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Yoga for Strength

Increasing your strength is ageless.

—Wayne Diamond, physical therapist and yoga teacher

Six months before her sixty-fifth birthday, Ellen Pechman started experiencing intense lower back pain. She especially had difficulty moving from sitting to standing, climbing and descending the staircases in her house, and walking in her neighborhood. A visit to the doctor led to a diagnosis of "irreversible stenosis" coupled with osteoporosis in two hip points. This is when she turned to her yoga teachers. She had been taking a yoga class once a week for several years, but after her diagnosis she began to practice yoga seriously. Because she had mild scoliosis, she started by studying with a teacher who specialized in yoga for scoliosis, learning how to use yoga poses to counter the effects of her slight curve. Next she upped her yoga classes to three times a week. Then, when she relocated to the Bay Area in the summer of her seventieth birthday, yoga became her mainstay. After five plus years of regular yoga practice, she says she's stronger now than when she started practicing regularly:

> As I approached seventy-one, I began to realize that the practices I was using were actually making me stronger! It is very clear that I have a stronger core and more flexibility. Now, instead of avoiding movements, I take them on! If there is a staircase, rather than an elevator, I take it. I try to turn invitations to meet for coffee or a meal into a time to walk, especially to walk the hills.[1]

And so far, in the past year, even with some periods of fatigue and stress, she rarely misses more than a few days of fairly vigorous yoga. She says, "My greatest joy comes when I can hold the balance and standing poses, especially Ardha Chandrasana and Vasisthasana and various supported inversions—my favorite challenge moves!"[2]

Strength

Strength is the first of our four essential physical skills because we need muscle strength just to move through our daily lives—to get out of bed in the morning, stand up in the shower, get dressed, cook breakfast, and get in and out of the car. We need even more strength to stay physically active, whether that means hiking, cycling, playing sports, gardening, repairing the house, or playing with the grandkids, and for extended activity of any kind we need endurance as well as strength.

In addition, strong muscles help to protect your joints—your muscles take up some of the weight and pressure, so the joints are not doing all the work themselves. That's why, for example, if you have arthritis of the knees, working to maintain leg strength is so beneficial.

If we don't maintain our muscle strength as we age, muscular weakness can lead to an inability to live independently because even the simplest of daily activities, such as getting out of a chair or walking up or down the stairs, require strength. Muscular weakness can also compromise our ability to balance, increasing our risk of falling, which can cause broken bones or other serious injuries.

Then there are our bones. Although we tend to think of muscles alone as creating strength, our bones support our muscles and our muscles use our bones to move us through the world. So strong, healthy bones are an integral part of physical strength. In addition, it's important to keep bones strong so they don't break or fracture.

For healthy aging, muscle and bone strength are equally important! Before discussing how you can use yoga to foster their strength, let's have a look at how aging affects both.

Aging and Strength

Just as the natural aging process affects all organs, structures, and systems of your body, it also affects muscle and bone strength. Because both muscles and bones contribute to your overall strength, loss of strength in one is typically associated with loss in the other, so it's equally important

to actively maintain muscle and bone strength. Fortunately, using yoga to maintain your muscle strength will help with bone strength and vice versa.

Muscles. We have more than 640 muscles in our bodies and starting as early as our thirties, these muscles gradually lose strength. This natural aging process, called skeletal muscle atrophy, causes your muscle cells and fibers to become smaller and weaker, leading to a loss of muscle mass, quality, and strength. The rate at which we lose muscle strength varies from person to person and is influenced by behavioral, genetic, and environmental factors.

Behavioral factors. How physically active you are overall influences how quickly you will lose muscle strength. If you have a sedentary job or lifestyle and do not exercise, you're going to lose strength more quickly than if your job or lifestyle is physically demanding or you exercise regularly. Your eating habits also influence your strength, as poor nutrition can worsen muscle atrophy.

Genetic factors. Your body type can influence how weak you become with age. If you tended to have larger muscles as a young adult, you simply have more muscle mass to lose as you age before you become weak. On the other hand, if you're someone who tended not to bulk up easily, you may become weaker more quickly as you age. Although you cannot change your body type, if you have not already started to do so, you can begin building up your muscles now as a preventative measure. Yoga's strength-building poses and techniques provide an excellent way to do this.

In general, men lose muscle mass at a slightly faster rate than women until women reach menopause, when the more rapid loss of bone that women experience (see below) contributes to greater loss of muscle strength as well. So leading up to and during menopause, women should focus especially on maintaining muscle strength.

Illnesses and injuries. Muscle disuse can accelerate loss of muscle strength. This disuse can be the result of joint injuries, arthritis, stroke, illnesses (such as diabetes, cancer, and HIV/AIDS) that affect the nerves and the blood supply to muscles as well as having other negative effects, and medications that weaken or damage muscles. For those who are dealing with these conditions, you can slow down the loss of strength by starting to move again with yoga.

Sarcopenia. A low percentage of people—whether due to illness, long-time inactivity, or just very advanced age—lose so much muscle mass

that they reach an advanced stage of skeletal muscle atrophy called "sarcopenia." Sarcopenia is the disease stage of skeletal muscle atrophy, just as osteopenia and osteoporosis are two disease stages of age-related bone loss.

Naturally, this serious loss of muscle mass—which is accompanied by significant muscle weakness—is something you want to avoid if at all possible because serious muscle weakness is one of the main factors that can lead to loss of independence. Fortunately, gentle forms of yoga can help even very elderly and weak people regain strength.

Bones. We have 204 bones in our skeletons, and like our muscles, those bones undergo changes as we age, gradually becoming thinner and weaker. However, it is only when our bones reach a certain degree of thinness that we are at greater risk of a fracture from a fall or poor postural habits. The rate at which we lose bone strength varies from person to person and is also influenced by behavioral, genetic, and environmental factors.

Behavioral factors. The same behavioral factors that have a negative effect on muscle strength, such as a sedentary lifestyle and poor nutrition, contribute to bone loss as well. In addition, regular use of certain medications, including steroids in high doses, cancer drugs, and some heartburn medicines, can also contribute to bone loss.

Genetic factors. Your body type, race, ethnicity, and natural bone density can influence how weak your bones become with age. Some people just naturally have thinner and/or less dense bones, so they have less bone mass to lose before bones become weak and brittle. For women, hormonal changes during menopause or due to other reasons accelerate the rate of bone loss, which is why more women develop osteoporosis in their fifties. Although you cannot change your genes or gender, if you have not already started to do so, you can begin strengthening your bones now as a preventative measure.

Osteoporosis. While everyone's bones thin somewhat as they age, for some people, due to advanced age, illness, medications, or menopause for women, bone loss can reach a critical point, which is called "osteoporosis." At this stage, the bones are more vulnerable to fractures and are also slower to heal. (Osteopenia is the stage of bone loss just before full osteoporosis, when you are already starting to be at risk for fractures from falls but not to the same degree as osteoporosis.)

Both body type and gender influence how weak bones become with age. People with smaller bones are at greater risk of developing osteoporosis than those with larger bones. And women in general are at greater risk than men. However, for both men and women, developing osteoporosis is common, so it's wise for everyone to take precautions.

For those with osteoporosis, the bones of the thoracic spine (your midspine) are at the greatest risk for fracture, followed by the wrist bones and the thighbones at the hip joints. These fractures can lead to chronic pain, physical disability, and, particularly with hip fractures, premature death. Because yoga is weight bearing, it could reverse bone loss, and practicing yoga balance poses is very helpful for preventing falls, which are actually more responsible for causing fractures than osteoporosis.

How Yoga Helps

Because a balanced asana practice includes standing poses, backbends, forward bends, twists, and inverted poses, a regular practice that includes a wide range of poses will build strength in both muscles and bones throughout your entire body.

Muscle Strength and Endurance

To do any active yoga pose, you contract certain muscles to enter in and out of the pose as well as to hold it. Although this muscle contraction does not result in bulky muscles, it very effectively lengthens, tones, and strengthens your muscles. Improving your muscle strength with yoga not only allows you to hold your static poses longer, it also provides the strength you need for your everyday activities and other types of exercise. The sheer variety of poses ensures that you can strengthen all the important muscles in your body, and practicing for longer sessions helps increase endurance as well as strength.

Bone Strength

In your yoga asana practice, you take many weight-bearing positions on your feet, as well as on other parts of your body, such as your hands, sitting bones, and shins. All of these weight-bearing poses load your bones, which naturally builds bone strength. In addition, the muscle contractions you use to stay in a pose stimulate your bones to strengthen themselves more vigorously than weight bearing alone, and the great variety of poses means that you will be strengthening *all* of your bones.

Static and Dynamic Poses

Holding a static pose strengthens your muscles through isometric muscle contraction, and you can add in conscious muscle activation as described under "Muscle Activation" (see page 36) to enhance this. If you gradually increase how long you hold a pose over time, you will improve endurance as well as strength. Eventually you can hold poses for one or two minutes or even longer. If you are practicing for bone strength, we recommend holding a yoga pose for thirty seconds or more, as Dr. Loren Fishman's ten-year study on yoga for osteoporosis showed that this length of time can be effective for building bone strength.

Moving in and out of a dynamic pose strengthens you in a different way than staying in the full pose. As your muscles move you into and out of the pose, they are being strengthened through resistance training rather than isometric muscle contraction. In addition, they are being strengthened throughout a greater range of motion (in every step along the way into and out of the pose) rather than just in the shape of the full pose. So if you do a set of dynamic pose repetitions, you're working your muscles very differently than if you just hold the pose for the same length of time.

Although we don't know of any studies on dynamic poses and bone strength, we do know that normal movement, such as walking and running, strengthens bones. So it's likely that practicing a pose dynamically in sets of repetitions is going to strengthen bones as well as muscles.

You can see there are different benefits to each way of practicing. So generally it looks like doing some of both is the way to go, if you're up for it! You can either mix static and dynamic poses within a single practice or alternate them on different days.

Using Yoga for Strength

All poses, except restorative poses, are weight bearing (even if you're bearing weight on some body part other than your feet), and all active poses require muscle contraction in some form, so any active yoga pose will strengthen both your bones and muscles. A well-rounded active yoga practice that includes a good mix of standing poses, backbends, twists, and forward bends will provide all-around muscle- and bone-strength building. But if you'd like to focus on strengthening a particular area, for example, if you have knee arthritis and want to work on leg strength, you can choose the corresponding categories shown in the table below to emphasize in your practice.

Leg and hip strength	Any poses where you stand on one or both legs, especially with one or both knees bent (e.g., Powerful Pose) or where you lift your leg or legs away from the ground (e.g., Locust Pose or Boat Pose), strengthen the legs and hips.
Arm and shoulder strength	Any pose where you bear weight on your hands (e.g., Downward-Facing Dog Pose) or forearms or where you lift your arms away from the floor, either out to the sides (Warrior 2 Pose), overhead (Warrior 1 Pose), or forward or behind your back (Locust Pose) will strengthen your arms and shoulders. To strengthen your wrists with yoga, you need to bear weight on your hands.
Core strength	Any poses where you lift your leg or legs away from the floor (e.g., Hunting Dog Pose, Locust Pose, and Boat Pose), tip your torso to the side (e.g., Triangle Pose), lift your hips away from the floor (e.g., Plank Pose, Side Plank Pose, or Upward Plank Pose), or activate your core muscles (e.g., Boat Pose, Hunting Dog Pose, and Plank Pose) strengthen your core.
Back and spinal strength	Standing and seated twists help strengthen spinal bones and the muscles of your back that support your spine. Standing, prone, and supine backbends strengthen overall back muscles.

Techniques for Building Muscle and Bone Strength

How Long to Hold the Poses. For muscle strength in static poses, you can work on either strength or endurance. To work on muscle strength alone, hold the pose for at least thirty seconds if possible and consider repeating the pose several times. To work on endurance, hold the pose as long as you safely can, gradually working up to longer holds of one to two minutes. For bone strength in static poses, we recommend holding the pose for thirty seconds or more.

If you're too weak or fatigued to stay in a pose for the recommended time, hold the pose for as long as you safely can and then come out. Gradually over the next several weeks, work your way up to longer and longer holds.

For muscle or bone strength in dynamic poses, move in and out of the pose with your breath for six or more repetitions.

How Often to Do the Poses. When you are working on strength building, the muscles you're strengthening need a day of rest between exercise sessions. So generally you shouldn't exercise the same muscle group on consecutive days. However, you can do strength-building yoga poses every day if you focus on different areas of your body each day, for example, alternating between upper body, lower body, and core strength. Or, you can alternate strength-building practice days with gentle stretching, restorative yoga, or breath-work sessions and/or meditation. If you are practicing for bone strength, follow the same recommendations.

Balanced Practice. To balance your strength building, make sure your practice includes poses of all of the basic types—standing poses, backbends, forward bends, and twists—as long as these are safe for you. Of course you don't need to do all these basic types within a single practice; just try to get to them sometime each week. Also, try to include poses where you bear weight on your hands as well as on your sitting bones, shins, and so on, such as Downward-Facing Dog Pose, Side Plank Pose, Hunting Dog Pose, and Boat Pose.

Stretching. Because your body's response to stretching and strengthening is similar in promoting muscle growth, poses that you might think of as "just stretching" also enhance strength. So when you practice for flexibility (see chapter 4), you'll be increasing strength. You can also enhance your strength building in a stretch (and improve the stretch) by adding in muscle activation.

Muscle Activation. Although a weight-bearing pose on its own will strengthen the bones that are bearing your weight, the bone strengthening effect is enhanced by consciously contracting the muscles holding you up. Do this by gently firming your muscles toward the bones rather than contracting them so strongly that they bulge away from the bones. For example, if you're standing in Tree Pose, firming your leg muscles will enhance bone building in the standing leg.

You can strengthen more than just the obviously active muscles by consciously contracting other muscles as you work in the pose. For example, in Downward-Facing Dog Pose, firm all your arm and shoulder muscles toward the bones. When you want to strengthen your hip area, in a standing pose, for example, you can slowly engage the muscles all around your hip joints, as long as this action does not pull you out of good alignment.

The reason we're always encouraging you to contract your muscles gently by firming them toward the bone is because strongly contracting a

muscle noticeably shortens the muscle, which seems to prevent you from moving as freely in the pose. On the other hand, gently firming a muscle toward the bone provides muscular support without interfering with movement. If you're not used to working this way, it may take some practice. Take it in two steps:

1. Consciously relax the muscle, allowing it to lengthen.
2. Gently firm the muscle toward the bone.

UPPER BODY STRENGTH PRACTICE

This sequence is designed to strengthen all of the muscles in your upper body, including the upper spine, shoulders, neck, and arms, by combining static and dynamic strength-building poses.

As you practice, focus on inviting a sense of strength and vitality into the muscles you feel working. To enhance the strength-building effects of the static poses, including Lunge Pose, Extended Side Angle Pose, and Warrior 2 Pose, try intentionally contracting your arm and shoulder muscles as you hold the pose. Between poses, if you notice your wrists are sore, shake out your hands and wrists for a few seconds. For information on practicing breath awareness, see "How to Practice Breath Awareness" in chapter 9.

1. Hunting Dog Pose, version 3, 30–60 seconds each side

2. Lunge Pose, version 2 or 4, 30–60 seconds each side

3. Downward-Facing Dog Pose, any version, 1–2 minutes

4. Plank Pose, version 1, 3, or 4, 30 seconds, 2 times

5. Downward-Facing Dog Pose, version 4, 30 seconds

6. Plank Pose, version 2, 30 seconds

7. Warrior 2 Pose, version 1 or 3, 30–60 seconds each side

8. Extended Side Angle Pose, any version, 1–2 minutes each side

9. Powerful Pose, version 2, 30–60 seconds

10. Warrior 1 Pose, version 1 or 2, 1–2 minutes each side

11. Upward-Facing Dog Pose, version 1, 2, or 3, 30 seconds

12. Side Plank Pose, any version, 30–60 seconds each side

13. Lunge Pose, version 4, 1 minute each side

14. Upward Plank Pose, any version, 30–60 seconds

15. Easy Sitting Twist, any version, 30–60 seconds each side

16. Easy Sitting Pose, version 1, 2, or 3, 2–4 minutes, with breath awareness

17. Relaxation Pose, version 2, 5–10 minutes

LOWER BODY STRENGTH PRACTICE

This sequence is designed to strengthen all of the muscles in your lower body, including your leg, hip, and lower back muscles, by combining static stretching poses with dynamic poses.

As you practice, focus on inviting a sense of strength and vitality into the areas where you feel your muscles working. To enhance the strength-building effects of the static poses, try intentionally contracting your leg and hip muscles as you hold the pose. In Lunge Pose, try keeping your fingertips only lightly on the ground or a block to encourage your legs and hip muscles to work harder.

For photos that illustrate the individual movements in the dynamic poses, see the "Dynamic Poses and Flow Sequences" section on page 282.

1. Mountain Pose, version 2, 1–2 minutes

2. Dynamic Powerful Pose, 6 times

3. Powerful Pose, version 2, 30–60 seconds

4. Lunge Pose, version 1, 2, or 3, 30–60 seconds each side

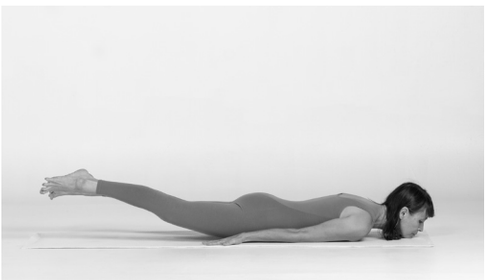
5. Triangle Pose, any version, 1–2 minutes each side

6. Standing Forward Bend, version 3, 1 minute

7. Warrior 3 Pose, version 2, 30–60 seconds each side

8. Boat Pose, any version, 30–60 seconds

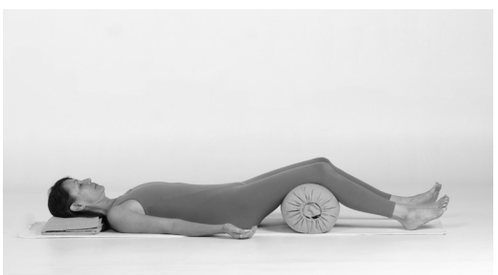
9. Dynamic Locust Pose, 6 times



10. Locust Pose, version 4, up to 30 seconds

11. Bridge Pose, version 1, 30–90 seconds

12. Legs Up the Wall Pose, version 4, 3–5 minutes



13. Relaxation Pose, version 3, 5–10 minutes

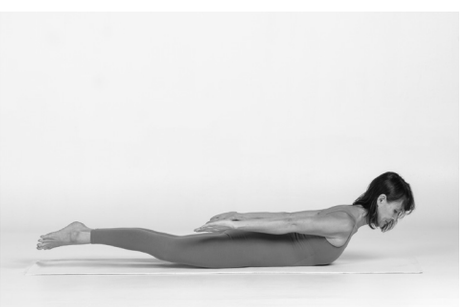
CORE STRENGTH PRACTICE

This sequence is designed to strengthen all of your core muscles, including your abdominal, lower back, and pelvic-floor muscles and your diaphragm. Dynamic Reclined Twist, Plank Pose, Boat Pose, Hunting Dog Pose, Extended Side Angle Pose, and Triangle Pose will strengthen your abdominal muscles. Cobra Pose, Dynamic Locust Pose, and Hunting Dog Pose will strengthen your lower back muscles. Plank Pose, Hunting Dog Pose, and Boat Pose will strengthen your pelvic-floor muscles and diaphragm. The sequence winds down with supported Reclined Cobbler's Pose to allow all your core muscles to relax.

As you practice the poses, focus on creating a sense of strength and stability throughout your entire core and maintain a steady breath. In Dynamic Reclined Twist, to increase the work of your abdominal muscles, try lightly resting your legs on the floor just for a moment before coming back up. For Triangle Pose and Extended Side Angle Pose, to provide more strengthening for your side abdominal muscles, try resting only your bottom hand lightly on the floor or a block.

For photos that illustrate the individual movements in the dynamic poses, see the "Dynamic Poses and Flow Sequences" section on page 282.

1. Dynamic Reclined Twist, 6 times



2. Dynamic Locust Pose, 6 times

3. Hunting Dog Pose, version 1, 30–90 seconds each side

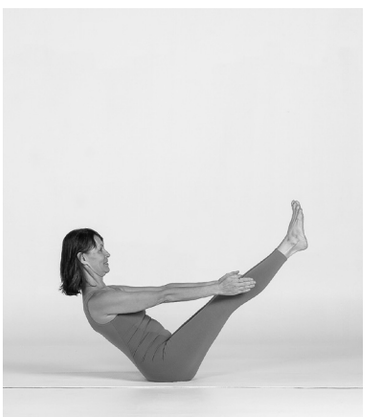
4. Plank Pose, version 2, 30–60 seconds

5. Cobra Pose, any version, 30–60 seconds

6. Triangle Pose, version 1, 2 or 3, 30 seconds each side

7. Half Downward-Facing Dog Pose, any version, 1 minute

8. Extended Side Angle Pose, version 1, 2, or 3, 30 seconds each side



9. Boat Pose, any version, 30–60 seconds, 2 times

10. Sage's Twist 3, any version, 1 minute each side

11. Reclined Cobbler's Pose, version 2 or 3, 5 minutes

BONE STRENGTH PRACTICE

This well-rounded sequence is designed to help you build bone strength in your most vulnerable bones. The practice includes weight-bearing poses on both your hands and feet, which build strength in your hips and wrists, and backbends, which target the bones of your spine.

To maximize bone building, hold the poses for the specified times if it's possible for you. In every pose, focus on intentionally activating as many muscles as you can. For example, in Warrior 1 Pose, intentionally firm the muscles all around your shoulder joints and the knee of your back leg. Because the first four poses require weight bearing on your hands and wrists, feel free to rest at any point between the poses to shake out your hands and wrists.

1. Dynamic Cat-Cow Pose, 6 times

2. Hunting Dog Pose, version 1, 30–60 seconds each side

3. Downward-Facing Dog Pose, any version, 30–60 seconds

4. Plank Pose, any version, 30–60 seconds

5. Mountain Pose, version 1, 1 minute

6. Warrior 1 Pose, any version, 30–60 seconds each side

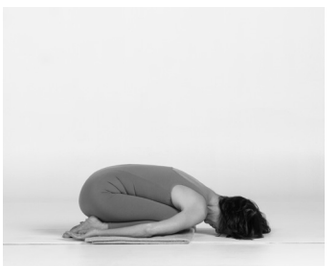
7. Extended Side Angle Pose, any version, 30–60 seconds each side

8. Powerful Pose, any version, 30–60 seconds

9. Warrior 3 Pose, any version, 20–30 seconds each side

10. Downward-Facing Dog Pose, version 4, 30 seconds

11. Plank Pose, version 4, 30 seconds



12. Child's Pose, any version, 1 minute

13. Locust Pose, any version, 30 seconds, 2 times

14. Sage's Twist 3, any version, 30-60 seconds each side

15. Bridge Pose, version 1, 30 seconds, 2 times

16. Relaxation Pose, any version, 5 minutes