

Back and Neck Care Guide

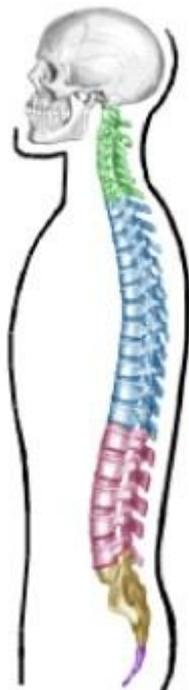
"My back hurts" is a common complaint for people of all ages. At least 45% of college students report feeling back pain at some point in their lives¹. Back pain is the fifth most common health problem for which people visit the doctor². Your lifestyle may play a big part in the care or abuse of your back or neck. Pain may be due to lifting a heavy object incorrectly, over-exercising, sitting for long periods of time, or carrying a heavy backpack on one shoulder.

This guide will help you understand more about your neck, back and spine. It is recommended that you read the entire guide to maximize your knowledge and understanding of factors that can influence and prevent problems and injuries of your back.

ANATOMY OF THE SPINE

The spinal column is made up of 33 bones, or vertebrae, held together by tough bands of tissue called ligaments. Small cartilage discs help absorb shock and minimize friction between the vertebrae. The spinal column protects the spinal cord as it extends from the brain and branches into nerves connecting to various parts of the body. The nerves pass through openings between the vertebrae.

There are five sections of the spine



1. **Cervical** (C-1 to C-7) - Seven vertebrae in the neck support and move the head.

2. **Thoracic** (T-1 to T-12) - Twelve vertebrae in the chest/upper back area support the shoulders and upper body.

3. **Lumbar** (L-1 to L-5) - Five vertebrae in the low back support most of the body weight so they are the largest and strongest of all vertebrae.

4. **Sacrum** - Triangular structure of the five attached vertebrae. They form the base of the vertebral column.

5. **Coccyx** (tailbone) - Four attached vertebrae.

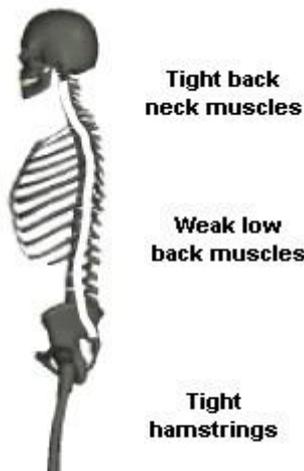
FACTS ABOUT BACK PAIN

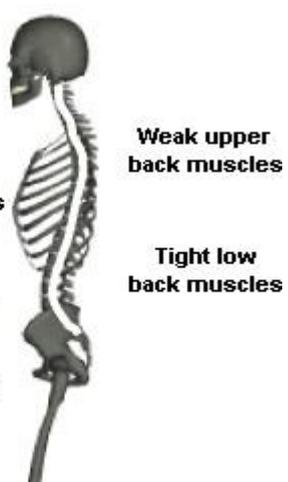
Most low back pain is not caused by accident or injury.

It is estimated that in 97% of low back pain, the source of pain is unknown³. However, it's believed that back problems often result from an imbalance between tissues (muscles, ligaments and tendons) surrounding the spine or incorrect spine alignment (posture). In ideal posture, the spinal column should form a gentle, sloping "s"-shape. When the spine's natural

curves are too extreme or flattened for a long period of time, muscles, tendons and ligaments are forced to adapt by tightening or weakening.

	<p>Ideal Posture Gentle, sloping "s"-shaped curve</p>
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	<p>Flat Low Back Curve - Increased Neck Curve</p> <p>Recommended Exercises for Flat Back Hamstring Stretch Abdominal Stretch Superman</p> <p>Recommended Exercises for Neck Arm Pit Stretch Head Tilt Stretch Chin Tucks</p>
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	<p>Increased Low Back Curve Increased Upper Back Curve</p> <p>Recommended Exercises Cat or Knee-to-Chest Stretch Kneeling Stretch Quadriceps Stretch Crossover Stretch Figure Four Stretch Abdominal Block or Dead Bug</p> <p>Recommended Exercises for Upper Back Corner Stretch Overhead Stretch Priming the Pump Stretch Shoulder Blade Squeeze</p>
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Even if your posture looks fine, studies have shown that exercise is one of the few factors that can actually prevent back pain. In addition, strengthening and stretching muscles is a vital part of caring neck, back and spine conditions. So consider trying the following exercises. If you have any of the conditions discussed on page 11, consult with a medical provider before starting a back exercise program.

STRETCHING EXERCISES

Stretching exercises help loosen tight muscles.

Technique:	Stretch immediately after a game or workout. Stretch gently and hold for 20 seconds without bouncing (unless otherwise indicated).
Frequency:	Do 6-8 repetitions/stretch (unless otherwise indicated). Stretch at least five days a week.
Precaution:	Discontinue an exercise if it is painful, even with a gentle stretch.

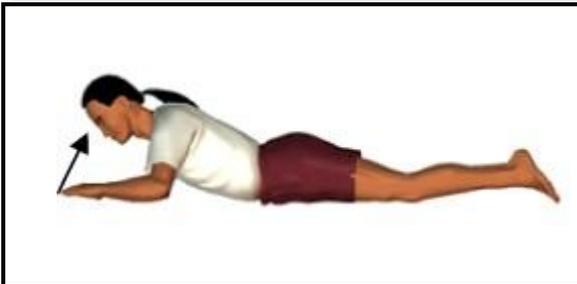
Low Back

	<p>Cat (mid back and low back)</p> <ul style="list-style-type: none"> • Kneel on hands and knees. • Slowly arch back up toward ceiling. • Hold when you feel a stretch in mid and lower back.
	<p>Knee-to-Chest</p> <ul style="list-style-type: none"> • Lie on your back with your knees bent and feet resting on the floor. • With your hands, pull one knee to your chest, then the other knee until you feel a gentle stretch in the low back. • Hold both knees for 20 counts, and then put one leg down at a time.
	<p>Trunk Rotation</p> <ul style="list-style-type: none"> • Lie on your back with knees bent and feet on floor. • Slowly lower knees to one side until you feel a stretch on that side, then hold. • Repeat on the opposite side.



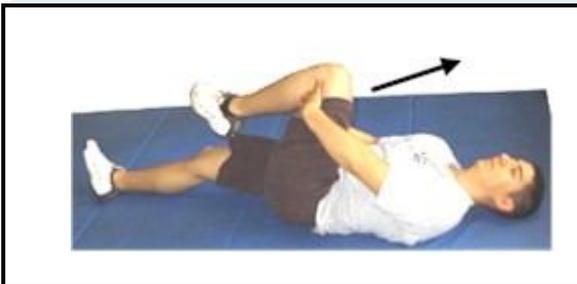
Side Bend

- Sit or stand with your back straight.
- Raise your arm and slowly bend your body over to the opposite side until you feel a stretch.



Abdominal

- Lie on your stomach.
- Slowly straighten your elbows pushing your upper body off the floor until you feel a stretch along your stomach.



Glut

- Lie on your back with your legs straight.
- Pull one knee toward the opposite shoulder until you feel a stretch along your outer hip.

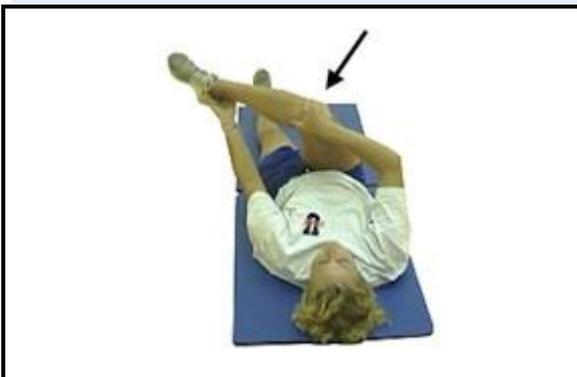
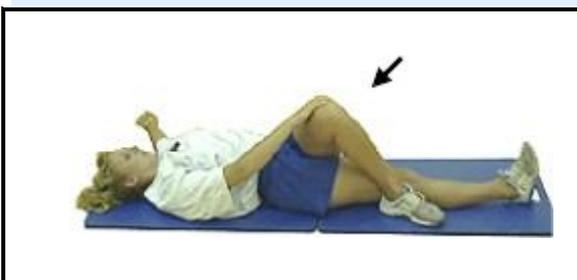


Figure Four (outer hip)

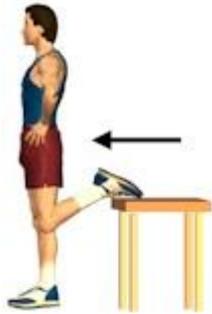
- Lie on your back with one leg flexed up at the hip and bent 90° at the knee.
- Pull your knee and ankle together, up and over toward the opposite shoulder.
- Hold when you feel an outer hip stretch.



Cross-Over (outer hip)

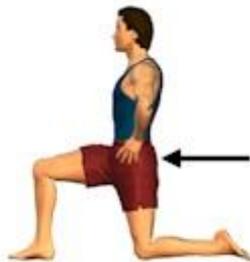
- Lie on your back and cross one knee over your other leg.
- With the opposite hand, pull you knee up and over toward the opposite shoulder, until you feel an outer hip stretch.

- Keep your foot flat on the ground.



Quadriceps Stretch (front thigh)

- Stand with your back straight and knee bent.
- Place your foot on a table or chair; keep the thigh pointing straight down.
- Squeeze your behind together and shift your hips forward slightly until you feel a gentle stretch along the front of your thigh.
- Don't lean forward or twist your hips.



Kneeling Stretch (front hip)

- Kneel on the knee of the leg that you are going to stretch.
- Squeeze your behind together and shift your hips forward slightly until you feel a stretch along the front of your thigh.
- Don't lean forward or twist your hips.



Seated Hamstring Stretch (back thigh)

- Sit with one leg straight and the other bent to your side.
- Place your hands on the floor next to your hips.
- Slowly lean forward with your chest until you feel a stretch along the back of your thigh.
- Caution: Stop if this causes back pain or shooting pain down the back of your leg.



Hamstring Stretch (back thigh)

- Lie with one leg resting on the floor and the other thigh flexed up toward the ceiling.
- Holding your thigh with your hands, slowly straighten your knee until you feel a gentle stretch along the back of your thigh (hamstring).
- Hold for two counts then relax.
- Do 10-20 repetitions with leg per

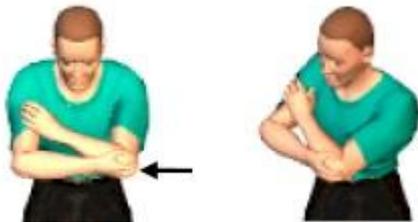
day.

Upper Back and Neck



Priming the Pump Stretch (back of shoulder)

- Lie on your side with your upper arm out 90° and elbow bent.
- Grab your forearm with the opposite hand.
- Slowly push your forearm down until you feel a gentle should stretch.
- Hold for 2-3 seconds then relax.
- Try 10-15 reps per day, especially after sports or workouts.



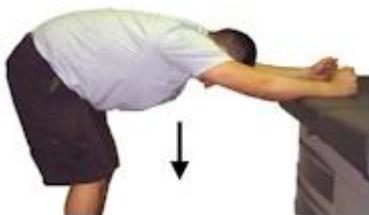
Shoulder Blade

- Raise one arm forward to shoulder level and bend your elbow.
- With the opposite hand, grab your elbow and pull it across your chest and rotate your upper body to the same side until you feel a stretch in the back of your shoulder.



Corner Stretch (pectoral muscles - chest)

- Stand in a corner with your arms on the walls and one foot in front of the other.
- Slowly bend your knee until you feel a gentle stretch in your chest muscles, then hold.
- Do not rest your entire body weight on your upper arms - this can stretch the stabilizing structures of the shoulder.



Overhead Stretch (lat muscles - mid back and back of shoulder)

- Bend over at the waist and rest your arms on a table with thumbs up.
- Slowly drop your head and body down below your shoulders.

	<ul style="list-style-type: none"> • Hold when you feel a stretch behind your shoulders and mid back.
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	<p>Head Tilt Stretch (side neck)</p> <ul style="list-style-type: none"> • Sit tall while holding onto a chair with your hand. • Grab the top of your head with the opposite hand. • Slowly pull your head over to the side until you feel a gentle stretch. • Repeat on other side.
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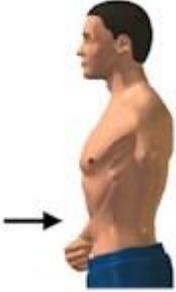
	<p>Armpit Stretch (side neck, top of shoulder and upper back)</p> <ul style="list-style-type: none"> • Sit tall while holding onto a chair with your hand. • Grab the top of your head with the opposite hand. • Slowly pull your head over to the side when you rotate your head down. • Hold when you feel a gentle stretch in the neck. • Repeat on other side.
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STRENGTHENING EXERCISES

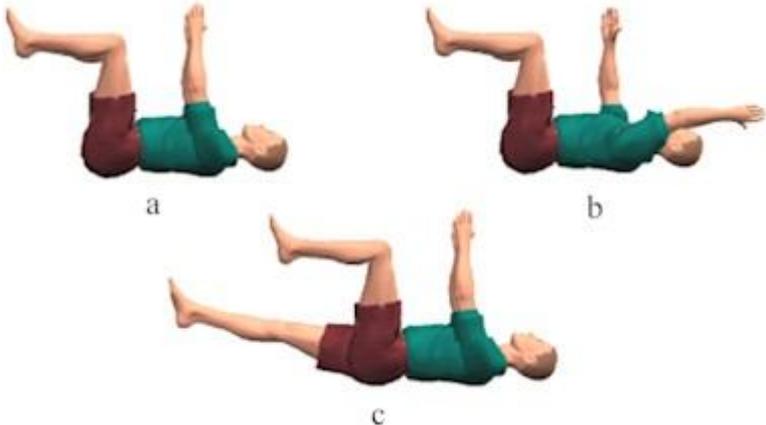
Exercises to strengthen your muscles will make everyday exercises easier and help prevent injuries.

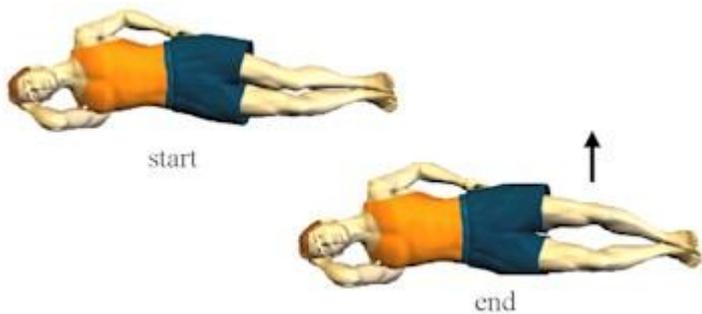
Technique:	Perform the exercises slowly, avoiding sudden jerking movements.
Frequency:	Do 1-3 sets of 5-20 repetitions, 3-4 days per week (unless otherwise indicated).
Precautions:	Discontinue an exercise if it is painful, especially if it is a beginning level exercise. Do not hold your breath while doing these exercises.

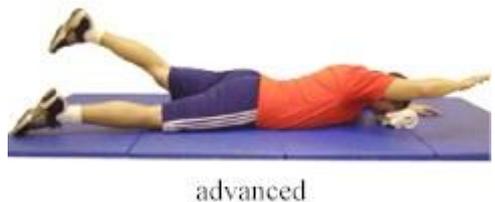
For Low Back Problems

	<p>Abdominal Block</p> <ul style="list-style-type: none"> • Stand upright with normal posture. • Breathing normally, tighten your abdominal muscles and draw your belly button in toward your spine. • Hold for three counts then relax. • Do 25-50 repetitions per day.
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	<p>Abdominal Crunch (basic abdominal)</p> <ul style="list-style-type: none"> • Lie on your back with your knees bent. • Do an abdominal block while you slowly raise your upper body and shoulder blades off the floor. • Hold for three counts, and then slowly lower. <p>Progression: Level 1 - arms at sides Level 2 - arms folded across your chest Level 3 - hands behind your head, elbows back.</p>
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	<p>Dead Bug (advanced abdominal)</p> <ol style="list-style-type: none"> 1. Lie on your back with knees bent and arms (elbows straight) up in the air. 2. Slowly lower one arm (straight), hold for two counts, then raise again. 3. Next lower one leg (straight), hold for two counts, then raise again. 4. Then lower your opposite arm and leg (both straight) and hold for two seconds. 5. Repeat the entire cycle 1-10 times.
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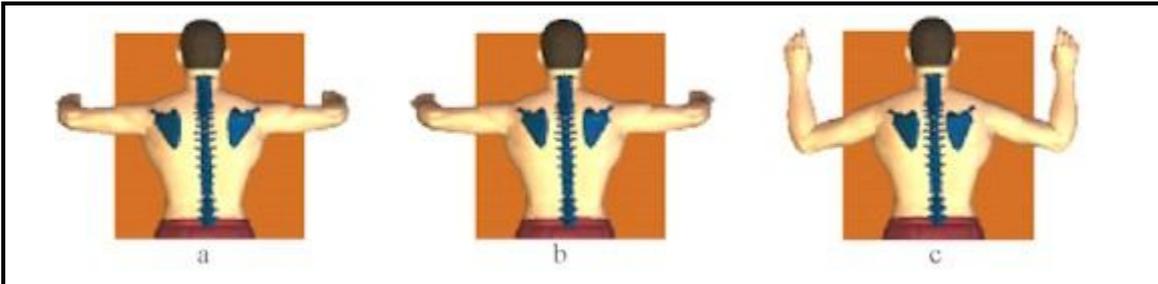
	<p>Clam (outer hip strengthening)</p> <ul style="list-style-type: none"> • Lie on your side with hips bent forward 45% and knees bent approximately 70%. • Slowly rotate your top kneecap up toward the ceiling until knees are approximately one hand-width apart. • Hold for three counts, and then slowly lower your knee. • Do not lean your hips back or lift up your top foot.
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	<p>Superman (upper and lower back)</p> <ul style="list-style-type: none"> • Lie flat on your stomach. • Raise one arm, hold for three counts, and then slowly lower. • Do the same with your other arm, then each leg. • Do 5-20 repetitions for each arm and leg. • Progression - Raise the opposite arm and leg at the same time. • It must be pain free!
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For Neck Problems

	<p>Chin Tuck (stretches back of neck and strengthens front of neck)</p> <ul style="list-style-type: none"> • While lying down, hold your head straight. • Slowly tuck your chin back toward neck spine until you feel a gentle stretch. • Hold for 10-20 seconds. • Do 5-7 repetitions, 5 to 7 times per week.
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For Upper Back Problems



Shoulder Blade Squeeze

- a. Stand or lie on a bench with your elbows bent forward.
- b. Squeeze your shoulder blades together.
- c. Raise your lower arms up to level even with your body and press your shoulder blades down toward your mid back. Hold for three seconds.

EXERCISE PRECAUTIONS

The following exercises are **Not** recommended.

	<p>Bent over hamstring stretch</p> <p>Caution:</p> <ul style="list-style-type: none">• This exercise causes the hamstrings to tighten instead of relax (stretch).• Bending forward beyond 70% flattens the low back curve and increases disc pressure.
	<p>Double leg lift</p> <p>Caution:</p> <ul style="list-style-type: none">• Hip and low back muscles perform much of the work in a double leg lift.• Also, this exercise tends to increase the low back curve too much.
	<p>Neck Rotation Exercises</p> <p>Caution:</p> <ul style="list-style-type: none">• Head circles can compress the cervical discs and potentially pinch nerves.
	<p>Flexion and rotation exercises</p> <p>Caution:</p> <ul style="list-style-type: none">• Flexion and rotation exercises put the low back discs and supporting structures at higher risk for injury.

PREVENTION TIPS

Avoid smoking - Smoking is a risk factor for back pain. It is believed that smoking decreases the circulation to the low back discs which can cause them to crack and rupture.

Maintain a healthy weight - Obesity may contribute to back pain by causing the lower back curve to arch too much.

Minimize your stress - Stress can cause or aggravate back pain. Try these strategies:

- Take a break every 20 minutes when studying or working on the computer.
- Practice time management.
- Try relaxation techniques like the following:

	<ol style="list-style-type: none">1. Lie on your back, eyes closed, knees bent and arms resting at sides.2. Inhale through your nose, and then exhale through your mouth.3. Concentrate on breathing slowly and deeply for a couple of minutes.4. While continuing the breathing pattern, slowly press your low back against the floor, hold 2-3 seconds, and then relax.5. Practice breathing and tensing/relaxing low back muscles until you feel relaxed.
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Back Safety for Weightlifting

Arching or flattening the spinal curves too much when weightlifting can cause or increase pain. Try the following tips to protect your back and neck during weightlifting:

	<p>Leg Extension</p> <ul style="list-style-type: none">• Lean against the back pad.• Do an abdominal block.• Lift with only one leg at a time to protect your back.
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	<p>Leg Curl</p> <ul style="list-style-type: none"> • Use a seated leg curl machine when possible. • If doing curl on stomach, don't let hips raise. <p>For both techniques:</p> <ul style="list-style-type: none"> • Maintain normal posture and do abdominal block. • Lift with only one leg at a time to protect your back.
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	<p>Bench Press</p> <ul style="list-style-type: none"> • Use a seated machine when possible. • If using a flat bench, don't raise your hips or arch low back. <p>For both techniques:</p> <ul style="list-style-type: none"> • Maintain normal posture. • Do an abdominal block.
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	<p>Biceps Curl</p> <ul style="list-style-type: none"> • Maintain normal posture. • Do an abdominal block. • Lift with only one arm at a time to protect your back.
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Cardio Exercise for a Healthy Spine

Aerobic exercise is recommended in addition to stretching and strengthening. In fact, a sedentary lifestyle is often a cause of back/neck pain. Aerobic exercise utilizes large muscle groups (i.e. legs) or multiple muscle groups (i.e. legs, arms and trunk), is rhythmical in nature, and is performed continuously over a period of time. Try to commit to an active lifestyle that extends into all aspects of your day, such as:

- Walking, biking or inline skating instead of driving or taking the bus.
- Taking the stairs.
- Parking your car several blocks away from your destination and walking.
- Taking a walk every 30 minutes, instead of sitting for long periods of time studying or working.
- Socializing with others by walking, rather than sitting and talking.

Exercise Formula for Healthy Living

Activity: Exercise doesn't need to be vigorous or continuous, so try to increase the activities that you do on a daily basis. Biking, walking or upright water exercise is less stressful on the back, so they are preferred over swimming, stair climber machines and jogging if you have back problems.

Daily: Do at least 60 minutes of physical activity. Activities can last for one minute 60 times a day or any other combination totaling 60 minutes.

Recommendations by the American College of Sports Medicine for developing or maintaining aerobic physical fitness:

Frequency	Activity	Duration	Intensity	Progression
3-5 days/week alternating	<p>Fitness walking, jogging, running, biking, swimming, group exercise class, rowing machines, etc.</p> <p>Sports such as handball and racquetball, if played vigorously for an hour or so, can be included in these activities even though they are not 100% aerobic.</p>	20 to 60 minutes continuous	<p>Rating of Perceived Exertion (RPE)**</p> <p>6 7 Very, very light 8 9 Very light 10 11 Fairly light 12 13 Somewhat hard 14 15 Hard 16 17 Very Hard 18 19 Very, very hard 20</p>	<p>1. Start at RPE of 1-12 and duration of 20-30 minutes.</p> <p>2. Progress in intensity and duration by no more than 10%/week until you reach 40-60 minutes per week.</p> <p>The relationship between DURATION and INTENSITY is important - if you work out at higher intensities, decrease exercise duration; if you work at lower intensities, increase exercise duration.</p>

****RPE** is a subjective measurement used to determine the intensity of an aerobic workout. Rating workouts **12 to 16** (somewhat hard to hard) correlates with a heart rate (HR) range of 50 to 85% Max HR Reserve. To determine your RPE, utilize cues such as the increased rate of breathing, a "sense" that the HR is faster, tiredness or burning in the working muscles, etc., and ask yourself "How hard does it feel like I'm working?" Don't focus on just one cue, but rate the overall feeling of work intensity.

Ideas for Daily Living

Be mindful of your posture during daily activities like standing, sitting, and sleeping. Your posture habits can cause some muscles to tighten and others to weaken.

	<p>Ideal sitting posture promotes a normal "S" shaped curve. Use a pillow or towel roll to support the low back. In a car, sit with your knees slightly higher than your hips.</p>
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	<p>Slouch Posture grossly increases and/or flattens the spinal curves, resulting in soft tissue tightening or weakness.</p>
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Sleeping

A firm mattress promotes proper sleeping posture. Place a 3/4 inch plywood board under a soft mattress to increase its firmness.

	<p>Lying on your side, with knees bent, supports the natural curve of the back. Use a flat pillow to support the neck, especially if your shoulders are broad.</p>
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	<p>Sleeping on the stomach can increase the low back curve and stress the neck and shoulders. If you must sleep on your stomach, place a pillow under your hips to support the low back.</p>
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	<p>Sleeping on your back is restful and correct when the knees are properly supported.</p>
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Packs and Sore Backs - Wearing heavy backpacks or placing them over one shoulder can add to back pain. It can also increase your risk for upper back and shoulder pain. Keep the load light and carry the pack over both shoulders.

Bicycling and Your Back - Adjust bicycle handlebars and seat to support correct posture. Upright handlebars, rather than racing types will place less stress on the lower back.

Footwear - Wear flat-soled shoes with firm arch support. High heel shoes increase the forward curve of the low back. Don't stand in one place too long; shift your weight and change positions. When walking or standing, remember the three curves of the back and practice correct posture.

Neck Tips - Do not lean over your work, hobbies, projects, etc. Angle your work so that you can look straight ahead, or sit closer to your work area. Do neck exercises throughout the day (pages 5 and 7). Try frequent "mini-breaks" to relieve tension. Avoid overhead reaching, use a ladder or stepstool instead. **Sex** - Avoid stress on your back during sexual intercourse. Try positions which feel comfortable, such as lying on your side or having your partner on top.

Pregnancy - During pregnancy, hormones slightly loosen tissues that hold the vertebrae together. The added weight can also cause strain. Consult your doctor if you experience back problems.

CARING FOR YOUR BACK OR NECK

While dull aches can be annoying and even ignored, severe pain or pain present with other symptoms may indicate a more serious condition.

Call a doctor if your pain involves...

- Fever - may indicate an infection
- Frequent, painful or bloody urination - may indicate a kidney problem
- Shooting pain down the back of a leg, from the hip down to or below the knee - may indicate a disc problem or pinched nerve
- Numbness or tingling in arm(s) or leg(s) - may indicate a nerve or disc problem
- Weakness or paralysis in an arm or leg - may indicate a nerve or disc problem
- Persistent pain that can't be relieved - may indicate a serious back disorder or injury
- An accident
- Changes in bladder or bowel function - may indicate an internal organ problem
- Changes in menstrual cycle
- Changes in skin color (yellow) - may indicate an internal organ problem

Self-Care for Back or Neck

If you haven't experienced any of the above symptoms, you can try self-care to ease pain and promote healing.

Based on a thorough analysis of the research on treating back pain, the Agency for Health Care Policy and Research (AHCPR) has recommended these self-care guidelines⁴:

First 48-72 Hours	After 72 Hours
<ul style="list-style-type: none"> • Ice (15-20 minutes, 3-4 times per day) • Acetaminophen • Rest from painful activities • Walk or perform other low stress exercise • Minimal bed rest 	<ul style="list-style-type: none"> • Moist heat 15-20 minutes, before exercising • Back, abdominal, and hip stretching exercises • Back and abdominal strengthening exercises • Aspirin or Ibuprofen

Using Ice and Heat

To relieve initial pain, you can supply an ice pack for 15-20 minutes every two hours for the first 72 hours. Avoid lying on the ice pack, as it could freeze the skin. After the first 72 hours, moist heat, such as a hot shower, bath, wet towels, or hot water bottle, may help relax muscles prior to stretching exercises. Apply 15-20 minutes every few hours.

Massage

Massage helps increase the blood flow to your muscles and helps muscles relax. You may want to consult a massage therapist for assistance.

Medication

Acetaminophen, ibuprofen, and aspirin can help reduce pain. Follow the label for recommended dosages and frequency. Inform your doctor of any drug allergies or adverse reactions.

Rest

Rest from painful activities, but resume daily activities such as walking as quickly as possible. Muscles and other tissues will stiffen and weaken if you avoid exercise for too long.

Exercise

As pain decreases, try the exercises in this brochure. Slight discomfort is normal. Gradually increase the amount, intensity, and frequency of exercise as tolerated. If you experience severe or prolonged pain, stop and seek medical help. Also stop and seek help if exercises cause numbness or tingling in your arms or legs.

Stress and Tension Management

Muscular relaxation and breathing exercises, meditation, and guided imagery may help relax tense muscles and relieve pain. Listening to soothing music and resting your body and mind may help as well.

Recreational Activities

Some activities, like swimming, walking and water exercise, can help tone and stretch muscles while you recover. However, aggressive twisting, bending and weight bearing activities (like tennis, golf, bowling, racquetball, diving, jogging, and high-impact aerobics) can increase back problems. Therefore, only attempt strenuous activities once your symptoms subside and strength, flexibility and conditioning are restored.

Seeking Help

If your pain worsens or does not decrease after two weeks of self-care, or you have questions or concerns about your back or neck, see a doctor. Thorough evaluation of your problem will help to make an accurate diagnosis and should ensure a successful integrated management programme to suit you and your needs.

Summary

You are not alone if you suffer from back and neck pain or related problems. Performing exercises can help restore your body to optimal health, prevent back and neck pain, and reduce the risk of re-injury.

References

¹American College Health Association. National College Health Assessment: Reference Group Executive Summary Spring 2000. Baltimore: American College Health Association; 2001.

²Warner M, Barnes, PM, and Fingerhut, LA. Injury and poisoning episodes and conditions; National Health Interview Survey, 1997. Vital Health Statistics 10(202). 2000.

³Nachemson, AL. Chronic Pain: The end of the welfare state? Quality Life Research (1994). 3:S11-7.

⁴Bigo S, Bowyer O, Braen G, et al. Acute Low Back Problems in Adults. Clinical Practice Guideline No. 14. AHCPR Publication No. 95-642, Rockville, MS: Agency for Health Care Policy and Research, Public Health Service, U.S. Department of Health and Human Resources, December 1994.

