Can you dig it?

The Ergonomics of Gardening

By Tamara Mitchell

Gardening is fun, good for you, and you can do it for your entire life! Also, gardening and yard work can be a part of healthy, active living. Anyone who gardens will agree that it can be extremely hard work unless you limit yourself to a few potted plants on the deck. But maybe that is why so many people enjoy it. You get a good workout and you gain a beautiful garden in the process! People who grow their own fruits and veggies are more likely to eat lots of these healthful foods and they are more nutritious when picked fresh and eaten from your own garden.1

There are both traumatic and repetitive strain injuries (RSI) that can doom your gardening fun if you aren’t aware and careful. And, even though gardening is great exercise, it is best to get in good condition before gardening! It will reduce the chances of traumatic injury and repetitive strain injuries, and you’ll be able to garden longer without feeling exhausted afterwards. It really is pretty much like participating in a sport. You need the right equipment, the right form, you need to condition your body to prepare for hard work, and you need to take time to warm up before embarking on gardening activities to prevent strain injuries.2

Every gardener should read Barbara Pearlman's book, Gardener's Fitness: Weeding Out the Aches & Pains.3 It's a quick read and full of excellent advice on every aspect of gardening.

Heavy yard work like digging, lifting, and carrying loads improves endurance and strength, while other gardening activities can help increase and maintain flexibility. In general, gardening is considered a moderate-intensity physical activity and even just 2½ hours spent gardening each week can reduce the risk for obesity, high blood pressure, type 2 diabetes, osteoporosis, heart disease, stroke, depression, colon cancer, dementia, and premature death.4,5,6 Exposure to sunlight helps to boost levels of Vitamin D, which increases your calcium levels.5 And people who get involved in gardening activities have been found to exercise an average of 40-50 minutes longer than people who do other fitness activities like walking or biking.4 Even people with physical limitations or who are recovering from injury can participate in gardening activities that help improve range of motion, improve motor skills, increase self-esteem, and many other physical and mental benefits.6
Gardeners consume a greater variety of vegetables more frequently than non-gardeners. Involving children in gardening really helps them learn to love veggies and fruits. You can grow more healthful organic produce that is really fresh and full of nutrients, you can create habitats for pollinators, birds, and butterflies, and you can use your imagination to create an oasis in your own yard. Many edible plants are really gorgeous and can easily be integrated into the landscape. Rosalind Creasy is likely the originator of doing landscaping with edibles and helping people get out of the rut of confining plants to a restricted area of the yard as shown at left.

Gardening benefits the mind, too! Gardening is associated with mental clarity, feelings of accomplishment, and stress reduction. Nature is well known as a refuge for tranquility and healing. And greater exposure to sunlight reduces feelings of depression in people who suffer from Seasonal Affective Disorder (SAD). And it has been found that lower prevalence of Attention Deficit/Hyperactivity Disorder is associated with areas of the world and the U.S. that have higher solar intensity. Exposure to sunlight while gardening in any area may well be associated with better mental focus, less depression, and better sleep in children and adults. People who feel lonely can participate in community gardens where they work with other people to provide beauty to the community or help to raise fruits and vegetables. If you are a gardener, you’ll always find people excited to talk to you about gardening. Its pretty contagious!

**Traumatic Injuries**

Traumatic injuries occur much less frequently than RSI, but they are often more critical. Power lawnmowers are by far the most common source of traumatic injuries. While these tools can reduce the risk of RSI by eliminating tasks requiring repetitive motions, such as sawing and digging holes, they increase risk of potential tool misuse and carelessness. Thousands of injuries occur with all types of non-powered gardening equipment, but the number one culprit is lawnmowers as reported by the Consumer Product Safety Commission (CPSC) in 2012.

Obviously, things with sharp edges or pointed tips are a potential hazard, but so many other things can happen! Wheelbarrows and lawn carts can tip over, hoses and sprinklers can cause trip hazards, power tillers and trimming or pruning equipment including chainsaws can be very dangerous. Be extremely careful when using a ladder.

Keep equipment in good working order, follow manufacturer’s instructions, don’t remove safety guards, and wear safety glasses. Wear sturdy shoes, gloves, and long pants when using power
tools and equipment. Shoes should fit properly, give good foot support, and have thick soles. Walk around the area where you will be working and remove any objects (e.g., rocks, metal, glass, or wire) that could damage equipment or cause injuries if caught and thrown by equipment, such as lawnmowers. Keep children away from power equipment, unplug or disable power equipment when not in use and when making adjustments. Never fill gasoline tanks while equipment is operating or when equipment is still hot. Wipe up spills. Store gas in an approved container away from the house. Never smoke or use any type of flame around gasoline. Hire a professional to do a job that requires equipment you are not confident using. If you do decide to do the job yourself, know how to operate the equipment safely and correctly.

Gloves protect you from blisters, but also from fertilizers, chemicals, and bacteria and fungus in the soil. Many gloves protect the hands from thorns, cuts, scrapes, poison oak, and bites from critters that reside in the garden. Make sure you get gloves that fit your hand. Gloves that are too small restrict finger and hand movement, but gloves that are too big are awkward to use, can require more force to grip tools, and can create blisters. Knit gloves with rubber dipped fingers and palms can afford more dexterity. Baseball batting gloves are another alternative to help you protect your hands while affording greater dexterity than heavier gardening gloves.

One of the best brands of gloves available is West County Gardener. Their landscape gloves are made from recycled plastic bottles, they have Kevlar reinforced thumb and fingertips, padded palms and knuckles, and a terry sweat wipe on the back. The leather palms and fingers provide excellent protection, last a long time even when handling stone and pavers, yet they are breathable with a knit back so hands do not get hot. This brand is available from WestCountyGardener.com or Amazon.com.

Be aware of the danger of ticks especially when working around long grass and shrubs that are low to the ground. Sharpen tools carefully. Keep chemicals, tools, and equipment out of the reach of children.

When it is hot, drink more fluids, take breaks frequently, rest in the shade, and call it quits if you start feeling too hot, dizzy, have rapid pulse, or nausea. Avoid drinking alcoholic beverages or drinks with lots of sugar or caffeine (such as energy drinks). Do not operate power equipment or climb ladders if you are taking medications that cause you to be drowsy or have other side-effects that can affect your judgement or balance.

Sunburn is always a danger, so avoid working in the middle of the day when the sun’s rays are strongest. Sunblock is good, but wearing sunblocking clothing can be even better without the
risk of dangerous chemicals and the need to reapply every 2-3 hours.\textsuperscript{10} There are many brands of clothing that provide excellent sun protection. Shop around to find styles that work for you, but the fabric should be breathable and durable enough to withstand the rigors of outdoor work and the style should provide protection for as much skin as possible including the neck...or wear a hat that covers the neck area.

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   & L.L. Bean & Columbia  \\
   Women’s Vista Camp Pant & Men’s Trail Pants & PFG Tidal Deflector  \\
   & & Men’s and Women’s Shirts  \\
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Make sure your tetanus vaccination is up-to-date. A cut or puncture from rusty tool can be very dangerous and tetanus vaccinations should be given every 10 years to provide protection from lockjaw or death.\textsuperscript{9} A wound no larger than a pin prick (or sticker from a rose bush) can harbor enough of the tetanus bacteria to kill an unvaccinated human.\textsuperscript{11} It is one of the most deadly poisons known and a natural habitat of this bacteria is the soil.\textsuperscript{11} It isn’t the bacteria itself that is toxic; it is the toxin that the bacteria produces.\textsuperscript{11} The spores can remain dormant and result in infection many years later with a very grim prognosis.\textsuperscript{11} Prevention with a current tetanus shot is very important!

Be extremely cautious with chemical use. Read the labels and follow the instructions. Make sure all containers are labeled and kept in a safe place away from animals and children. When spraying toxic substances stand upwind of the spray and use a respirator with an appropriate filter (not just a dust mask). Better yet, avoid the use of toxic chemicals and start gardening organically!

Legionnaires’ disease can be contracted from breathing soil, potting soil, or compost containing the bacteria \textit{legionella longbeachae}.\textsuperscript{12} It is not very common, but inhaling the bacteria or getting the bacteria into the mouth from the hands by smoking, eating, drinking, or touching the face with dirty hands is highly associated with the disease.\textsuperscript{12} Working in an enclosed gardening space such as a greenhouse is also associated with contracting the disease.\textsuperscript{12} Wearing a face mask has not been shown to prevent the disease, but gardeners should avoid inhaling the air from bags of compost or soil amendments, and they should be wary of getting dirty hands near the mouth.\textsuperscript{12} Although it is important to stay hydrated while working, be careful not to contaminate the water or drinking surfaces with dirty hands or gloves. This is a potentially deadly infection.
with flu-like symptoms of fever, chills, cough, muscle aches, headaches, tiredness, loss of appetite, and/or occasionally diarrhea and vomiting.\textsuperscript{13}

\textbf{Repetitive Strain Injuries}

Data regarding the prevalence of RSI in gardeners is lacking, however it appears to be very common because many websites about gardening safety and orthopedics make a specific point of discussing RSI prevention. The Ontario Chiropractic Association in Toronto found that 88\% of Ontario chiropractors reported that gardening is the most common source of back and neck pain during the warm weather season.\textsuperscript{14} Farming and agriculture industry research can give us insights into many problems regarding injuries and prevention in manual workers. In developed countries, most farming activities have been mechanized, but in less developed countries hand tools are used almost exclusively.\textsuperscript{15} The tools used in these countries do not have the benefit of ergonomic design and the workers have no training in ergonomic principles and safety.\textsuperscript{15} It should be noted that the factors in less developed countries are different from the backyard gardener because productivity, as well as avoidance of injury and fatigue, is quite critical to individual farmers for their income. Cost of tools is a major consideration, and training and acceptance of new tool design requires effort as farmers are used to the traditional, old design of their tools.\textsuperscript{15} Tools designed in wealthy countries and in laboratories often do not take these things into consideration. While backyard gardeners in the U.S. may not have the same issues as farmers in developing countries, cost, acceptance of different tools, avoidance of injuries, and reduction in fatigue are important to everyone.

In one study, nursery workers in India were primarily involved in spading activities. They typically worked 9 hour days, six days per week, with just two breaks totaling 30-45 minutes off daily.\textsuperscript{16} It was determined that spading was the most strenuous activity as opposed to other work duties. The spade in India is more like a large hoe, as shown at right. Over 50\% of the workers reported low back pain, 36\% reported thigh pain, 33\% reported ankle pain, and 30\% reported neck pain.\textsuperscript{16} The posture of leaning forward and bending the knees repeatedly are the primary problem.

In another study in India, farm workers performing crop cutting and weeding activities in a squatting posture were found to have high discomfort from hand tool usage, primarily in the fingers, shoulders, and lower back.\textsuperscript{17} Age, male gender, and perceived work fatigue were all shown to be related to issues related to the neck, shoulders, upper back, and fingers.\textsuperscript{17} Workers were largely unaware of factors responsible for ergonomic risks and it was concluded that adding rest breaks and stretching exercises, improving the tools used in the squatting posture, and increasing training about safety and health among
workers would reduce the incidence of strain injuries among workers.\textsuperscript{17} This research can be related to backyard gardeners as well. Weeding and other activities carried out for prolonged periods with poorly designed tools, inadequate breaks and stretching can all contribute to RSI.

There are several large differences between weekend gardeners and the workers in these studies. Those of us who occasionally garden probably spend most of the week in sedentary jobs. Then we expect our bodies to perform the strenuous physical tasks associated with gardening one or two days a week. Secondly, we generally do not garden for eight or more hours per day or doing one single task like squatting and reaping with a sickle. We have the freedom to limit the time we spend at each gardening task (even though we tend to forget this fact!) and most of us poop out long before eight hours.

The wrong tools will stress your muscles, but probably 75\% of the pain we suffer is due to our habits and attitude. In gardening, we often face very large, physically demanding tasks and set impossible deadlines to tackle them. Gardeners plunge into these tasks with great enthusiasm and unconditioned bodies. The next day, they are exhausted and in pain. But this does not have to happen! The injuries sustained are dependent on the types of activities, the tools, the duration, and the postures used while doing the job.\textsuperscript{18}

**Hand Tool Design**

There are four basic factors that comprise ergonomic considerations in tool design, regardless of whether they are to be used in farming or gardening.\textsuperscript{15} How well a tool works to reduce strain is dependent upon how well it meets all of these criteria. When buying tools, it is important to consider all of these factors with regard to how well they fit your body or hand individually and how they will help you accomplish the intended tasks. A tool may be designed to do a job with great efficiency and power, but if it is too large and heavy for you, it will be very difficult to use and can cause injury.

<table>
<thead>
<tr>
<th>Human variables</th>
<th>Qualitative variables</th>
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<tr>
<td>Biomechanical stress</td>
<td>Comfort, discomfort, satisfaction</td>
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<td>Muscular load</td>
<td>Functional, fit, usability</td>
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<tr>
<td>Strain</td>
<td>Boredom, Fatigue, rest</td>
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<td>Effort</td>
<td>Vibration</td>
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<td>Activity</td>
<td>Noise</td>
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<td>Blisters</td>
<td>Efficiency, performance, productivity</td>
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<td>High force exertions</td>
<td>Incentive, income, maintenance, training, working hours</td>
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<td>Pressure points</td>
<td>Tactile feel, ease in use</td>
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<tr>
<td>Wrist movements</td>
<td>Appearance, color, excitement, emotional response</td>
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<td>Applied force</td>
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<td>Torque</td>
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<td>Pinch force</td>
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<td>Body dimensions</td>
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<td>Strength</td>
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Purchasing tools for any hobby is a challenge because there always seems to be another or better tool that is important to have. You can become bankrupt by buying tools! Follow these recommendations for buying and using gardening tools.

- **Use the correct tool for the job.** Don't use a trowel when you should be using a spade. Big jobs require that you use more of your body and your larger, stronger muscles. Don't be lazy; walk to the shed to get the right tool! And use tools rather than your hands.

- **Buy tools that fit you and your needs.** Know your body's weak points and focus on getting the best tools to save that body part first. As with office equipment, gardening tools sold as "ergonomic" are only good if they fit YOU. So before you buy, try out the tool in the store. Tools should be well-balanced and as light weight as possible.

- **Take care of your tools: keep them sharp and in good shape.** Sharp spades and trowels reduce the amount of effort needed to dig. Use a metal file or whetstone to sharpen the edges when they become dull. If they are really dull, use a grinding wheel. Clean and dry all tools after use. Plunge tools up and down in a bucket filled with builder's sand and motor oil to clean and oil them. Oil unfinished wood handles with linseed oil to keep them from splintering and sand and refinish them when they become rough.

Determine the correct grip size for handles. Make a circle with your fingers and thumb. Measure the inside diameter of the "O" formed by the thumb and index finger. This measurement indicates the optimum grip diameter of a hand tool (it is generally about 1.5"). If the grip is not the right size, customization of the tool may be necessary.
### Long-handled and short-handled tools
Tools such as hoes and rakes should have long enough handles so you can stand upright to use them.\(^2,13,19,20\)

Conversely, handles that are too long are cumbersome for a person who is shorter than average. Green Heron Tools has many tools that allow you to specify your height to buy an appropriate sized tool.

Green Heron Tools  
[https://www.greenherontools.com](https://www.greenherontools.com)

Walt Nicke's Garden Talk  
[www.gardentalk.com](http://www.gardentalk.com)

A.M. Leonard  
[www.amleo.com](http://www.amleo.com)

Lee Valley  
[www.leevalley.com](http://www.leevalley.com)

### Hand tools that fit
Use tools that allow your wrists to remain straight without twisting or bending. Repeated squeezing of hand tools like pruners can result in various different forms of tendonitis.\(^21\) Tools that are engineered to reduce force and have padded grips help take strain out of pruning. Hand-held tools should fit your hand comfortably. They should be easy to use, have wide handles, and a padded grip.\(^22\)

Some people have smaller hands than average or they are left-handed. Green Heron Tools has a selection of tools that are available in multiple sizes and some made for lefties with different sizes, too! They are well made, light weight, and not horribly expensive.

Green Heron Tools  
[https://www.greenherontools.com](https://www.greenherontools.com)
<table>
<thead>
<tr>
<th><strong>Fiskars PowerGear Loppers</strong></th>
<th><img src="https://example.com/image1.png" alt="Image" /></th>
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<tbody>
<tr>
<td>Lightweight and powerful. Using the power of gears, much greater leverage is provided over standard loppers. The model with 32” handles will cut branches up to 2” in diameter. The model with 25” handles will cut branches up to 1.5” in diameter. Available at most hardware stores, nurseries, and garden centers…or online.</td>
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<tr>
<th><strong>Easy to operate watering nozzles</strong></th>
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<tr>
<td>Look for watering nozzles that avoid continuous squeezing, especially ones that use just one finger. Pistol-grip style nozzles are good, especially if they lock into the “on” position to avoid continuous squeezing.</td>
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The wand watering nozzle shown at right by Gilmore allows for not only many different spray patterns, but has a swivel head allowing the user to change the angle depending upon whether it is watering plants on the ground, in hanging baskets, or anything in between.

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<th><strong>Weeders for neutral wrist position or standing</strong></th>
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<tr>
<td>There are LOTS of weeding tools on the market. Using toxic bee-killing chemicals is not a good solution. Whatever you choose, make sure that your wrist is straight. Choosing a tool for use while standing may not work for delicate spots, but it sure saves bending over for hours if the job allows. Shown at right are: the Hoe Dag, Ho-Mi digger (available with short handle or long handle for standing), and the loop hoe which is used while standing and slides below the surface to cut weeds off at the root. Finally, don’t overlook torching tools like the Weed Dragon. You can’t torch in places that would pose a fire danger or burn plants next to the weeds, but if you are eliminating weeds growing in patches of dirt, in sidewalk cracks, or in gravel paths or driveways, this can make quick work of them. It works by cooking the weed with the flame. You won’t incinerate the weed, but it will die after it is blasted with the flame.</td>
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Repetitive Strain Injury Prevention

The most important rule in repetitive strain injury (RSI) prevention is to **never work through pain**. If your shoulder aches even before you start your pruning job, you should either postpone the task until your shoulder is better or ask for help with overhead pruning. You will aggravate painful forearm and hand muscles if you choose to pull weeds, and you will hurt a sore back even more if you lift anything. RSI results from using the same muscles, tendons, or other body parts over and over. It all adds up! If you use one group of muscles at work, then use the same muscles when you are playing an instrument, and use them again when you are gardening, you are not giving your body any time to recover.

RSI is a serious disorder for which there is no cure. You will develop chronic pain if you push yourself beyond your limits. It is very discouraging to put off tasks that you planned, but it is even more frustrating when you cannot do anything because you are in too much pain due to injury. Therefore, listen to your body! Have a list of many different tasks around the garden that use different body parts, so when you feel muscle fatigue or strain, switch to another task that uses a different body part, or just call it quits for the day and enjoy sitting on your porch looking at all the work you’ve done!

Keep your body conditioned, practice healthy habits, and use the right tools so you can be a senior gardener! It's better to change your approach now and still be able to dig at 80, right?

**Conditioning**

Even if you are used to a regular program of exercise, gardening requires strength and flexibility. If you don’t train with gardening in mind, you will likely discover muscles you never knew you had! Just as with sports, it is helpful to condition your body for gardening rather than expecting
the gardening to be your total workout routine. You’ll be able to garden longer if you are conditioned.

Barbara Pearlman explains and diagrams numerous exercises you can perform on a regular basis to strengthen your body in preparation for gardening in her excellent book, Gardener's Fitness: Weeding Out the Aches & Pains.⁴

Please do not participate in any strengthening exercises if you already are experiencing pain from injury!

- **Back.** For low back strength and flexibility, work on strengthening core muscles, especially all of the abdominals. There are many excellent strength and stretching exercises to work on your abdominals, extensor muscles, hip flexors, and hamstrings.

- **Arms and shoulders.** Activities in the garden require lifting, reaching overhead, and digging with a trowel that can result in strain injuries if muscles are weak. To prevent this, strengthen them and increase your flexibility by working on your biceps, triceps, chest, shoulder, and forearm muscles.

- **Hands.** The hands are used extensively in gardening. Unfortunately, hand strengthening exercises to increase grip strength consist of gripping and squeezing. These exercises are not advisable for people who are experiencing any hand, wrist, or forearm pain. Therefore, do not do the recommended hand strengthening exercises in the Pearlman book if you have any hand, wrist or forearm pain. Focus on the stretches that will relax and lengthen these muscles and increase flexibility in these generally rigid body parts.

- **Leg and Knees.** There are several exercises in Barbara Pearlman’s book for before, during, and after gardening that will help you strengthen your quadriceps, release hamstring tension, and work on your calves and groin.³ Strong quadriceps are very important in squatting, lifting, and carrying activities. This video demonstrates an excellent exercise for strengthening your quads with Dr. Gail Dubinsky: [https://youtu.be/3xswAD_Yedk](https://youtu.be/3xswAD_Yedk).

**Pre-gardening warmups and during-gardening rest breaks.**

- **Warm-up and cool-down** is as important in gardening as it is for any sport. Before gardening, go for a brisk walk around the block to get your heart pumping and circulation going.

- **Dynamic warm-ups.** Current research has shown that stretching before athletic activities does not prevent injuries and can actually damage muscles if done quickly.²³,²⁴ We recommend that you include similar motions that you will be doing in your gardening activity during your warm-up. Start with small movements and gradually increase to full range of motion.

- To avoid fatigue, take breaks throughout the day as you are working.²⁵

- Change positions frequently to avoid stiffness and muscle cramping.

- **Wind down.** Just walking around to put your tools away is probably the best way to let your body cool down after a strenuous gardening session.
Proper Form
Unlike sports, nobody ever teaches you proper form in the garden. People just get out there and start digging without thinking much about the right or wrong way to dig. By learning a bit about body mechanics, you will not only save yourself pain and strain, but also your movements will be more economical, so you don't waste energy.

Bending and Lifting.³,⁴,¹⁸,²⁵
- When you lift heavy objects, squat with your feet shoulder-width apart and bend your knees. Use your powerful thigh and buttock muscles, not your back muscles. Tighten your stomach muscles before you lift.
- Keep the object close to your body and center of gravity. This will cause much less strain on your back and will allow you to keep your arms close to your body and comfortably bent.
- Stand upright when working at ground level or when using long-handled gardening tools such as hoes, spades and rakes.
- Garden in raised beds if possible. Move close to the object you are working on.

Carrying.³
- Use a cart or other device for carrying equipment and containers around the garden. (Shown at right: Suncast garden scooter, available from Suncast.com. $34.99).
- Use larger arm muscles rather than pinch-gripping heavy objects (like pots) with your hands. Hold them from underneath with your whole hand and keep the load close to your body.
- Use two hands for a balanced load, if possible. If not possible, trade between your arms so that you don't pull your body out of alignment, which stresses both the back and hips.
- Drop any load immediately if you find it's too heavy.
- Make more trips with lighter loads.
- Test the load before you carry it. If you need help, make sure you get it!
- Sometimes putting the load on a tarp and dragging it works if it is too heavy to lift and it doesn’t have to move far.
Reaching\textsuperscript{3}

- Work below shoulder level whenever possible to avoid strain on your back and shoulders. Use a ladder to bring yourself up to the level you are working.
- When you have to work above shoulder level, work for no more than five minutes. Holding your arms up and looking up creates tremendous strain on your neck.
- Take a break to stretch your neck and back muscles and perform another activity for a few minutes before returning to overhead work.

Pruning, picking, and shoveling\textsuperscript{1,3,22,25}

- Never over reach. Move to the job and keep moving to be close to your work.
- Avoid twisting the forearms back and forth repeatedly.
- When weeding, if the ground is hard and the weed is resistant, use a weeding tool. If it is a hand-held tool, look for one with a wide padded grip. The gripping and pulling motion involved in weeding can cause a tremendous amount of hand strain.
- Always face your work without twisting whether it is shoveling, hand digging, or weeding. Move your body to face what you are working on.
- Keep your wrists and forearms in a neutral position (i.e., handshake position). Avoid bending your wrists up, down and sideways. This is especially important when working against resistance.
- When shoveling, keep the shovel close to your body, knees slightly bent, and scoop with a forward motion. Don’t reach out too far and don’t twist your body. This video shows proper shoveling technique, though we would prefer that the wheelbarrow be closer to the person so throwing forward several feet is not required: https://youtu.be/8x7nXQhE2NA
- Hold objects with a light grasp for a short period of time. Avoid a tight, sustained gripping.
- Change hands and change the position of your hands to take the strain off. You really can weed with either hand!
- Don’t sit back on your knees. Bending your knees this far is hard on the knee joint.
- Use knee pads or a kneeling mat when kneeling.
- Use a short gardening stool or bench.
- Keep your back straight.
**Raking.**
Put one leg in front, the other behind and switch legs and hands every now and then. Use a tool with a long enough handle so you can stand up straight.

Other things to remember:\(^1,^3,^2,^5\)
- Schedule jobs when it's easier to do them. Moist earth is easier to dig than dry, compact earth or soggy, saturated earth. Do something else if conditions aren't right! Water a day in advance to have good soil conditions for digging.
- Work in the shade; don't force yourself to work in the sun on a hot day. As the sun moves, different areas will be in the shade, which make it a lot easier to work without the risk of fatigue and dehydration.
- Keep tools close at hand.
- Alternate tasks that require heavy or repetitive movement with tasks that are easier to do.

**Pacing and Scheduling Tasks**
When you first start gardening or at the beginning of the season, don’t overdo it.\(^1\) Start with 30 minutes to 1 hour of work at first.\(^1\) Using rechargeable tools is an easy way to limit yourself. You stop when the battery runs out of charge.\(^1\)

Choosing to distribute the tasks over time is also a good plan. When the tomatoes are suddenly all ripe, the basil has gone to bloom, and 1,000 bulbs just arrived in the mail, how are you going to get it all done? Each of these tasks will require hours of work...more time than you have this weekend. Panic sets in. You decide the bulbs can wait until next weekend and you'll can all of the tomatoes and make pesto from the basil. Then next weekend, you'll prepare the beds, dig the holes, and plant the bulbs.

But wait! Instead of looking at these activities as huge chores to get out of the way, why not do it the easy way? Get out in the morning and plant a few bulbs while the day is still cool, pick the ripest tomatoes, pull up two or three of the basil plants, and trim the blooms off the rest of the basil. In the afternoon when it is hot, you can work inside or in the shade cleaning, prepping, and canning. Break up your day and do a little of each thing. And the next three weekends, do a little bit of each again. Give some tomatoes and fresh basil to some friends rather than letting them rot or killing your hands peeling, chopping, and seeding.

Gardening should be a joy, not a chore. Your garden can be that special, wonderful place for recovering your bearings, not losing them. "Getting it done" should not be the objective because gardening is always a work in progress. If you feel rushed and anxious to get it all done, you will attempt to complete more than you can comfortably manage. You will miss the pleasures of the moment. You will also miss the signals your body is sending you or “power through” the pain (e.g., an ache in the elbow or strain in the back).\(^3\)
Tips for staying healthy and sane while gardening:¹,¹⁴,¹⁹

• Spread the work out over several days or weeks.
• Alternate tasks.
• Start slowly and take frequent breaks.
• Change position frequently.
• Don't work until you wilt.
• Stay hydrated. Drink more water than you think you need.
• Stand up and stretch frequently to relax muscles that can become tight. We highly recommend that you make time to do some stretches throughout your gardening time and afterward. These yoga poses can be done in the garden during a short break (with Dr. Gail Dubinsky):
  o This is a good demonstration of a stretch to open up your shoulders when you have been bending over working for a while: https://youtu.be/P8SF7XHO_Xc
  o Doing the sphinx cobra pose is a good way to reverse upper back tension: https://youtu.be/7M4vwdg9sD0
  o Yoga stretches for the hands, forearms, and neck are important when you’ve been using your hands a lot and holding your head forward: https://youtu.be/TR09-xorBKw
  o To stretch the lower back, this yoga stretch is great for releasing tension in that area: https://youtu.be/DOkluh4KE_k.

The entire video by Gail Dubinsky named “Yoga for Gardeners” is available as DVD or downloadable from: http://rxyoga.com

Smelling the Roses
Please, sit down and take time to enjoy your garden! Here are some steps Pearlman suggests to meditate in your garden and appreciate it in the present moment.³ Praise yourself for creating the beauty that surrounds you and be grateful for the nature in your life.

Bring your awareness to your senses one at a time.

• Look at all that surrounds you as if you were viewing your garden for the very first time. Stroll and take note of the colors, textures, and shapes.
• Smell all of the delicate florals, the pungent smell of pine or herbs, and the rich smell of the soil.
• Listen to all of the sounds as if you are hearing them for the first time: birds, rustling leaves in the trees, water trickling in a fountain or brook.
• Touch an occasional petal or leaf, feel the breeze and sun on your skin, and feel your muscles relax more and more.

**Treatment**

Did you overdo it? If you are simply tired, there is nothing better than a warm bath to relax tired muscles.³ Pearlman suggests taking a quick shower to get rid of most of the dirt, sweat, and grime, then drawing a bath to relax in. She has some great bathtub stretches to help your muscles relax as you soak out the fatigue of the day.³

It is amazing how a warm Epsom salt bath can relax muscles and reduce inflammation. This is because Epsom salt (hydrated magnesium sulfate) is rich in both magnesium and sulfate which is very easily absorbed through the skin, though not easily absorbed through the intestines.⁶ Americans tend to be very deficient in magnesium since a century ago due to many changes including how food is grown, the modern diet with lots of fat, sugar, salt, and protein, and the emphasis on taking calcium supplements which can deplete magnesium in the wrong balance.⁶ So, draw yourself a lovely warm bath, add 2 cups of Epsom salt and maybe a couple of drops of essential oil, and indulge your tired body! You don’t need to buy anything fancy; Epsom salts are extremely inexpensive and available at every drug store.

If you feel extremely fatigued and sore, rest is generally the best cure.²¹ If you are experiencing significant pain after a couple of days off, you may have actually caused injury and it is a good idea to seek professional help.²¹

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 your 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 health and treatment!

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