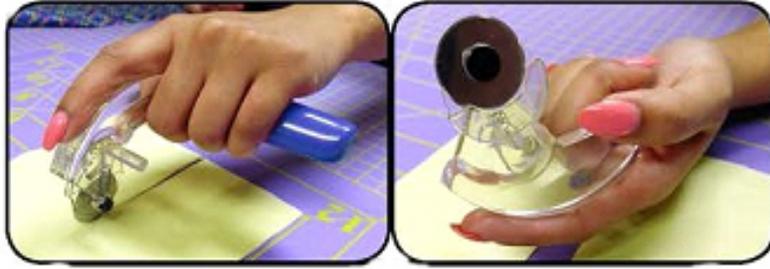
## Hand Positions



The neutral wrist is the position of greatest strength that reduces strain on the muscles and tendons in the wrist, hand, and arms. Working in a neutral position with smooth, efficient, natural motions is more efficient and less tiring.<sup>1</sup> It may not feel natural for a while because your “muscle memory” is not used to working in that way, but just as with sports, incorrect technique and bad posture will eventually result in injury.<sup>1</sup> Please refer to the Resources section at the end of this article for the book called *Comfortable Knitting*. It is a comprehensive guide on how to knit without injuring your hands, but it is also perfect for all crafters. It is expensive, but your local library might have a copy...or invest as a group with other crafters.

Choice of tools is an important factor in maintaining a neutral wrist position. There is no such thing as an “ergonomic” tool, although the advertisers want you to think there is! The only way to tell if a tool is correct for you is to try it. Test all tools for hand comfort, hand stress, and overall ease of use. Look for tools that are spring loaded, have padded grips, and fit your hand.<sup>2</sup> The rule “bend the tool, not your wrist” applies, so look for tools with bent handles that enable you to do the task with a straight wrist.

The Martelli rotary cutter is an example of a tool that is well-designed to keep the wrist straight, to distribute the downward pressure evenly across the palm of the hand, and to maintain a sharp cutting edge for a long time. It doesn’t just relieve awkward hand position, it also keeps the forces low through a very sharp blade that keeps its edge and allows the force of cutting to be downward and across more of the hand. Available in three different blade sizes and in left or right-handed models.



### **Martelli Ergo Rotary Cutter**

MartelliNotions.com

It is not just the hands and wrists that suffer from awkward positions! The rest of the body suffers as well. Poor posture can often be traced to other factors such as poor seating, improper work surface heights, inadequate lighting, and vision problems.

**Seating.** Many of you may be sitting in places that are not ideal while working on crafts that are portable, such as needlework. When you are working at home or have a choice in seating, choose a chair that has back and seat height adjustments, adequate back support and no armrests.<sup>2</sup> Armrests of all types tend to interfere with arm movement and can cause people to squeeze their shoulders up toward their neck. Shoulder and upper back muscle strain is a consequence.

Adjust the chair so that your feet are flat on the floor, your hips are slightly higher than your knees, and your back is upright with comfortable lower back support. Your arms should be relaxed at your sides, your elbows at approximately a 90 degree angle and your head aligned with your hips. If a work surface is too high and cannot be adjusted, you will need to raise the chair and use a footrest to support your feet in the elevated position. Your knees should only be slightly lower than your hips and never higher than them.

When you are doing any craft, make sure you are seated with the work centered.<sup>3</sup> For some reason, we often sit to one side which requires us to reach sideways or work in an asymmetric manner that puts strain on one side of the body.<sup>3</sup>

### **Work surfaces.**

Work surface height will vary depending on whether you are standing or sitting. The work surface should be approximately elbow height unless you are doing small detail work, like jewelry making or beading. In that case, the work surface should be 2" above your elbow height. Jeweler's benches are typically quite high (36" to 39") and the bench pin (work surface) is just slightly lower. In any event, you should not be hunching your back, slouching, hovering, etc.

Your back should be straight, your shoulders relaxed and down, and your ears aligned with your shoulders.

Please note that there is no standard correct standing or sitting height! Everything needs to be adjusted to your own body measurements. If there is more than one person doing crafts in a particular space, a height adjustable table may be the best solution to accommodate everyone. Or if you have just one work surface that must serve for both standing and sitting tasks, a motorized height adjustable work surface is probably a good investment. Please refer to our information on sit/stand workstation bases that can be retrofitted onto existing surfaces, with motorized and programmable height settings. <http://working-well.org/Website/pwksfc.html#SitStand>

One way to raise surfaces easily is to buy a set of bed risers at someplace such as Bed, Bath, & Beyond. They generally come in sets of 4 and are available in a variety of heights. Or, simple blocks made from chunks of wood will enable you to raise surfaces at any increment needed, mock it up, try it out, and adjust as needed.

When using a sewing machine, the feed dog should be about elbow height when you are seated with your feet flat on the ground and your knees bent at about a 90 degree angle.<sup>4,5</sup> If the sewing machine is too high your shoulders will be elevated while sewing.<sup>4</sup> Do not use a sewing machine sitting on the dining table. That is too high for anyone! Find a sewing table (many are available in thrift shops or on Craigslist) that will allow you to set the machine flush with the sewing surface. In some cases, especially with smaller machines, it isn't possible to see the needle when the machine is set so that the feed dog is elbow height because the body of the machine is in the way. It will be necessary to raise the machine just until you can sit upright and see the needle.<sup>3</sup> In any case, do not slouch to see your work!

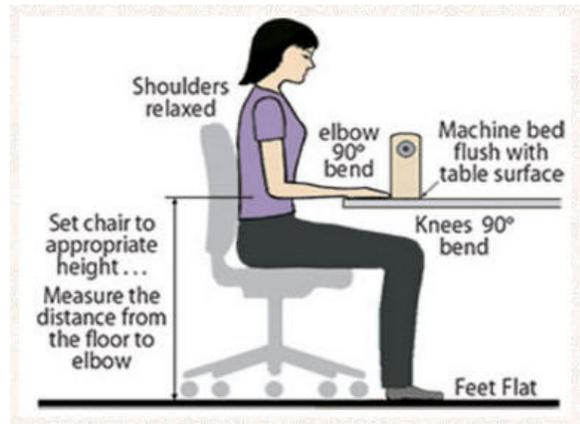


Illustration courtesy of Reference 6

A cutting table should be about 4 inches below your standing elbow height.<sup>4</sup> Again, the dining table is definitely the wrong height for working while standing or sitting.



Since an iron is heavy, the ironing board should be about 1 inch lower than your elbow height while standing.<sup>4</sup> Most ironing boards are much lower than that, so it will be necessary to create a safe platform to raise it up or perhaps remove the base, add 3" legs that will allow it to sit on the cutting table when in use.<sup>4</sup>



**Incorrect**

Illustrations courtesy of Reference 5

Sit in a posture that allows you to be upright, looking just slightly down at your work.<sup>2</sup> This may result in your arms bending at a greater angle than the ideal 90 degrees, but maintaining a natural curve in your spine and an upright head position is more critical to injury prevention.



Bad weaving posture, her shoulders are hunched, and her pelvis is tilted back

Good weaving posture; her shoulders are back and down, and her pelvis is in a neutral position

Illustration courtesy of Ref. 1

Be sure to take frequent breaks if you are working in a less than ideal posture. It is best to alternate between sitting and standing. Change your posture at least once an hour to reduce your risk of injury.<sup>7</sup> Perhaps plan to have two or more phases of a project moving forward at the same time so you can alternate tasks and change positions.

There is an ideal seat height and worksurface height, but it doesn't mean you have to sit like a rigid statue while you work. Many crafts can almost become a dance with the equipment, especially if you can work while standing.

The work surface should accommodate all of the tools and equipment you need within easy reach in a circle in front of you.<sup>2</sup> Support your work! Do not require your body to hold and support the materials you are working with.<sup>3</sup> Arrange items so that the tools used most frequently are the closest at hand. Avoid over reaching. Keep tools and equipment in rotating bins, shelves, compartments, and tool bars to allow a maximum number of things to fit in the small work space.



### ***Lighting.***

In most cases, it is preferable to use natural lighting when doing craft work. If light levels are low, supplemental lighting is necessary. Eye strain is very common among craft workers.<sup>2</sup> Ambient light should be fairly bright throughout the entire work space, with task lighting added to supplement and focus more intense light specifically on the work at hand. Make sure that you have plenty of light to clearly see what you are working on, but the light should not be too bright.

Areas of high contrast between light and dark cause significant eye strain. There are some videos listed in the Resources section at the end of this article that you can watch to learn how to improve lighting and how to use LED strip lighting in certain areas to illuminate hard-to-reach spots.



Illustration courtesy of Reference 5

To the left is an example of a workstation combining all the elements of proper posture, adequate seating, good lighting, and necessary magnification so that the woman can work comfortably in a neutral position.

Glare can be a problem, too, if you are working with shiny objects. Identify sources of glare and either shield your work from the source, move the lighting, or move your position. Looking directly toward a bright light source, such as facing a window, will cause eye strain. It's better to sit at a right angle to a bright light source, or you can dim the source, such as drawing the window blinds.

### ***Vision problems.***

If you have sufficient lighting and still have problems seeing your work, it's likely that you need to correct your vision. Doing very close craft work requires a different glasses prescription than reading or computer work. Get your eyes checked and make sure you wear glasses if you need them. In many cases, small craft work requires the use of additional magnification such as an OptiVisor or magnifying light. The OptiVisor can be ordered with a variety of different magnifications and interchangeable lenses.



**OptiVisor**

<http://www.doneganoptical.com/products/optivisor>



**V-Light Full Spectrum Magnifying light**

Amazon.com or <https://smile.amazon.com/>

### ***Temperature extremes.***

Working in cold environments is potentially harmful because it causes a reduction in circulation in your extremities (i.e., fingers and toes). With less circulation, your muscles are not being fed with oxygen as they are working, so they will tire more easily. Also, when you are cold, you tend to have more muscle tension in general. Wear adequate clothing, and when necessary, use a small space



heater to keep warm. Also, wear fingerless gloves if your hands are cold. You will not lose manual dexterity. In fact, your mobility will improve due to adequate circulation! The Handeze gloves pictured to the right are available at most drug stores or online. Please refer to our products webpage featuring gloves: <http://working-well.org/Website/pglove.html>

**Force.**

It may seem like a time-saver to cut six layers of fabric at once, but the additional stress it places on your hands is not worth it.<sup>2</sup> As mentioned before, the Martelli Ergo Rotary Cutter is extremely sharp with a very good design, so if you need to cut multiple layers of cloth, buy one of those and use it. Scissors cannot do the job. Use electric or power tools whenever possible for forceful activities to reduce your risk of CTD/RSI.

Gripping too hard is very common. Do not grip things any tighter than necessary to do the job, and relax your grip when it is not necessary to hold the tool.<sup>3</sup> For example, if you are hand stitching through something heavy like denim, sailcloth, or leather, relax your hands after the needle is through the fabric.

The pinch grip is the most stressful position for the hand. Find ways to accomplish a task in another way to avoid the pinch grip.

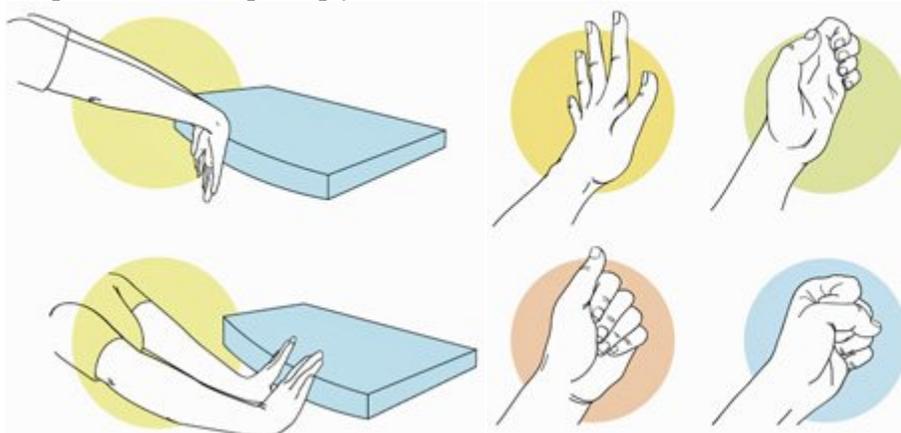
Spring-loaded snips and scissors with a cushioned palm grip can save a lot of stress on your hands and wrists.<sup>5</sup> Keep tools sharp and in good working order to avoid unnecessary force.<sup>5</sup>



Fiskars RazorEdge Easy Action 8" Fabric Shears  
Photo courtesy of JoAnn Fabrics, <http://www.joann.com/>

**Breaks and Recovery.**

It's important to allow your body to recover from any repetitive and/or forceful task. Microbreaks are suggested in office work and are a great way to prevent injury in craftwork as well. Every 20 minutes or so, put down your tools or work for a moment to stretch your shoulders, neck, arms, and hands. Focus your eyes on something distant and roll them around. Take a few deep breaths. Then pick up your work and continue.



**Wrist and forearm extensor/flexor stretches<sup>8</sup>**

It is best to get up and walk around every hour. Be aware of the passing of time and stretch at least once an hour. If you are using noisy or vibrating tools, the length of time between breaks must be even shorter.<sup>7</sup> No more than 1/2 hour is suggested for working with noisy and/or vibrating tools. Such tasks should be alternated for 1/2 hour with another task that doesn't involve noise and

vibration to allow the body to rest.<sup>7</sup> There are some excellent stretches on the our website and a page of stretches you can print to keep with you at: <http://working-well.org/Website/stretch.html>.

We guarantee you will still get your work done (and even faster!) because your muscles and tendons will not be fatigued.

### ***Repetitive motion.***

Repetitive motion in itself is rarely a problem, as long as the other three factors (i.e., awkward posture, force and environmental extremes) are not present at the same time. Repetitive motion done with the body in a neutral position, using no force, having sufficient lighting and comfortable temperature, being in good overall health and eating right, taking rest breaks, working a reasonable number of hours, and allowing days off for the body to heal will not usually cause problems. Crafts like knitting, crocheting, embroidery, weaving, leather punching, wood carving and hammering that are repetitive will not necessarily cause injury simply because they are repetitive.

One of the problems with many crafts is that they use the same muscles that are used during the work day. Your hands, wrists, and arms are making a lot of small motions using little muscles if you use a keyboard or pipette at work. These little muscles need time to recover from overuse. In addition, your neck and back muscles are being overloaded, which makes matters worse. If you go home and spend all evening knitting or scrap booking, you are increasing your risk for repetitive strain injury. Add to this working on a soft couch with poor back support, low light levels, and holding the needles in an awkward position more tightly than you should...you're probably going to have problems, especially when you're working hard to get a sweater done for someone's birthday!!

We are not recommending that you give up your craft. We are asking that you consider the ergonomic factors involved and that you include daily exercise that is a real contrast to your craft and work activities. This would be an activity that improves circulation and uses the large muscle groups in your body that are not as easily fatigued (e.g., walking). Avoid the sports that use the small muscles in the forearms (e.g., racquet sports).

As mentioned before, working on crafts that don't allow your muscles to recover from other similar work activities is not a good thing. Spending weekends or evenings on crafts that use the same hand, arm and neck muscles that you used all day does not allow your body to recover.

### ***Additional Factors***

Several other factors can influence the likelihood of experiencing discomfort while performing craftwork. In general, these are factors that affect overall health.

- Age-related factors such as arthritis and a decrease in visual acuity.
- Health problems that affect circulation, such as diabetes and thyroid conditions.
- Pregnancy increases the likelihood of "tunnel" syndromes due to retention of fluids and back problems due to shift in posture. Tunnel syndromes caused by edema during pregnancy often resolve themselves after delivery.
- Dehydration. Make sure you stay hydrated to keep body tissues healthy.
- Diet. Poor diet affects every aspect of your health, including neural functioning and circulation.
- Exercise. Adequate daily exercise is necessary to maintain proper blood circulation, muscle tone, and health of all body tissues.

## Helpful Videos

There are some excellent videos on YouTube that demonstrate some of these ergonomic principles and may help you apply them to your own studio or workshop.

- Sewing ergonomics. National Sewing Circle. <https://youtu.be/WeAbw5Bg338> (Please note they are not using a rotary cutter that reduces wrist strain.)
- Martelli Ergo Rotary Cutter. <https://youtu.be/QJRQGFYoO2Q>
- Woodshop workbench height: <https://youtu.be/JFVjTda6U0Q> and building platforms to adjust height for various tools: [https://youtu.be/q0v\\_DvNxR5I](https://youtu.be/q0v_DvNxR5I)
- Adding lighting with adhesive strip LED lights: <https://youtu.be/nOG0tR6uC4U>
- Craft lighting: <https://youtu.be/PB-ktYrvdso>
- Workshop lighting: <https://youtu.be/PB-ktYrvdso>

## RESOURCES:

### V-Light Full Spectrum Magnifying light

<https://smile.amazon.com/>

### Optivisor

<http://www.doneganoptical.com/products/optivisor>

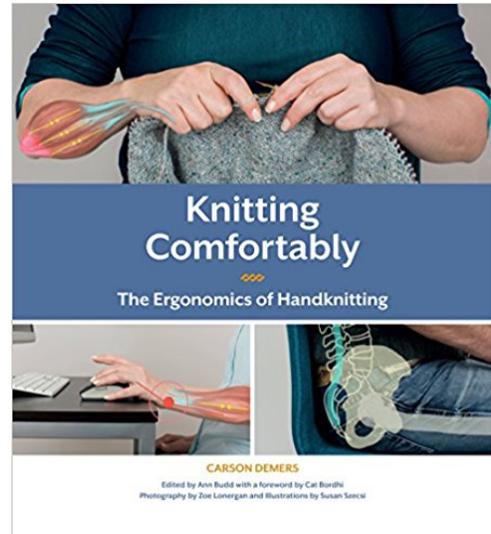
### Fiskars RazorEdge Easy Action 8" Fabric Shears.

\$20-\$40, JoAnn Fabrics. <http://www.joann.com/>

### *Knitting comfortably, the ergonomics of handknitting.*

By Carson Demers, knitter and physical therapist.

Hardcover, 2017. \$199.99.



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This article and all of our articles are intended for your information and education. We are not experts in the diagnosis and treatment of specific medical or mental problems. When dealing with a severe problem, please consult with a healthcare or mental health professional and research the alternatives available for your particular diagnosis prior to embarking on a treatment plan. You are ultimately responsible for your own health and treatment!

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## ERGONOMICS FOR CRAFTS

Problem	Solution
Poor posture Bad seating  Inadequate lighting  Vision problems  Poor work arrangement  Incorrect work surface heights	<ul style="list-style-type: none"> <li>• Improve seating: no arm supports, good lumbar support, feet flat on floor.</li> <li>• Use enough light to see your work, but not too much to cause high contrast with surrounding area.</li> <li>• Wear corrective lenses. Use magnifiers for small work.</li> <li>• Keep materials close at hand. Avoid over reaching. Organize according to usage frequency and effort to select.</li> <li>• IDEAL: Back straight, hips slightly higher than knees. Arms relaxed, elbows at a 90 degree angle, head aligned with hips or slightly lowered. Work surfaces should be adjusted to fit you. Standard heights are usually incorrect!!</li> </ul>
Environmental factors Inadequate lighting  Drafts and cold environments	<ul style="list-style-type: none"> <li>• Use enough light to see your work.</li> <li>• Move to another location, use a space heater, wear fingerless gloves.</li> </ul>
Bad habits Gripping too tightly	<ul style="list-style-type: none"> <li>• Relax your grip as much as possible. Put tools down to stretch forearms after forceful activity.</li> </ul>

<p>Non-neutral wrist position</p> <p>Head bent, craning neck</p> <p>No breaks, not stretching, no allowing time for recovery</p> <p>Sitting off-center</p>	<ul style="list-style-type: none"> <li>• Keep your wrist straight. Find tools (scissors, etc.) that are bent to allow a straight wrist. “Bend the tool, not the wrist!”</li> <li>• Make sure lighting is adequate and your vision is corrected properly. Move work closer to your face if possible.</li> <li>• Place instructions upright on a document holder. Keep parts and tools nearby to avoid reaching.</li> <li>• Take mini-breaks every 15 minutes and a full break every hour. Do recommended stretches. Allow body to rest after using muscles! Do not use the same muscles all day. Alternate tasks.</li> <li>• Center your work with your body.</li> </ul>
<p>Health issues</p> <p>Diabetes, pregnancy, aging, dehydration, poor diet, inadequate exercise.</p>	<ul style="list-style-type: none"> <li>• Stay hydrated.</li> <li>• Manage health issues.</li> <li>• Understand limitations; make allowances and adaptations for them.</li> </ul>